Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Jason Crapo
Deputy Director

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Deputy Director

Ruben Hernandez
Deputy Director

Gabriel Lemus
Deputy Director

March 23, 2026

NOTICE OF PUBLIC REVIEW AND INTENT TO ADOPT A PROPOSED MITIGATED NEGATIVE DECLARATION

Pursuant to the State of California Public Resources Code and the "Guidelines for Implementation of the California Environmental Quality Act of 1970" as amended to date, this is to advise you that the Contra Costa County Department of Conservation and Development, Community Development Division, has prepared an Initial Study evaluating the potential environmental impacts of the following project:

1. **Project Title:** Marsh Creek Reservoir Restoration and Total Mercury Reduction Project

2. **County File Number:** CP#23-35, Project No. WO8495

3. **Lead Agency:** Contra Costa County
Department of Conservation and Development
30 Muir Road, Martinez, CA 9455

4. **Lead Agency Contact Person:** Syd Sotoodeh, Senior Planner
(925) 655-2877
syd.sotoodeh@dcd.cccounty.us

5. **Project Location:** Approximately 0.3 miles southeast of Marsh Creek Road and Vineyards Parkway, 0.7 miles south of Highway 4, near the City of Brentwood, Unincorporated Contra Costa County

   APNS: 007-380-018; 007-380-019; 007-380-020; 007-380-011

6. **Applicant:** Contra Costa County Flood Control and Water Conservation District
Contact: Laura Cremin: (925) 313-2015

7. **Description of Project:**

The multi-benefit Marsh Creek Reservoir Restoration and Total Mercury Reduction Project (project) would improve the flood capacity of the Marsh Creek Reservoir (Reservoir), improve water quality, enhance the ecosystem, and increase the value of public recreation in the area. The project would excavate excess accumulated sediment and debris from the wet pool of the Reservoir, dry the removed material, dispose of the material onsite, create a high flow diversion, restore habitat, clean and maintain the existing primary outfall/operate the gate, and install cattle exclusion fencing.

8. **Surrounding Land Uses and Setting:**

The project site (326.3 acres) is located approximately 4 miles southwest of the City of Brentwood in a rural, low-density area of Contra Costa County. The project vicinity is generally hilly with surrounding recreational and agricultural land use, including rangeland grazing. The project site is located 0.5 mile outside of the legal boundary of the Sacramento-San Joaquin Delta (Delta) but is connected to the Delta via Marsh Creek. Local access to the project site is provided by Highway 4, Vasco Road, Vineyards Parkway, Camino Diablo, and Marsh Creek Road.

The project site encompasses the Reservoir, an approximate 1-mile extent of Marsh Creek upstream of the Reservoir wet pool (made up of West and East Wet Pools), and surrounding uplands, including land on the east side of Marsh Creek Road. The majority of the project site is located on land owned by the Contra Costa County Flood Control and Water Conservation District (District). The primary adjacent land use includes Marsh Creek State Park to the north, east and west. A small portion of Marsh Creek adjacent to the West Wet Pool is located within lands managed by California State Parks; however, no work is proposed within this area, and it would likely not be accessed during construction or operation and maintenance of the project. Proposed wildlife-friendly fencing (for cattle exclusion) would be implemented in a few small areas of California State Park Land along upstream Marsh Creek. Other land uses in the project area include the Historic John Marsh House and the Vineyards at Marsh Creek, a single-family residential development located to the north.

The project site sits in a valley bounded on all sides by rolling hills. The valley floor is mostly flat, gently sloping downwards from south to north. Topographic low points are associated with Marsh Creek and the Reservoir wet pool. Topographic high points are associated with the hillside toe slopes bounding the western and eastern edges of the

project site, the Reservoir, Dam and associated levee. Elevation in the project site ranges from approximately 170 to 230 feet above mean sea level.

9. **Determination:**

An Initial Study (IS) for the project identified potential significant impacts in the environmental area of biological resources, cultural resources, greenhouse gas emissions, hazards and hazardous materials, tribal cultural resources, utilities and service systems, and wildfire. Environmental analysis determined that measures were available to mitigate potential adverse impacts to less-than-significant levels. As a result, a Mitigated Negative Declaration (MND) has been prepared pursuant to Public Resources Code Section 21080 (c), 21064.5, and Article 6 of the California Environmental Quality Act (CEQA) Guidelines.

Pursuant to the requirements of CEQA (CEQA Guidelines Section 15071), the MND describes the project; identifies, analyzes, and evaluates the potential significant environmental impacts which may result from the project; and identifies measures to mitigate adverse environmental impacts. Mitigations identified in this document designed for the project will ensure that the project will not cause a significant impact on the environment.

The project site is not present on any of the lists enumerated under Section 65962.5 of the Government Code.

Prior to adoption of the MND, the County will be accepting comments on the IS and Draft MND during a 30-day public comment period.

The initial study/draft mitigated negative declaration may be reviewed at the Contra Costa County Public Works Department, 255 Glacier Drive, Martinez, during normal business hours, or viewed online at the following link: https://www.contracosta.ca.gov/4841/CEQA-Notifications. All documents referenced in Section 3, “References,” of the IS/MND can be provided upon request.

Public Comment Period: The period for accepting comments on the adequacy of the environmental document will begin **Tuesday, March 24, 2026, and extends to 5:00 P.M., Thursday, April 23, 2026.** Any comments should be submitted in writing to the following:

Laura Cremin
Contra Costa County Public Works Department
255 Glacier Drive
Martinez, CA 94553
Laura.Cremin@pw.cccounty.us

The proposed Mitigated Negative Declaration will be considered for adoption at a meeting of the County Board of Supervisors. The hearing date before the County Board of Supervisors has not yet been scheduled. To confirm the Board date, please contact Laura Cremin at Laura.Cremin@pw.cccounty.us or directly at 925-313-2015.

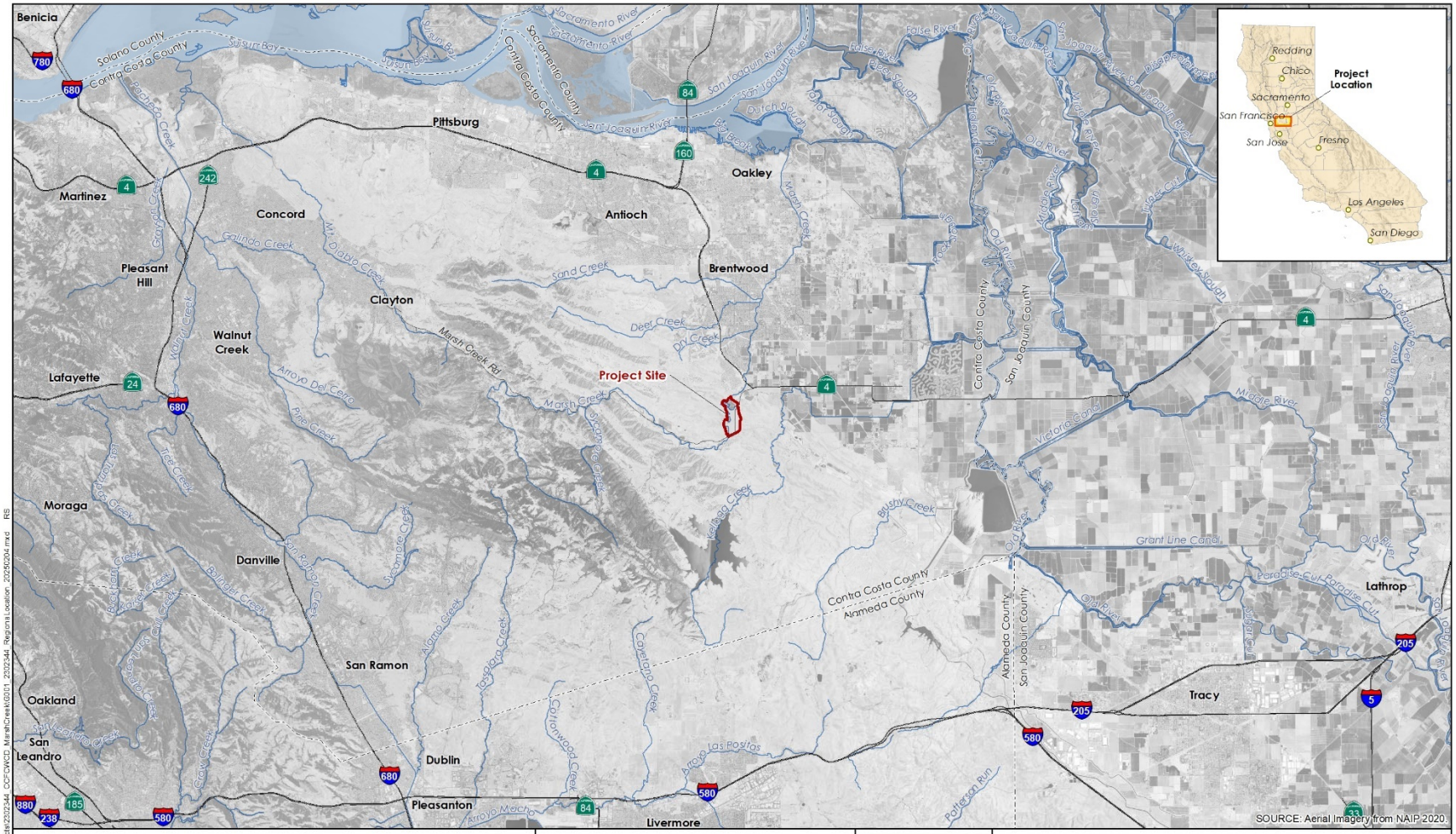
Sincerely,

Syd Sotoodeh

Syd Sotoodeh
Senior Planner
Department of Conservation & Development

attch: Figure 1-1: Regional Location
Figure 1-2: Project Location
Figure 1-3: Proposed Project

cc: County Clerk's Office (2 copies)
Adjacent Occupants and Property Owners
Notification List (Agencies, Interested Parties)



Marsh Creek Reservoir Restoration and Total Mercury Reduction Project

Contra Costa County Flood Control and Water Conservation District

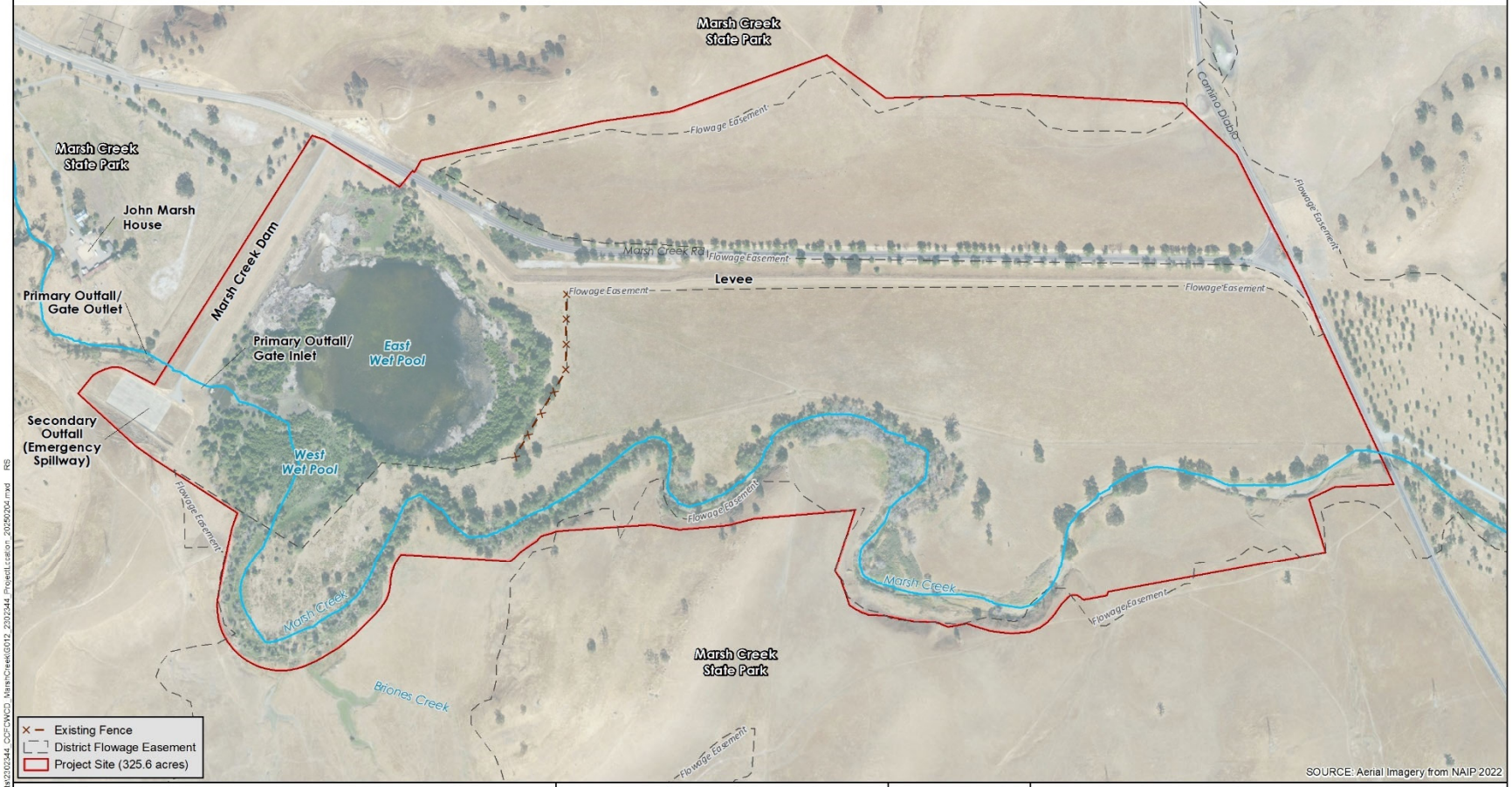
GEI Consultants

REGIONAL LOCATION

MARCH 2025

FIGURE 1-1

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Marsh Creek Reservoir Restoration and Total Mercury Reduction Project

Contra Costa County Flood Control and Water Conservation District

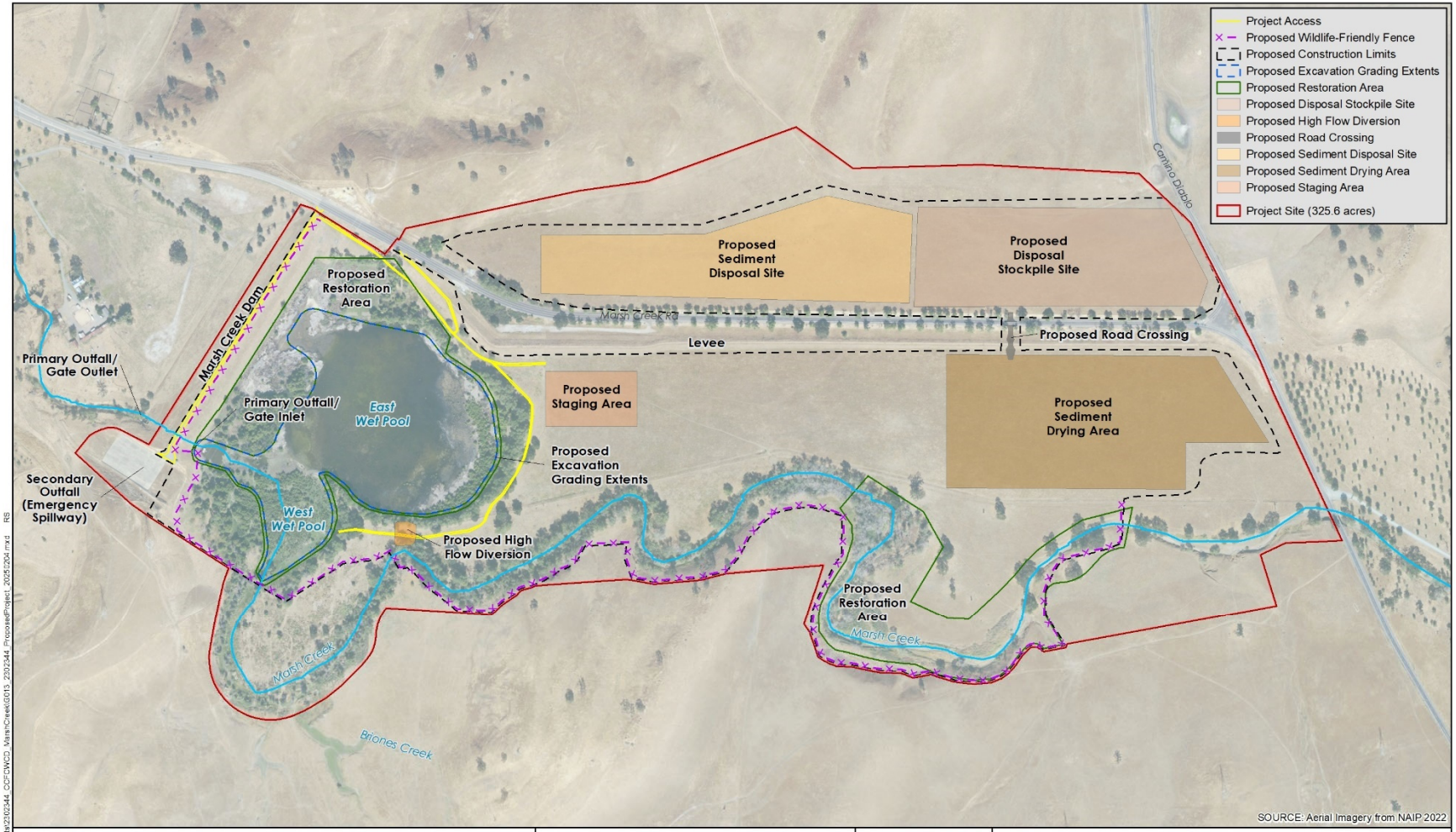
GEI Consultants

PROJECT LOCATION

MARCH 2025

FIGURE 1-2

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Marsh Creek Reservoir Restoration and Total Mercury Reduction Project

Contra Costa County Flood Control and Water Conservation District

GEI Consultants

PROPOSED PROJECT

MARCH 2025

FIGURE 1-3

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Draft Initial Study and Proposed Mitigated Negative Declaration

Marsh Creek Reservoir Restoration and Total Mercury Reduction Project



Prepared for:

Contra Costa County Flood Control and Water Conservation District

Prepared by:

GEI Consultants

March 2026

1. Project Description

Project Title:	Marsh Creek Reservoir Restoration and Total Mercury Reduction Project
Lead Agency Name and Address:	Contra Costa County Department of Conservation and Development 30 Muir Road Martinez, CA 94553
Contact Person and Phone Number:	Laura Cremin, Environmental Analyst laura.cremin@pw.cccounty.us (925) 313-2015
Project Location:	Approximately 0.3 miles southeast of Marsh Creek Road and Vineyards Parkway, 0.7 miles south of Highway 4, near the City of Brentwood, Unincorporated Contra Costa County APNS: 007-380-018; 007-380-019; 007-380-020; 007-380-011 (County of Contra Costa 2024a)
Project Sponsor's Name and Address:	Contra Costa County Flood Control and Water Conservation District 255 Glacier Drive, Martinez, CA 94553
General Plan Designation:	Water (WA); Public/Semi-Public (PS) (County of Contra Costa 2024a)
Zoning:	Heavy Agricultural District (A-3); Agricultural Preserve District (A-4) (County of Contra Costa 2024a)

Description of Project: The multi-benefit Marsh Creek Reservoir Restoration and Total Mercury Reduction Project (project) would improve the flood capacity of the Marsh Creek Reservoir (Reservoir), improve water quality, enhance the ecosystem, and increase the value of public recreation in the area. The project would excavate excess accumulated sediment and debris from the wet pool of the Reservoir, dry the removed material, dispose of the material onsite, create a high flow diversion, restore habitat, clean and maintain the existing primary outfall/operate the gate, and install wildlife-friendly fencing.

Surrounding Land Uses and Setting: The project site (326.3 acres) is located approximately 4 miles southwest of the City of Brentwood (**Figure 1-1)** in a rural, low-density area of Contra Costa County. The project vicinity is generally hilly with surrounding recreational and agricultural land use, including rangeland grazing. The project site is located 0.5 mile outside of the legal boundary of the Sacramento-San Joaquin Delta (Delta) but is connected to

the Delta via Marsh Creek. Local access to the project site is provided by Highway 4, Vasco Road, Vineyards Parkway, Camino Diablo, and Marsh Creek Road.

The project site encompasses the Reservoir, an approximate 1-mile extent of Marsh Creek upstream of the Reservoir wet pool (made up of West and East Wet Pools), and surrounding uplands, including land on the east side of Marsh Creek Road. The majority of the project site is located on land owned by the Contra Costa County Flood Control and Water Conservation District (District). The primary adjacent land use includes Marsh Creek State Park to the north, east and west. A small portion of Marsh Creek adjacent to the West Wet Pool is located within lands managed by California State Parks; however, no work is proposed within this area, and it would likely not be accessed during construction or operation and maintenance (O&M) of the project. Proposed wildlife-friendly fencing (for cattle exclusion) would be implemented in a few small areas of California State Park Land along upstream Marsh Creek. Other land uses in the project area include the Historic John Marsh House and the Vineyards at Marsh Creek, a single-family residential development located to the north (**Figure 1-2**).

The project site sits in a valley bounded on all sides by rolling hills. The valley floor is mostly flat, gently sloping downwards from south to north. Topographic low points are associated with Marsh Creek and the Reservoir wet pool. Topographic high points are associated with the hillside toe slopes bounding the western and eastern edges of the project site, the Reservoir, Dam and associated levee. Elevation in the project site ranges from approximately 170 to 230 feet above mean sea level (msl).

Other public agencies whose approval is required (e.g., permits, financing, approval, or participation agreement: **Table 1-1** lists the permits that are anticipated to be required for the project.

Table 1-1 Discretionary Permits or Approvals Potentially Required

Agency	Permits and Authorizations Required	Description
U.S. Army Corps of Engineers	Clean Water Act, Section 404 Permit	Required for discharge of dredge or fill to Waters of the U.S., including the Reservoir and fringing wetlands, and Marsh Creek.
U.S Fish and Wildlife Service	Federal Endangered Species Act, Section 7	Required for "take" of federally listed species or modification of critical habitat.
California Department of Fish and Wildlife	Fish and Game Code, Section 1600, Lake or Streambed Alteration Agreement	Required for diversion/obstruction or substantial change/use of any material from the bed, channel, or bank of, the Reservoir or Marsh Creek and associated riparian habitat
California Department of Fish and Wildlife	Fish and Game Code, Section 2081, Incidental Take Permit or Consistency Determination	Required for "take" of a State listed species.
Central Valley Regional Water Quality Control Board	Clean Water Act, Section 401 Permit, Water Quality Certification	Required for discharges of dredge or fill to surface Waters of the State. Required for the removal of dredge or fill to a dredge material placement site for retention, as well as for beneficial use.

Agency	Permits and Authorizations Required	Description
State Water Resources Control Board	National Pollutant Discharge Elimination System, Construction General Permit (Notice of Intent to Proceed)	Required for projects that disturb more than 1 acre of land; discharge permit for stormwater. A Storm Water Pollution Prevention Plan must be prepared and implemented.
California Office of Historic Preservation	National Historic Preservation Act Section 106 Consultation	Required for analysis of effects on cultural resources pursuant to Section 106 of the National Historic Preservation Act.
East Contra Costa County Habitat Conservancy	East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan	Project is a covered activity under the ECCHCP and plans to obtain USFWS Section 7 and CDFW Section 2081 take coverage through participation.
California State Parks	Right of Entry Permit	Required if the portion of the project site within the Marsh Creek State Park needs to be accessed at any time during project construction and operation.
Pacific Gas & Electric	Encroachment Permit	Required for relocation of Pacific Gas & Electric gas transmission line located along Marsh Creek Road.
Bay Area Air Quality Management District	Burn Permit, Smoke Management Plan	Prior to a prescribed burn, the District is required to register the burn with the Bay Area Air Quality Management District, obtain a burn permit from the Air District and/or fire agency, and prepare and submit a Smoke Management Plan.

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.?

Yes; Wilton Rancheria and the Confederated Villages of Lisjan Nation (CVLN) previously requested to be notified of projects within Contra Costa County under Assembly Bill (AB) 52 (Chapter 532, an act to amend Section 5097.94 of, and to add Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3 to, the Public Resources Code, relating to Native Americans). On February 8, 2024, the Wilton Rancheria formally requested consultation with the District for the project. The District started consultation on February 21, 2024. On January 29, 2024, the Confederated Villages of Lisjan Nation requested consultation with the District. The District started consultation on May 15, 2024. Consultations regarded the methods of resource investigation identification and avoidance, mitigation, and monitoring measures. Refer to Section 2.18, "Tribal Cultural Resources," for the record of consultation meetings. Measures were agreed upon and consultation was concluded with CVLN on March 5, 2025, and Wilton Rancheria on October 1, 2025. Additionally, coordination with Wilton Rancheria and CVLN may occur through Section 106 of the National Historic Preservation Act (refer to Section 2.5, "Cultural Resources").

1.1 Description of Project:

The District has prepared this Initial Study (IS) and proposed Mitigated Negative Declaration (MND) in compliance with the California Environmental Quality Act (CEQA) to address the potential significant environmental impacts of the project.

Project Background and Need

Contra Costa County Flood Control and Water Conservation District

The District was formed in 1951 to manage construction and maintenance of regional flood control facilities, which now include approximately 79 miles of channels, creeks, and other drainages, and 25 detention basins and dams within Contra Costa County, including its cities. The District offers regional flood protection and also provides technical information and education to cities and residents (County of Contra Costa 2024b).

Figure 1-1 Regional Location

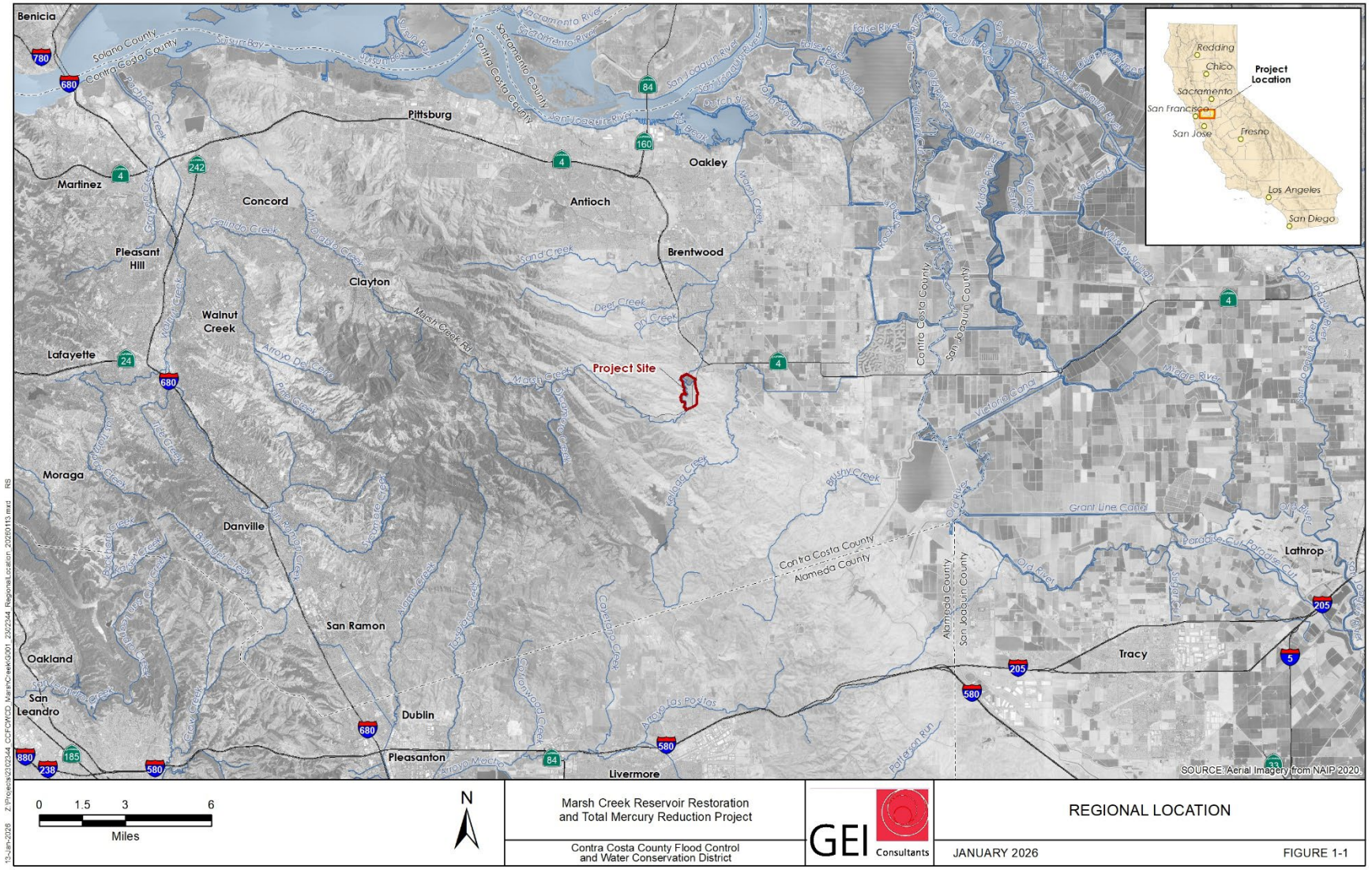
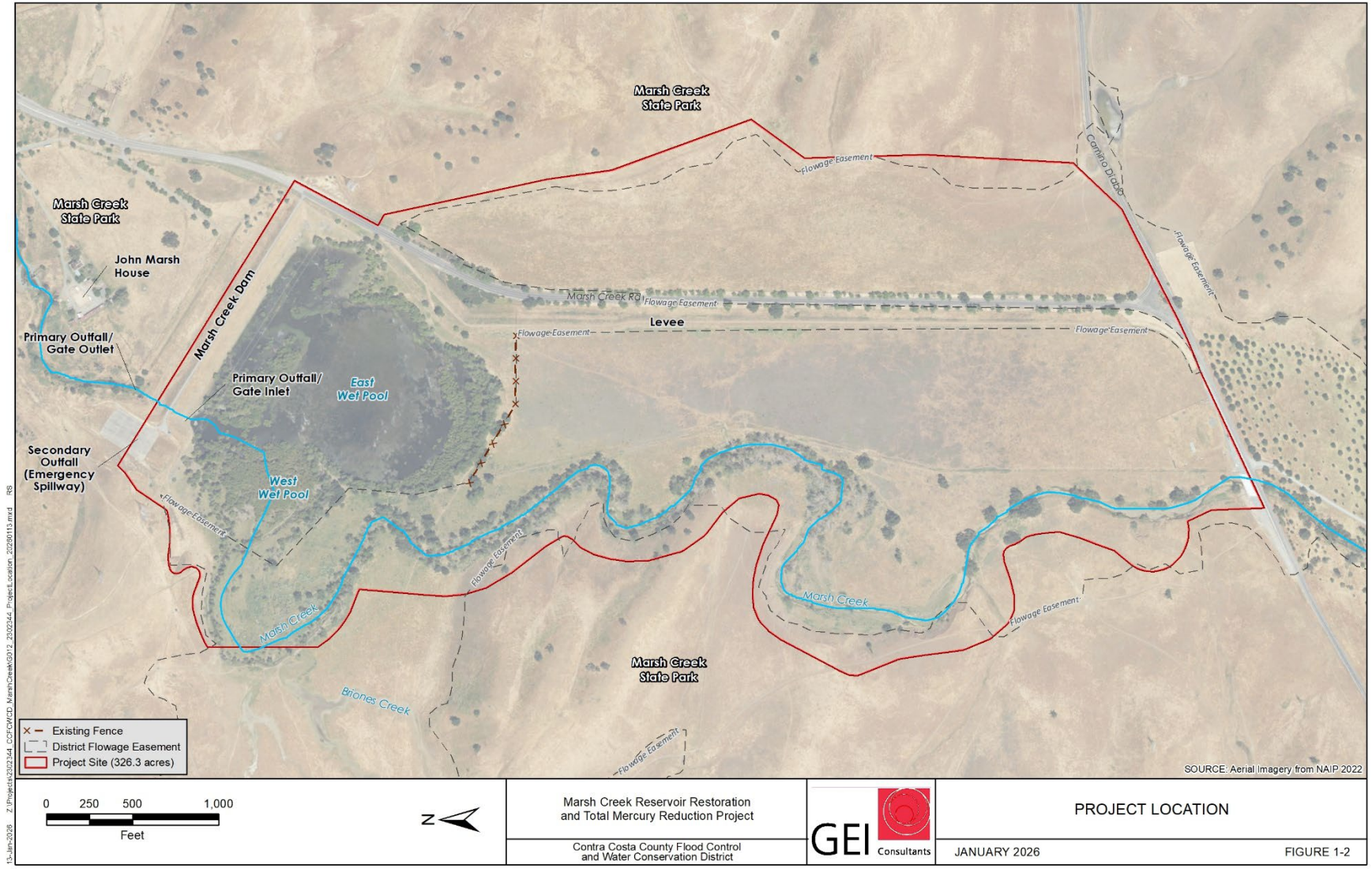


Figure 1-2 Project Location



Marsh Creek Reservoir

The District-owned Reservoir was constructed in 1962 by damming a section of Marsh Creek with the purpose of providing flood attenuation. The Reservoir remains nearly empty most of the time, until a large storm event occurs, except for a willow wet pool below the outfall elevation that typically stays wet year-round (refer to the East Wet Pool in Figure 1-2). When a large storm occurs, the Reservoir begins to fill and then slowly empties via a 54" x 54" concrete box spillway, which allows water to flow passively to the creek downstream. The Reservoir empties in a matter of hours to days via gravity without human interventions, gates, or other mechanical operations.

Marsh Creek is a freshwater stream that intermittently flows depending on weather patterns. Whereas downstream reaches of Marsh Creek have been significantly altered and straightened (some reaches have been restored), the creek above the Reservoir wet pool remains within its historical alignment and will continue to be preserved and enhanced within the footprint of the Reservoir (Figure 1-2).

The Reservoir includes the following structural components: the Dam, which is about 1,800 feet long and 58 feet high measured from the downstream toe of the embankment; the primary outfall (4.5-foot box culvert) and secondary outfall (emergency spillway); the levee, an earthen feature with an access road approximately 1-mile-long that runs parallel with Marsh Creek Road at the east end; and the "wet pool", which is the currently perennially wet portion of the Reservoir adjacent to the Dam (refer to East and West Wet Pools in Figure 1-2). The watershed area that drains to the Marsh Creek Reservoir is approximately 55 square miles (GEI 2019). As constructed, the total water storage capacity of the Reservoir wet pool was 330 acre-feet with an open water surface area of approximately 40 acres and a primary outfall elevation of 157.0 (NAVD 88) above msl downstream of the dam to 170.5 feet above msl (NAVD 88) (GEI 2019) upstream of the Dam. The total flood storage capacity at the height of the secondary outfall (194.3 feet NAVD 88) and Dam crest height of 206 (NAVD 88) feet was 4,425 acre-feet (DWR Bulletin 17-88). The primary outfall functions to slow outflow to Marsh Creek downstream of the Dam. Water ponds in the Reservoir, behind the primary outfall and slowly drains through the outfall.

Project Need

Over time, the accumulation of sediment in the Reservoir wet pool has diminished flood and sediment storage capacity, and the Reservoir wet pool has surpassed its anticipated life of 50 years. Water and sediment entering the Reservoir are contaminated with mercury (mercury or Hg) originating from an upstream abandoned mercury mine at the base of Mount Diablo.

Due to the current configuration of the Reservoir and sediment accumulation, the Reservoir wet pool becomes completely cut off from Marsh Creek and is subject to periodic dry-down in summer and fall months. As a result, the aquatic biota previously supported in the Reservoir wet pool have perished (Contra Costa County Flood Control and Water Conservation District 2017).

With the anticipation of more frequent extreme climatic conditions due to progressive climate and geomorphic changes, this degradation will continue, resulting in additional habitat loss over time.

Additionally, Marsh Creek and the surrounding areas have been used for cattle grazing since at least the mid-1800s when John Marsh acquired Rancho Los Meganos (Cain et al. 2003). Overgrazing by cattle has negatively impacted riparian habitat along Marsh Creek and within the Reservoir, resulting in deterioration of riparian habitat and an inability for native riparian trees to regenerate due to lack of natural recruitment of tree and shrub species.

The project would remove accumulated mercury-laden sediment that has historically been carried during storm events from the upstream mercury mine ultimately ending up in the Reservoir wet pool. The capacity of the Reservoir wet pool would be restored by excavating a deeper water column and steeper sides that would allow for the reduction of methylmercury (MeHg) production rate and subsequent volatilization, removing mercury from the water column.

The project is consistent with the goals of the Central Valley Regional Water Quality Control Board (CVRWQCB) Delta Mercury Control Program targeted to reduce mercury loads entering the Delta and to improve water quality levels in the Delta as identified in National Pollution Discharge Elimination System (NPDES) Permit No. CAS083313 (R5-2010-0102) and San Francisco Bay RWQCB NPDES CAS612008 (R2-2015-0049), both preceded by CVRWQCB Resolution R5-2010-0043 establishing requirements for "The Control of Methylmercury and Total Mercury in the Sacramento-San Joaquin Delta Estuary."

Out of caution, the District has closed public access to the Reservoir due to the mercury contamination. Implementation of the project would provide opportunities for the District to re-establish partnerships that could support public use and recreation around the Reservoir.

Project Objectives

The project objectives include the following:

- Restore wet pool capacity and improve water quality within the Reservoir;
- Reduce total mercury output to downstream Delta-habitats;
- Restore and enhance ecosystem functions and values;
- Increase Reservoir and habitat resiliency to climate change;
- Improve the aesthetic value and recreation opportunities in conjunction with existing planning efforts by the East Bay Regional Park District (EBRPD) and California State Parks; and
- Minimize impacts to existing sensitive resources including archaeological and culturally-sensitive resources and jurisdictional wetlands and waters.

Project Components

The project would excavate approximately 330,000 cubic yards (CY) of sediment and debris from the Reservoir wet pool within the West and East areas, dry the removed material, stockpile the material onsite for potential reuse, create a high flow diversion, restore habitat via plantings/seeding and controlled burns, clean and maintain the existing primary outfall/operate the gate, and install wildlife-friendly fencing for cattle exclusion (Figure 1-2 and **Figure 1-3**). Additional permissions and real estate transactions may be necessary for the various project components to be implemented. Implementing the project excavation activities in both the West and East Wet Pools would restore the storage capacity to approximately 330 acre-feet of water below the primary outfall elevation of 170.8 above msl. Specific project components are discussed in detail below.

West Wet Pool

The West Wet Pool is an approximate 10-acre area located within the western portion of the Reservoir wet pool. Flows upstream from Marsh Creek enter the Reservoir via the West Wet Pool. The West Wet Pool is currently filled with sediment. Excavation activities within the West Wet Pool would remove sediment and allow flows from upstream in Marsh Creek to enter into the East Wet Pool, maximizing the distance between the entry channel and the primary outfall that conveys flow downstream.

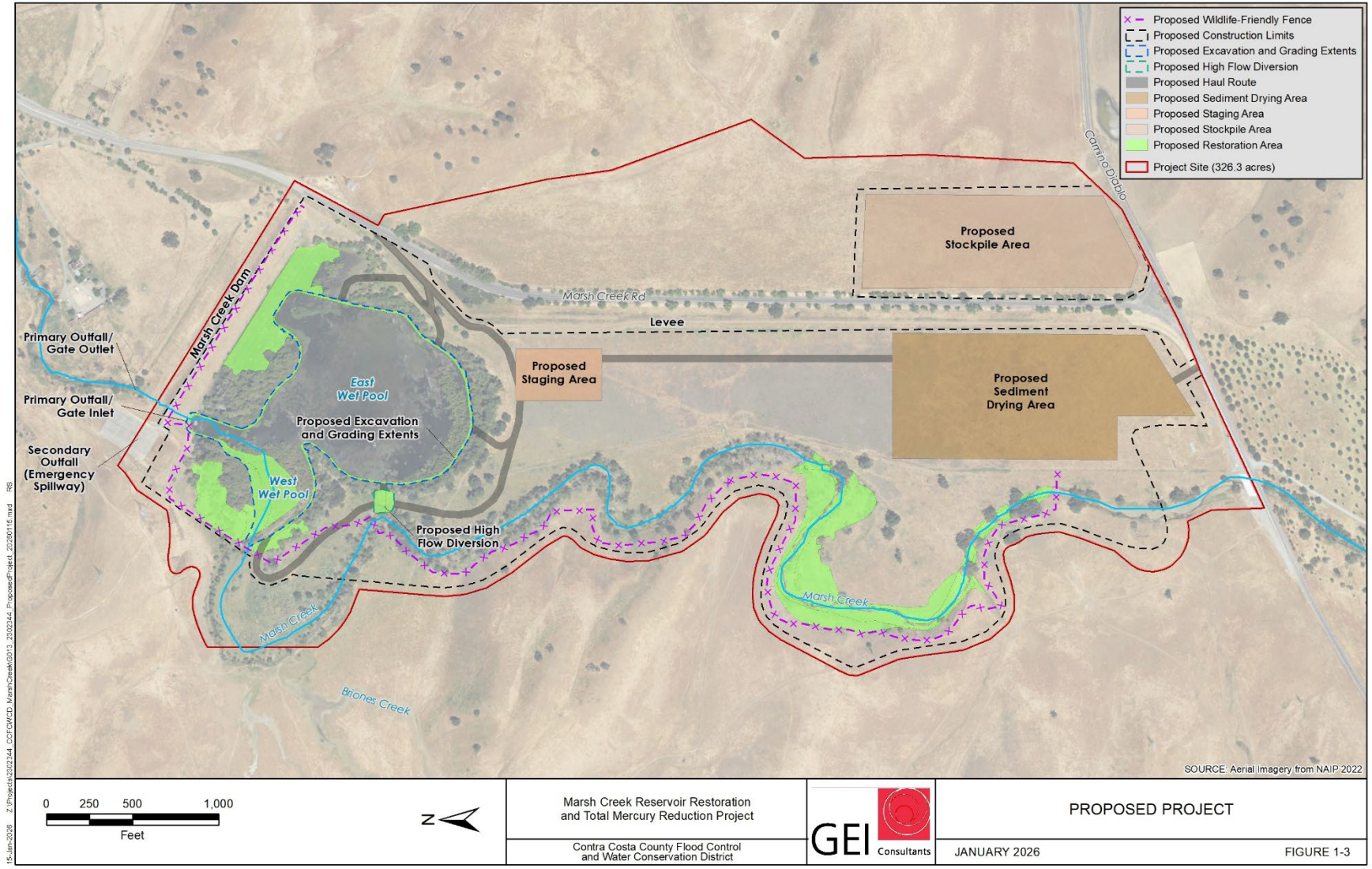
East Wet Pool

The approximate 30-acre East Wet Pool would have sediment excavated and removed to an approximate elevation of 160 feet above msl. Water would naturally flow northwest toward the Dam from flows through the West Wet Pool and proposed High Flow Diversion (Figure 1-3). The East Wet Pool would be reconstructed with willow side slopes to assist with vegetation growth and stability. Sediment removal in this area would not only restore capacity of the Reservoir but also remove mercury-laden soil. Additionally, restoring and maintaining adequate flood capacity in the Reservoir would improve flood protection and sediment catchment, reducing flood risk for downstream Delta communities.

High Flow Diversion

The proposed High Flow Diversion would convey higher flood flows and associated sediment load (e.g., flows above the 2- to 5-year recurrence interval) in Marsh Creek to directly enter the East Wet Pool. The High Flow Diversion would include a graded channel with slopes of 10:1 that contain rock slope protection or equivalent erosion control protection.

Figure 1-3 Proposed Project



Primary Outfall/Gate Operation

The existing primary outfall includes two trash racks and four 8-inch openings that regulate flow to one 12-inch gated outlet pipe that can be opened or closed (gate). After excavation activities, the Reservoir would spill into the primary outfall drain, which consists of a 4.5-foot diameter outlet, at approximate elevation 170.5 feet (NAVD 88) above msl. Implementation of the project would clean out the 8-inch outlet openings which are currently filled with sediment and inoperable. Cleaning out these openings would allow for Reservoir water levels to be lowered if deemed necessary by the District. See the "Project Implementation" section below for more information about O&M activities associated with the primary outfall and gate operation. The project does not include any modifications to the existing secondary outfall (emergency spillway).

Sediment Drying Area

A sediment drying area, approximately 25 acres in size, would be established in the southern portion of the Reservoir (Figure 1-3). After sediment and debris is removed from the West and East Wet Pools, it would be spread out to dry, prior to moving it to the permanent sediment stockpile area (see below). It is expected that most wet pool sediment would require some form of drying.

Soil Remediation Treatment

To facilitate sequestration of mercury, a carbon-based sorbent powder, application of biochar, or natural materials such as a layer of clean sand may be distributed into the Reservoir bottom after grading. It is expected that if chemical additives are used, it would be a one-time distribution.

These activities have been found to strongly reduce the accumulation of mercury in biota studied. Carbon-based sorbent powders have been tested by the U.S. Environmental Protection Agency (EPA)-821-R-02-12 test protocol and determined to be non-toxic to aquatic biota at a usage rate of 1 gram per liter (EPA 2002). Additionally, testing by Organization for Economic Cooperation and Development (OECD) 207 procedure indicated no acute toxicity at up to 10 weight percent loading in soil (typical dosing would be less) (OECD 1984). It is negatively buoyant and sinks in water.

Sediment Stockpile Area

After drying, excavated sediment and debris would be stockpiled within an approximate 25-acre area within the project site to the east of Marsh Creek Road (Figure 1-3). The stockpiled soil may be re-used in the future by local interested parties. The stockpiled soil will be placed in a manner that blends into existing slope and topography of the gradual low-lying hillside in this area with gently sloped sides but can still be recognized for future re-use. The stockpile will be seeded with a native erosion control seed mix that includes sterile wheatgrass, which is non-invasive and germinates quickly to provide rapid groundcover for erosion control. Wheatgrasses have a deep, strong root system, are well-adapted to both winter and drought conditions, and blend in will with slower growing, native and perennial species in the local area. Additional stormwater

drainage and/or best management practices (BMPs) would be implemented within this area to minimize water runoff from entering adjacent areas or Marsh Creek Road.

Restoration

After sediment is removed from the West and East Wet Pools, and initial grading is complete, surrounding and critical areas along Marsh Creek would be restored. Restoration activities would consist of site preparation including alleviation of compaction, invasive species control, planting native riparian scrub and riparian woodland, erosion control protection, and other features that would facilitate habitat growth such as implementing a temporary drip irrigation system to water container plantings up to a 5-year establishment period. Riparian vegetation expansion and enhancement would serve to bolster bank protection, expand ecological connectivity, boost local carbon sequestration, and increase resilience to climate change. Where feasible, project design would incorporate gradual slope transition between habitats to allow for a range of native tree and shrub species that can tolerate hotter and drier conditions over time. Resilient vegetative communities require disturbance regimes to be at an appropriate level to allow for native species regeneration and recruitment. Restoring habitat health would have a positive effect on nutrient transport and local carbon sequestration and may thus aid in mitigating the consequences of drought.

Site Preparation

Site preparation would be conducted in areas directly surrounding the West and East Wet Pools, the staging area, and the sediment drying area, to alleviate compaction resultant of heavy construction equipment use in these areas. Site preparation would consist of ripping to a depth of 18 to 24 inches, followed by disking.

Invasive Species Control

Invasive species that are of predominant concern on site include tree tobacco (*Nicotiana glauca*) located primarily along Marsh Creek and in riparian habitat around the wet pool, yellow star thistle (*Centuarea solstitialis*) located in upland grasslands between Marsh Creek and Marsh Creek Road in the stockpile area east of Marsh Creek Road, and perennial pepperweed (*Lepidium latifolium*) in seasonally wet habitats around the wet pool. Other species that would be controlled include giant reed (*Arundo donax*), tamarix (*Tamarix* spp.), and invasive thistles and broadleaf weeds. Control methods for these species would include physical, mechanical, and chemical methods and controlled burns. Herbicide application would be conducted under recommendations from a Pest Control Advisor (PCA). They would be applied in accordance with label instructions and applied by State-licensed pesticide applicators or employees under their direct supervision. The PCA would recommend an appropriate herbicide for the target weed species and would evaluate the chemical for its potential effects on non-targeted vegetation and animals. Anticipated control methods are summarized by species below:

- Tree tobacco would be removed using a cut and paint method by mechanically removing the tree at the ground surface and applying herbicide to the cut stump.

- Yellow star thistle control would utilize control burns over two to three seasons and/or mechanical removal with timed mowing and/or broadleaf specific herbicide applications. Prior to, or immediately after construction, the District would conduct the control burn(s) in close coordination with the appropriate entities, including local Tribes. The prescribed burn would be an approximate one-day event and would burn grassland. No woody vegetation would be burned.
- Perennial pepperweed would be controlled primarily through targeted broadleaf specific herbicide application.

Planting and Seeding

Planting would restore areas around the Reservoir that are disturbed during construction (Figure 1-3). Plant communities around the wet pools would include freshwater emergent wetland, riparian scrub, and riparian woodland. The staging and sediment drying areas would be seeded with native perennial grassland and native forb seed mixes, while the stockpile area would be seeded with a native erosion control seed mix that includes sterile wheatgrass.

Planting and installation of bioengineered post-assisted log structures and willow pole cuttings along approximately 2,400 linear feet (lf) of Marsh Creek would be focused in a bend located approximately one mile upstream of the West Wet Pool (Figure 1-3).

Wildlife-Friendly Fencing

Wildlife-friendly fencing would be installed along portions of Marsh Creek within the project site to limit cattle grazing along Marsh Creek and immediately adjacent to the Reservoir wet pool to encourage native species regeneration. New fencing would tie into existing barbed-wire fencing and final alignment of the fence may be adjusted (Figure 1-2 and Figure 1-3).

Utilities

Existing utilities in the project site include Pacific Gas & Electric (PG&E) high voltage transmission lines, gas transmission lines, and overhead power distribution lines. Utilities may be relocated or raised with implementation of the project (see the "Project Implementation" section below for more information).

Project Implementation

Implementation of the project would consist of construction activities, restoration and adaptive management, and O&M of the Reservoir once construction is complete. This section describes the characteristics associated with the construction and O&M phases of the project.

Construction Schedule and Sequencing

Project construction would take place over approximately 15 months and is currently expected to occur from Summer 2027 through Winter 2028. The County does not have a Noise Ordinance with specific allowable construction hours; however, in accordance with the County's *2045 General Plan*, construction would occur between 7:30 a.m. and 5:00 p.m., Monday through

Friday, except on Federal holidays (County of Contra Costa 2024c). Construction hours may be extended to 7:00am to 7:00pm on weekdays and 7:00am to 9:00pm on weekends due to the rural nature of the area and distance away from sensitive resources. Nighttime construction is not expected to be required. **Table 1-2** summarizes the proposed construction activities, their estimated durations, equipment mix, maximum number of workers required, and import and export quantities.

Table 1-2 Construction and Operation and Maintenance Activity Overview

Activity	Construction Equipment Used (Number)	Anticipated Use Duration (days)	Workers Required	Material Import Quantities	Excavation/ Sediment Quantities
Construction					
Mobilization	Mechanic Truck (1), Excavator (1), Loader (1), Crane (1)	5	4	-	-
Traffic Control	-	175	1	-	-
Erosion Control and BMPs	Pickup Truck (1), Excavator (1), Flatbed Truck (2)	10	4	240 TN BMP Materials	-
Develop Entrances, Haul Roads, and Permanent Access	Pickup Truck (2), Dozer (1), Cat 14 Blade (1), Roller (1), Scraper (2)	4	6	2,500 TN	-
Water Diversion[2]	Pickup (1), Excavator (1), Dozer (1), Baker Tank (1), Booster Pump (1), Submersible Pump (4)	5	3	150 TN	-
Excavating Relief Trenches	Excavator (1)	15	1	-	6,700 CY
Dewatering System Setup	Pickup Truck (1), Flatbed Truck (1), Excavator (1), Loader (1), Pumps (5), Fusing Machine (1)	9	4	5 TN	-
Dewatering System Operation	Generator (1), Excavator (1)	250	2	-	-
Clearing and Grubbing Reservoir Area	Pickup Truck (2), Dozer (1), Excavator (2), Loader (1), Ejector Truck (1), Tub Grinder (1)	17	6	-	7,000 CY
Strip and Prepare Stockpile and Drying Area	Scraper (2), Cat 14 Blade (1), Pickup Truck (2)	23	5	-	72,000 CY
Temporary Access to Sediment	Pickup Truck (2), Excavator (2), Dozer (1), Ejector Truck (3), Roller (1)	9	8	-	-
Excavation of Reservoir Sediments to Drying Area	Pickup Truck (2), Excavator (1), Ejector Truck (3), Dozer (1), Cat 14 Blade (1)	165	7	-	330,000 CY
Sediment Drying	Tractor (1), Dozer (1)	165	2	-	-
Load, Haul and Place Dried Material to Stockpile Area[a]	Pickup Truck (2), Scraper (2), Dozer (1), Compactor (1), Cat 14 Blade (1)	165	7	-	330,000 CY
Sand Layer Placement[a]	Pickup Truck (2), Ejector Truck (2), Loader (2), Dozer (2)	23	5	46,000 TN	-

Activity	Construction Equipment Used (Number)	Anticipated Use Duration (days)	Workers Required	Material Import Quantities	Excavation/ Sediment Quantities
Excavation of High Flow Diversion	Pickup Truck (2), Excavator (1), Ejector Truck (2), Dozer (1)	2	5	-	1,640 CY
Final Grading of Reservoir	Dozer (1)	33	1	-	-
Restore Drying Area and Stockpile Area	Pickup Truck (2), Scraper (2), Dozer (1)	24	4	-	72,000 CY
Site Restoration	Pickup Truck (1), Dozer (1), Cat 14 Blade (1), Scraper (2), Flatbed Truck (1)	5	6	-	-
Habitat Restoration	Dozer (1), Water Truck (1), Pick-up Truck (5), Drill Seeder (1), Tractor (1)	120	8	1 TN Fencing Materials, 1500 CY Wood	-
Demobilization	Mechanic Truck (1), Excavator (1)	3	3	-	-
Operation and Maintenance					
Habitat Restoration	Water Truck (1), Pick-up Truck (5), Tractor (1)	175	2	-	-

Notes: CY= cubic yards, TN= tons

1. Materials include office needs and setup, improvements, utility hookups, radios, and other communication equipment
2. Water Diversion is separate from dewatering that would be required
   a. Construction activities would occur concurrently over 15 months.
   b. Operation and maintenance activities would occur over the course of 5 years.

Construction Equipment and Personnel

Table 1-2 lists the construction activities, and the types and number of equipment anticipated to be used for each project activity, however, this is not indicative of the total amount of equipment that would be operated onsite at any given time. The number of construction personnel would vary depending on project activities. Construction workers are anticipated to come from the local workforce within the County.

Mobilization, Construction Access, and Staging

Construction access into the project site would be provided from the top of the existing levee northeast of the East Wet Pool and from Marsh Creek Road through an existing gate. Project mobilization would likely require field office and staging area setup and equipment parking (Figure 1-3).

The District's contractor would establish staging areas for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants in compliance with permits obtained for the project. Contractors would be required to use, store, and dispose of any hazardous materials in accordance with all applicable regulations. Staging areas would have a stabilized entrance and exit, designed to be consistent with the California Department of Transportation (Caltrans) Type 1 or 2 construction entrances. The stabilized construction entrances and exits would be constructed with a rock and/or aggregate to assist in removing mud

and dirt off construction equipment and personal vehicles before entering paved roadways from the construction site. No equipment refueling or fuel storage would take place within 100 feet of the Reservoir wet pool and/or Marsh Creek. Prior to construction, access and staging areas would be cleared or grubbed, as needed. Scrub vegetation and some tree removal would be required in the West and East Wet Pool areas. If the access or staging area is disturbed with earth movement, the area would be recontoured and revegetated to approximate pre-project conditions after construction is complete.

Construction Activities

Traffic control would be provided during sediment transport to the stockpile location on the east side of Marsh Creek Road, or as needed for other entrance and exits of the project site. Full road closures are not anticipated, and emergency access would be established at all times. It is likely two flaggers would be required at each entrance for the duration of hauling into the Reservoir areas and sediment stockpile area. Some flagging would be required during site preparation and completion as well. Materials required for traffic control include signage and temporary message boards.

Existing utilities in the area may require modifications for project site access or project implementation. If needed, a potholing company may be used to obtain additional information about utilities. All coordination with the appropriate utility agency would take place prior to construction activities.

To the extent possible, work would be conducted in dry conditions. Standing water in the West and East Wet Pools would be removed to the extent practical, before transporting the excavated material to the drying area. The precise means and methods of dewatering will be selected by the contractor prior to mobilization and would be dependent on the site conditions at the time of construction; however, it is anticipated that the dewatering strategy would require a combination of methods. A cofferdam would likely be needed in Marsh Creek upstream of the inlet to block flows into the reservoir during construction. Water would be diverted around the work area into Marsh Creek downstream of the dam. To dewater the reservoir, early excavation would be concentrated in West Wet Pool to train water towards the outlet structure. In addition, a network of relief trenches would be excavated across the reservoir, placed about 75 to 100 feet apart. The dewatering system of sumps and pumps would move water from the trenches to settling tanks prior to discharging to downstream Marsh Creek. It is possible that some water could be diverted to an elevated tank for use for dust control. Excavation would be completed mechanically from the bottom of each wet pool after it is dewatered. Material would be loaded near the point of excavation and hauled to the sediment drying or stockpile area (Figure 1-3). All activities associated with water diversion and dewatering would be governed in accordance with required permits. The dewatering system would run off generator power.

BMPs required to contain solids and silt generated during excavation would include the use of silt fences around the sediment stockpile area, sediment drying area, access roads and ramp, and some portions of the Reservoir wet pool. Approximately 1,000 LF of biodegradable straw

wattles or equivalent would be used as well. During construction, the Reservoir would continue to be closed to the public.

Security lighting may be required in staging areas during construction. If so, all lighting would be pointed down onto the project site and equipment and directed away from Marsh Creek Road.

Operation and Maintenance

Developing an establishment period O&M approach that includes adaptive management measures specific to climate change resilience is an important aspect of the project. Maintenance of new berms or roads is not anticipated unless severe erosion due to extreme precipitation events occurs. No new staff would be required to maintain the Reservoir. General maintenance activities would remain similar to existing conditions. The following maintenance activities would occur during project operation.

Primary Outfall/Gate Operation

If deemed necessary by the District, periodic sediment removal from the primary outfall (intakes and outlet pipes) may be conducted every 5 to 7 years. Additionally, if necessary, the District may open the primary outfall's outlet pipe gate. However, the Reservoir would be operated such that water levels and the hydrologic regime would continue to support existing wetland and riparian vegetation. The primary outlet pipe gate would remain closed during construction to prevent additional sediment accumulation within the pipe during construction, and after construction to facilitate support of existing wetland and riparian vegetation.

Grazing Management

Wildlife-friendly cattle exclusion fencing would be maintained around various portions of Marsh Creek and the Reservoir to protect and allow for regeneration of native plantings along the Creek and reduce the spread/establishment of undesirable habitat spread through grazing. Grazing activities would be modified, as needed.

Integrated Pest and Vegetation Management

Weed and pest control operations would be conducted as necessary, utilizing products approved for aquatic use to protect and preserve water quality. Recommendations and application of any herbicides or other pesticides must be under the direction of a PCA. Herbicides and pesticides would be applied in accordance with label instructions by State-licensed pesticide applicators or employees under their direct supervision. The PCA would recommend an appropriate herbicide for the target weed species and would evaluate the chemical for its potential effects on non-targeted vegetation and animals.

Vegetation management would follow an integrated pest management approach; the timing and frequency of the maintenance efforts would be based on the biology of the invasive species that require control. Mowing, chopping, and string trimming would be used to maintain herbaceous vegetation in native perennial grassland approximately two to three times per year in spring and late summer/fall to reduce the risk of wildfire, and discourage the spread of noxious weeds.

String trimming and/or hand pulling would be used around tree and shrub planting to remove weed species that cannot be reached using other means. Site-specific hand pulling/cutting may be employed throughout the year. Use of both contact and systemic herbicides may be used for the suppression of noxious weeds. General application and spot spraying using selective herbicides is preferred over general application of broad-spectrum herbicides. Spot spraying and wicking with broad spectrum herbicides may be used to control non-native grasses or small noxious weed infestations. Herbicides would be applied up to three times per year in spring and late fall, to coincide with flushes of weeds.

Irrigation

The development of extensive root systems that can tap groundwater supplies during the dry summer months allows the plantings to become independent of the need for supplemental irrigation. Irrigation would consist of deep, infrequent watering to stimulate container plants to develop the extensive root systems. Watering would likely only occur around the immediate area of the Reservoir wet pool.

Drip systems may be used to irrigate all planted trees and shrubs around the Reservoir wet pool and potentially the plantings along Marsh Creek. Irrigation water for woodland is anticipated to be supplied either from the Reservoir wet pool using a screened pump or a tank that would be filled with a water truck from an offsite location. Irrigation systems would be temporary in nature and used for up to five years during the establishment period.

Soil Remediation Treatments

As described previously, to facilitate sequestration of mercury, a carbon-based sorbent powder, application of biochar, or natural materials such as a layer of clean sand may be distributed into the Reservoir wet pool. Chemical additives are expected to be a one-time distribution during construction; however, the District would include additives into their adaptive management plan, as needed.

2. Environmental Checklist Form

Environmental Factors Potentially Affected

Table 2-1 identifies environmental resources where the proposed project would result in at least one potentially significant impact prior to mitigation, as indicated by the Initial Study checklist on the following pages. Significant impacts to all resources for the proposed project are reduced to a less-than-significant level with the incorporation of mitigation measures.

Table 2-1 Environmental Resources with Potentially Significant Impacts Prior to Mitigation

Environmental Resources	Yes or No?
Aesthetics	No
Agriculture and Forestry Resources	No
Air Quality	Yes
Biological Resources	Yes
Cultural Resources	Yes
Energy	No
Geology/Soils	No
Greenhouse Gas Emissions	Yes
Hazards and Hazardous Materials	Yes
Hydrology/Water Quality	No
Land Use/Planning	No
Mineral Resources	No
Noise	No
Population/Housing	No
Public Services	No
Recreation	No
Transportation	No
Tribal Cultural Resources	Yes
Utilities/Service Systems	No
Wildfire	Yes
Mandatory Findings of Significance	Yes

Determination (To be completed by the Lead Agency)

On the basis of this initial evaluation:	Yes or No?
I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	No
I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	Yes
I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	No
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.	No
I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier Environmental Impact Report (EIR) or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.	No

Syd Sotoodeh

Signature

March 19, 2026

Date

Syd Sotoodeh

Print Name

Senior Planner

Title

Contra Costa County

Agency

2.1 Aesthetics

#1. AESTHETICS. Except as provided in PRC Section 21099.

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#1 -a. Have a substantial adverse effect on a scenic vista?	No	No	**Yes**	No	No
#1 -b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	No	No	No	**Yes**	No
#1 -c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a 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?	No	No	**Yes**	No	No
#1 -d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	No	No	No	**Yes**	No

Environmental Setting

Project Area Characteristics

The visual character of a project site and its immediate surroundings is defined by existing land uses and the associated natural or built environment, including vegetation, landforms, and structural features. The dominant natural visual character for the project area is low rolling hills, with Marsh Creek navigating through the project site. The hills are sparsely covered with low-lying vegetation, and Marsh Creek and Reservoir are lined with trees and riparian habitat. Immediately adjacent to the project site is the historic John Marsh House and Marsh Creek State Historic Park.

The Historic John Marsh House, located approximately 0.1-mile north of the project site, is owned by California State Parks and is considered a recreational feature (State Parks 2024). The project site and surrounding area is mostly rural with the nearest residential area being the Vinyards at Marsh Creek (within the City of Brentwood), approximately 0.3 miles north. The nearest sensitive receptors are located 0.3-mile north of the project site, within the Vineyards at Marsh Creek residential neighborhood in the vicinity of Los Medanos College/Brentwood. Additionally, there are agricultural areas within the project vicinity.

Project components and construction activities would be largely obscured by existing topography and vegetation. The project site and construction-related equipment would be visible to recreationists on Marsh Creek Road or visitors to the Marsh Creek State Historic Park.

Scenic Vistas

Scenic vistas are defined as expansive views of distant landforms and aesthetic features from public vantage points, including areas designated as official scenic vistas along roadway corridors or otherwise designated by local jurisdictions. The project site and surrounding areas do not have any designated scenic vistas; however, Marsh Creek Road, within the project site, is a County-designated scenic route (Contra Costa County 2024).

Scenic Highways

A scenic highway is officially designated as a State Scenic Highway when a local jurisdiction adopts a scenic corridor protection program, applies to the California Department of Transportation (Caltrans) for scenic highway approval, and receives notification from Caltrans that the highway has been designated as an official Scenic Highway. The County supports the eligibility of State Route 4 (SR 4), located approximately 0.6 miles northeast of the project site, as a State Scenic Highway. However, the nearest officially designated State Scenic Highway is SR 680, located approximately 15 miles west of the project site (Caltrans 2019). As mentioned previously, Marsh Creek Road is a County-designated scenic route.

Light and Glare

There are two primary sources of artificial light: light emanating from building interiors that pass-through windows and light from exterior sources (e.g., street lighting, parking lot lighting, building illumination, security lighting, and landscape lighting). Depending upon the location of the light source and its proximity to adjacent light-sensitive uses, light introduction can be a nuisance, affecting adjacent areas and diminishing the view of the clear night sky. Light spillage is typically defined as unwanted illumination from light fixtures on adjacent properties. Existing light sources in the vicinity of the project site include limited exterior lighting of areas nearby including agricultural, grazing, or Marsh Creek State Park facilities, streetlights along Vineyards Parkway, and interior and exterior lighting from the historic John Marsh house. The project site contains few, if any, existing on-site uses that involve lighting.

Discussion

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

There are no designated scenic vistas within or nearby the project site. However, Marsh Creek Road, a County-designated scenic route, passes through the project site. The project includes activities at multiple individual areas including the proposed sediment drying and stockpiling, areas, which would be located directly adjacent to Marsh Creek Road.

Typically, scenic vistas include natural areas and features such as mountains, waterbodies, open, undeveloped land, or unique or historic built structures, etc. Therefore, the project site and local vicinity, which includes low lying hills and the Reservoir, are visual resources that contribute to the scenic qualities within the viewshed of motorists traveling along Marsh Creek Road or recreationalists in the general vicinity of the project site. During construction, traffic control would be provided for construction equipment and trucks crossing Marsh Creek Road to access

the stockpile site, or as needed for other entrance and exits of the project site. Full road closures are not anticipated, therefore, public access along Marsh Creek Road would remain available during construction.

Construction activities would include a mix of equipment ranging in size and scale but could include cranes that could be as high as 50 feet tall. As described in more detail in Table 1-2, larger equipment such as cranes would only be required for mobilization, which would take approximately 10 days. Other phases of construction include equipment such as excavators and trucks for various uses and would remain within the project for approximately 605 working days. Excavation of the Reservoir wet pools, hauling and sediment drying activities, as well as plantings and restoration activities would all take place south of the Dam. The majority of the views from motorists traveling along Marsh Creek Road would be either fully obstructed or partially obstructed by the existing levee, topography, or scattered trees and vegetation along Marsh Creek Road. Motorists, pedestrians or bicyclists traveling south along Marsh Creek Road in the area of the Dam would be at a higher elevation and would have views down into the Reservoir area.

Construction activities within the proposed sediment stockpile area would be visible from Marsh Creek Road during construction activities. While construction equipment and materials would be visible from Marsh Creek Road, the equipment would not have the scale or massing to significantly obstruct or provide contrasting views of expanse of low-lying hills to the east of Marsh Creek Road. Additionally, the stockpiling area would be partially shielded by surrounding trees and foliage from motorists, pedestrians or bicyclists traveling north and south along Marsh Creek Road. Furthermore, motorists, bicyclists, pedestrians, and/or recreationalists would only experience temporary view obstruction for brief moments of time while passing by the project site. The presence of construction equipment would not permanently affect expansive views of the Reservoir area or low-lying hills to the east of Marsh Creek Road.

The stockpile area would be graded in a manner that would naturally blend into the existing low-lying hillside with gradual slopes and would be hydroseeded with sterile wheatgrass. Wheatgrass is non-invasive, provides temporary erosion control, suppresses weeds, and does not compete with surrounding native vegetation. Furthermore, wheatgrass provides quick establishment of ground cover; therefore, the stockpile area would not remain bare for very long. The stockpile site would not appear drastically different than the surrounding area, would not need to be irrigated, and would easily be accessible for reuse in both short- or long-term conditions.

In summary, once construction is complete, the project site would be restored and enhanced ecologically, benefitting the overall scenic quality of the Reservoir. Additionally, O&M activities would not require substantial equipment or a significant number of vehicles onsite. Given the short-term and temporary presence of construction equipment and materials coupled with the low levels of visual contrast and view obstruction compared with existing conditions, impacts to scenic views along Marsh Creek Road during construction and operation would be **less than significant**.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway?

There are no designated State Scenic Highways located within or near the project site. The nearest designated State Scenic Highway is Interstate 680, located approximately 25 miles west of the project site. State Route 160 (near Antioch)/84 (near the city of Brentwood) located approximately 0.75-mile northeast of the project site is designated as an Eligible State Scenic Highway; however, the project site and immediate area would not be visible from this stretch of highway. There would be no work conducted within or along a State Scenic Highway, therefore, **no impact** would occur.

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

As described above for Impact 2.1(a), project construction activities would result in the short-term presence of construction equipment and ground disturbance in certain portions of the project site that could be visible form public vantage points including motorists traveling along Marsh Creek Road, as well as recreational users of the project vicinity. As discussed in above in the Project Description, all staging and disturbed areas would be restored upon completion of construction and equipment would be removed from the project site.

Once construction is complete, the project site would be enhanced ecologically but would appear similar to existing conditions. Further, O&M activities would not require a significant number of vehicles or equipment onsite. Therefore, implementation of the project would not permanently or significantly impact the existing visual characters and quality of public views of the project site and immediate vicinity. Impacts 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 design does not include new permanent sources of light. Construction would occur during daylight hours and no nighttime lighting would be required. Security lighting may be needed within staging areas overnight. All security lighting would be pointed down onto the construction equipment and away from Marsh Creek Road and surrounding areas. Furthermore, implementation of the project does not include structures built with reflective materials such as glass or metal; therefore, implementation of the project would not create a new source of glare in the area. Potential impacts regarding new light or glare in the project site and surrounding area would not occur and therefore, there would be **no impact**.

2.2 Agriculture and Forestry Resources

#2. AGRICULTURE AND FORESTRY RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#2 -a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	No	No	No	**Yes**	No
#2 -b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	No	No	No	**Yes**	No
#2 -c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220(g)), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	No	No	No	**Yes**	No
#2 -d. Result in the loss of forest land or conversion of forest land to non-forest use?	No	No	No	**Yes**	No
#2 -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?	No	No	No	**Yes**	No

Environmental Setting

Important Farmland

The California Department of Conservation Farmland Mapping and Monitoring Program (FMMP) identifies lands that have agricultural value and maintains a Statewide map of agricultural lands in its Important Farmland Inventory System (DOC 2004). The Important Farmland Inventory System classifies land based upon its productive capabilities, which is based on many characteristics, including fertility, slope, texture, drainage, depth, salt content, and

availability of water for irrigation. The California Department of Conservation maintains the FMMP and monitors the conversion of farmland to and from agricultural use through its Important Farmland Inventory. Farmlands are divided into the following categories: Prime Farmland; Farmland of Statewide Importance; Unique Farmland; Farmland of Local Importance; Grazing Land; Urban and Built-up Land; and Other Land. The project site is designated as Farmland of Local Importance and Grazing Land on maps prepared for the FMMP (DOC 2022).

Williamson Act Contracts

The California Land Conservation Act of 1965, also known as the Williamson Act, is designed to preserve agricultural and open space lands by discouraging their premature and unnecessary conversion to urban uses. Williamson Act contracts, also known as agricultural preserves, create an arrangement whereby private landowners' contract with counties and cities to voluntarily restrict their land to agricultural and compatible open-space uses (DOC 2023). The project site and surrounding area consist of rural, low-density communities, and the project site does not operate under a Williamson Act Contract (DOC 2023).

Forestry Resources

Public Resources Code (PRC) Section 12220(g) defines "forest land" as land that can support 10 percent native tree cover and forest vegetation of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.

The project site is zoned as Resource Conservation and has low-density trees along Marsh Creek. Contra Costa County designates the Resource Conservation land use as an area that is "applied to the watersheds of reservoirs owned by public utilities, mitigation banks, habitat restoration sites, ecologically significant or environmentally sensitive areas that are not within publicly-owned parkland, and hazardous or otherwise constrained areas that are unsuitable for development. Resource management, low-intensity agriculture, low-intensity recreation, and similar activities are consistent with this designation when conducted in a way that is not damaging to the resources being protected. Construction of public and semi-public infrastructure, and one single-family residence on an existing legal lot under private ownership, is consistent with this designation. All types of urban development and subdivisions that increase density are prohibited" (Contra Costa County 2024).

Discussion

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

The project area does not contain Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on FMMP maps. While it does contain Farmland of Local Importance, there are no current or historical farming activities. Additionally, it is immediately

surrounded by and adjacent to Marsh Creek State Park, which does not contain active agriculture production. Therefore, the project would not convert Farmland to non-agricultural use. There would be **no impact**.

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

The project is not zoned for agriculture and is not located within an area regulated by a Williamson Act Contract. The project would restore the site ecologically and would install wildlife -friendly fencing to exclude grazing in certain sensitive areas; however, implementation of the project would not change or alter any existing uses of the area. Therefore, the project would not conflict with existing zoning or agricultural use and **no impact** would occur.

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 site contains low-density tree cover along Marsh Creek and surrounding the edges of the Reservoir wet pools but does not meet the definition of forestland as defined above. The project site is not zoned as forest land, timberland, or timberland zoned as timberland production, therefore, no loss or conversion of forest land to non-forest land would result from implementation of the project. There would be **no impact**.

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

Refer to Impact 2.2(c), above. The project would not remove forest land or convert forest land to non-forest use. **No impact** 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 conversation of forest land to non-forest use?

Refer to Impact 2.2(a), above. There is no Farmland or forest land within the project site. The project would remove contaminated sediment from the Reservoir wet pools and restore the site ecologically. Implementation of the project would not change or alter the uses of the project site or vicinity and would not impact agricultural or forest land use in any way. Therefore, **no impact** would occur.

2.3 Air Quality

#3. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied on to make the following determinations.

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#3 -a. Conflict with or obstruct implementation of the applicable air quality plan?	No	**Yes**	No	No	No
#3 -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?	No	**Yes**	No	No	No
#3 -c. Expose sensitive receptors to substantial pollutant concentrations?	No	No	**Yes**	No	No
#3 -d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	No	No	**Yes**	No	No

Environmental Setting

The proposed project is in the San Francisco Bay Air Basin (SFBAB) within Contra Costa County. The Bay Area Air Quality Management District (BAAQMD) is responsible for obtaining and maintaining air quality conditions in Contra Costa County. The Federal Clean Air Act and California Clean Air Act required the U.S. Environmental Protection Agency (EPA) and California Air Resource Boards (CARB) to establish health-based air quality standards at the federal and state levels. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) were established for the following criteria pollutants: carbon monoxide (CO), ozone (O3), sulfur dioxide (SO2), nitrogen dioxide (NO2), particulate matter less than 10 microns in diameter (PM10), particulate matter less than 2.5 microns in diameter (PM2.5), and lead. Areas of the state are designated as attainment, nonattainment, maintenance, or unclassified for the various pollutant standards according to the Federal Clean Air Act and California Clean Air Act.

An “attainment” designation for an area signifies that pollutant concentrations did not violate the NAAQS or CAAQS for that pollutant in that area. A “nonattainment” designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as identified in the criteria. A “maintenance” designation indicated that the area previously categorized as nonattainment is currently categorized as attainment for the applicable pollutant; though the area must demonstrate continued attainment for a specific number of years before it can be re-designated as an

attainment area. An "unclassified" designation signifies that data does not support either an attainment or a nonattainment status. The EPA is responsible for enforcing the NAAQS, primarily through their review of the State Implementation Plans (SIPs). In California, the CARB is responsible for the establishment of the SIP. The local air quality management districts (BAAQMD) is responsible for the enforcement of the SIP, as well as the NAAQS and CAAQS. If an area is meeting the NAAQS and CAAQS, that area is considered in "attainment"; however, areas that are noncompliant are designated "non-attainment" areas. Once attainment has been achieved, the air basin may be placed under a maintenance plan to demonstrate long-term compliance with the NAAQS. The State and Federal attainment status for SFBAAB ais shown in **Tables 2.3-1**.

Table 2.3-1 Bay Area Air Quality Management District Pollutant Attainment Status

Pollutant	Federal Attainment Status	State Attainment Status
1-hour Ozone	**Non-attainment**	**Non-attainment**
8-hour Ozone	**Non-attainment**	**Non-attainment**
24-hour PM_{10}	Unclassified	**Non-attainment**
Annual PM_{10}	Not Applicable	**Non-attainment**
24-hour $PM_{2.5}$	**Non-attainment**	Not Applicable
Annual $PM_{2.5}$	Unclassified	**Non-attainment**
1-hour Carbon Monoxide	Attainment	Attainment
8-hour Carbon Monoxide	Attainment	Attainment
1-hour Nitrogen Dioxide	Not Applicable	Attainment
Annual Nitrogen Dioxide	Attainment	Not Applicable
3-hour Sulfur Dioxide	Attainment	Not Applicable
24-hour Sulfur Dioxide	Attainment	Attainment
Annual Sulfur Dioxide	Attainment	Not Applicable
30-day Lead	Not Applicable	Unclassified
Quarter Lead	Attainment	Not Applicable

Notes: PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less
Source: BAAQMD 2017

The BAAQMD has prepared the 2017 Bay Area Clean Air Plan as an update to the Bay Area 2010 Clean Air Plan, pursuant to air quality planning requirements defined in the California Health & Safety Code. To fulfill state ozone planning requirements, the 2017 control strategy includes all feasible measures to reduce emissions of ozone precursors; reactive organic gases (ROG) and nitrogen oxides (NOx) and reduce transport of ozone and its precursors to neighboring air basins. In addition, the 2017 Bay Area Clean Air Plan builds upon and enhances the BAAQMD's efforts to reduce emissions of fine particulate matter and toxic air contaminants.

The BAAQMD has established recommended thresholds of significance for air quality, as shown in **Table 2.3-2.**

Table 2.3-2 BAAQMD Air Quality Thresholds of Significance

Criteria Air Pollutant	Construction[1] (Average Daily - pounds per day)	Operational (Average Daily - pounds per day)	Operations (Maximum Annual Emissions – tons per year)
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (exhaust)	82	15
$PM_{2.5}$	52 (exhaust)	54	10
$PM_{10/2.5}$ (fugitive dust)	Best Management Practices[2]	None	None
Local CO	None	9.0 parts per million (ppm) (8-hour average), 20.0 ppm (1-hour average)	9.0 parts per million (ppm) (8-hour average), 20.0 ppm (1-hour average)

Notes: Notes: CO = carbon monoxide; NO_X = oxides of nitrogen; $PM_{2.5}$= fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ROG = reactive organic gases.

[1] The BAAQMD recommends for construction projects that require less than 1 year to complete, lead agencies should annualize impacts over the scope of actual days that peak impacts would occur rather than over the full year. Additionally, for phased projects that results in concurrent construction and operational emissions. Construction-related exhaust emissions should be combined with operational emissions for all phases where construction and operations overlap.

[2] PM10/PM2.5 (fugitive dust) is also recognized to impact local communities. The BAAQMD strongly recommends implementing all feasible fugitive dust management practices especially when construction projects are located near sensitive communities, including schools, residential areas, or other sensitive land uses. These measures are detailed in the BAAQMD 2022 CEQA Guidebook.

Source: BAAQMD 2022

Discussion

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

As of June 2022, the BAAQMD most current air quality plan is the 2017 Bay Area Clean Air Plan, the primary goals of which are to protect public health and the climate. The 2017 Bay Area Clean Air Plan includes a wide range of control measures and actions to reduce combustion-related activities, decrease combustion of fossil fuels, improve energy efficiency, and reduce emissions of potent greenhouse gases. Several measures address the reduction of multiple pollutants such as O_3 precursors, PM, air toxics, and GHG emissions.

Determination of whether a project supports the goals in the 2017 Bay Area Clean Air Plan is achieved by a comparison of project-estimated emissions with BAAQMD thresholds of significance. If project emissions would not exceed the thresholds of significance after the application of all feasible mitigation measures, the project is consistent with the goals of the 2017 Bay Area Clean Air Plan. Project construction would take place over approximately 15 months and is currently expected to occur from Summer 2026 through Winter 2027. As shown in **Table 2.3-3** below, the proposed project would generate emissions above BAAQMD's applicable significance threshold for NOx (54 pounds per day). The project would not generate emissions exceeding BAAQMD significance thresholds for ROG, PM_{10} or $PM_{2.5}$. Once construction is complete, the project would contribute a minimal amount of operational air quality emissions due to maintenance activities. Since the project would generate emissions above the applicable BAAQMD threshold for NOx, the project would result in a **potentially**

significant impact. The following mitigation measures would be implemented to address this impact.

Table 2.3-3 Estimated Unmitigated[1]/Mitigated Construction-related Criteria Pollutant Emissions[2]

Construction year	ROG (average pounds per day)	NOx (average pounds per day)	PM10- exhaust (average pounds per day)	PM2.5 – exhaust (average pounds per day)	PM10 – fugitive dust (average pounds per day)	PM2.5 – fugitive dust (average pounds per day)
2026	4.8/1.9	59/39	1.7/0.68	1.5/0.52	241/239	25/25
BAAQMD Threshold	54	54	82	82	Basic Construction Best Management Practices	Basic Construction Best Management Practices
Exceeds Threshold?	No/No	Yes/No	No/No	No/No	No/No	No/No
2027	9.2/2.4	81/38	3.1/0.54	2.9/0.54	952/244	105/28
BAAQMD Threshold	54	54	82	82	Basic Construction Best Management Practices	Basic Construction Best Management Practices
Exceeds Threshold?	No/No	Yes/No	No/No	No/No	No/No	No/No

Notes: BAAQMD = Bay Area Air Quality Management District; NOx = Nitric Oxide; PM2.5 = Fine Particulate Matter; PM10 = Coarse Particulate Matter; ROG = Reactive Organic Gas

1. The first output value for 2026 and 2027 pollutant emissions are unmitigated estimates (**X**/X).
2. The second output value for 2026 and 2027 pollutant emissions are post-mitigation (X/**X**).

Source: CalEEMod version 2022.1. Refer to Appendix A for Model Data Outputs.

Mitigation Measure AQ-1: Implement BAAQMD Basic Best Management Practices for Construction-Related Fugitive Dust Emissions.

The BAAQMD Best Management Practices, which are strongly recommended for all construction projects, regardless of the amount of emissions generated, include the following:

- B-1 All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- B-2 All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- B-3 All visible mud or dirt trackout onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- B-4 All vehicle speeds on unpaved roads shall be limited to 15 mph.
- B-5 All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

- B-6 All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
- B-7 All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
- B-8 Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.
- B-9 Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.

Timing: During construction

Responsibility: District and its contractor(s)

Mitigation Measure AQ-2: Implement BAAQMD Enhanced Best Management Practices for Construction-Related Fugitive Dust Emissions.

The District will implement the following enhanced BMPs to reduce emissions to the extent feasible.

- E-1 Limit the simultaneous occurrence of excavation, grading, and ground-disturbing construction activities.
- E-3 Plant vegetative ground cover (e.g., fast-germinating native grass seed) in disturbed areas as soon as possible and watered appropriately until vegetation is established.
- E-4 Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.
- E-5 Minimize the amount of excavated material or waste materials stored at the site.
- E-6 Hydroseed or apply non-toxic soil stabilizers to construction areas, including previously graded areas, that are inactive for at least 10 calendar days.

Timing: During construction

Responsibility: District and its contractor(s)

Mitigation Measure GHG-1: Best Management Practices for Construction-Related GHG Emissions.

Please refer to Mitigation Measure GHG-1 in Section 2.8, "Greenhouse Gas Emissions," for the full text of this mitigation measure.

Timing: During construction

Responsibility: District and its contractor(s)

Implementation of Mitigation Measures AIR-1, AIR-2, and GHG-1 would require establishment of BMPs and other on-site controls to reduce NOx and PM emissions at the project site to levels below the established thresholds of significance. Therefore, the project would result in a **less-than-significant impact with mitigation incorporated.**

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?

By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's individual emissions exceed its identified significance thresholds, the Project would be cumulatively considerable. Projects that do not exceed significance thresholds would not be considered cumulative considerable.

Project construction would temporarily generate criteria air pollutant emissions from exhaust associated with on-site equipment operation, material hauling, and worker vehicle trips, as well as fugitive dust from ground-disturbing activities. O&M activities would be minimal and result in negligible emissions. Construction-related emissions were modeled using the California Emissions Estimator Model (CalEEMod) (see Appendix A, "Air Quality and Greenhouse Gases Data"). Table 2.3-3 provides estimates of unmitigated and mitigated daily average construction-related pollutant emissions, based on maximum anticipated material hauling, equipment usage, and numbers of workdays described in Section 1.5 "Project Implementation."

The SFBAAB is currently designated as a nonattainment area for California and national ambient air quality standards for ozone and particulate matter. Therefore, if a project exceeds the BAAQMD identified project-level thresholds of significance (as shown in Table 2.3-2), its emissions would result in a significant adverse air quality impact.

As shown in Table 2.3-3, the proposed project would generate unmitigated emissions above BAAQMD's applicable significance threshold for NOx (54 pounds per day). The project would not generate emissions exceeding BAAQMD significance thresholds for ROG, PM_{10} or $PM_{2.5}$. The BAAQMD does not establish numeric thresholds for fugitive dust emissions, instead relying on the implementation of BAAQMD BMPs to be considered less than significant. Since the project would generate emissions above the applicable BAAQMD threshold for NOx, the project would result in a **potentially significant** impact. The following mitigation measures would be implemented to address this impact.

Mitigation Measure AQ-1: Implement BAAQMD Basic Best Management Practices for Construction-Related Fugitive Dust Emissions

Please refer to Mitigation Measure AQ-1 in Section 2.3, "Air Quality," for the full text of this mitigation measure.

Timing: During construction

Responsibility: District and its contractor(s)

Mitigation Measure AQ-2: Implement BAAQMD Enhanced Best Management Practices for Construction-Related Fugitive Dust Emissions

Please refer to Mitigation Measure AQ-2 in Section 2.3, "Air Quality," for the full text of this mitigation measure.

Timing: During construction

Responsibility: District and its contractor(s)

Mitigation Measure GHG-1: Best Management Practices for Construction-Related GHG Emissions.

Please refer to Mitigation Measure GHG-1 in Section 2.8, "Greenhouse Gas Emissions," for the full text of this mitigation measure.

Timing: During construction

Responsibility: District and its contractor(s)

Implementation of Mitigation Measures AIR-1, AIR-2, and GHG-1 would require establishment of BMPs and other on-site controls to reduce NOx and PM emissions at the project site to levels below the established threshold of significance. Therefore, the project would result in a **less-than-significant impact with mitigation incorporated.**

c) Expose sensitive receptors to substantial pollutant concentrations?

Some members of the population are especially sensitive to emissions of air pollutants and should be given special consideration during the evaluation of a project's air quality impacts. These people include children, older adults, people with pre-existing respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

A toxic air contaminant, (TAC) is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs usually are present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. Diesel PM emissions associated with activity by heavy-duty construction equipment represent the greatest potential for

TAC emissions. The nearest resident is located approximately 0.10-mile to the north (a groundskeeper for the Historic John Marsh House), however, the nearest sensitive receptors are located 0.3-mile north of the project site, within the Vineyards at Marsh Creek residential neighborhood in the vicinity of Los Medanos College/Brentwood. Construction activities would occur in proximity to residential areas and would involve the use of a variety of gasoline- or diesel-powered equipment that emit exhaust fumes (diesel PM), which could negatively affect sensitive receptors in the project area. However, the duration of exposure would be short and exhaust from construction equipment dissipates rapidly. Because of the temporary and intermittent use of off-road construction equipment, the dispersive properties of diesel PM[1] (Zhu et al. 2002), and the relatively low exposure period, temporary and short-term construction activities would not result in the exposure of sensitive receptors to substantial TAC concentrations. This impact would be **less than significant**.

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

Human response to odors is subjective, and sensitivity to odors varies greatly. Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, anxiety) to physiological (e.g., circulatory and respiratory reactions, nausea, vomiting, headaches). The project would not create new objectionable odors. Sources that may emit odors during construction activities include exhaust from diesel construction equipment, which some individuals could consider offensive. Additionally, there may be odors associated with the drying of sediment within the proposed sediment drying area that contains more organic material. However, odors from these sources would be localized and generally confined to the immediate area surrounding the project site. Haul trucks would also produce exhaust; however, most haul trips would be localized to the project site from moving excavated materials to the onsite established drying, and stockpile areas. All offsite haul trucks would travel along major routes that are currently used by similar large transport vehicles. Because of the diffusive properties of diesel exhaust (Zhu et al. 2002), the remote nature of the project area, and existing conditions along anticipated haul routes, this impact would be **less than significant**.

[1] Based on a study conducted by Zhu, et al., ultrafine particle number concentration measured at 300 meters downwind from the freeway was indistinguishable from upwind background concentration (Zhu et al. 2002).

2.4 Biological Resources

#4. BIOLOGICAL RESOURCES.

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#4 -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 United States Fish and Wildlife Service?	No	**Yes**	No	No	No
#4 -b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service?	No	No	No	No	**Yes**
#4 -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?	No	No	No	No	**Yes**
#4 -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?	No	No	**Yes**	No	No
#4 -e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	No	No	**Yes**	No	No
#4 -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	No	No	**Yes**	No

This section provides an overview of the existing biological resource conditions in the biological study area (BSA) and analyzes impacts from the project on biological resources. The Marsh Creek Reservoir is located within an area governed by the East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan (ECCHCP and NCP).
The District plans to use ECCHCP and NCP for take authorization for covered species. Consistent with HCP/NCCP standards, the BSA is defined by an approximately 500-foot buffer

surrounding the project site, which includes all permanent and temporary construction areas (**Figure 2-1**).

Environmental Setting

The discussion presented in this section is based on information gathered during field surveys and from a variety of sources that address biological resources in the BSA.

Desktop Review

The following sources were reviewed to support descriptions of existing biological conditions in the BSA:

- Aerial imagery (Esri 2024, Google Earth 2024).
- Brentwood United States Geological Survey (USGS) topographical map.
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation System (USFWS 2024a).
- USFWS Critical Habitat Mapper (USFWS 2024b).
- National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) Species and Habitat App (NOAA Fisheries 2024a).
- NMFS Endangered Species Act (ESA) Critical Habitat Mapper (NOAA Fisheries 2024b).
- NMFS Essential Fish Habitat (EFH) Mapper (NOAA Fisheries 2024c).
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) QuickView Tool and BIOS 6 Viewer (CDFW 2024a).
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2024).
- California Department of Conservation Maps Data Viewer: Geologic Map of California (DOC 2024).
- U.S. Department of Agriculture Natural Resources Conservation Service Web Soil Survey (USDA 2024).
- National Hydrography Dataset (USGS 2024).
- USFWS National Wetlands Inventory map (USFWS 2024c).
- East Contra Costa County HCP/NCCP (Jones & Stokes 2006).
- Marsh Creek State Park General Plan and Program Environmental Impact Report (California Department of Parks and Recreation & City of Brentwood 2012).
- Marsh Creek Road Bridge Replacement 143 and 145 Project Initial Study/Mitigated Negative Declaration (Contra Costa Public Works Department 2020).

- Marsh Creek Regional Trail Project, Brentwood to Round Valley Regional Preserve, Initial Study/Mitigated Negative Declaration (LSA 2021).

The USFWS Information for Planning and Consultation System was queried to identify USFWS-regulated species that have the potential to occur in the BSA, and the USFWS Critical Habitat Portal was reviewed to identify designated critical habitat. A query of the CNDDB QuickView Tool provided a list of mapped and unprocessed occurrences for special-status species in the Brentwood, California, USGS 7.5-minute quadrangle and all adjacent quadrangles including Byron Hot Springs, Clifton Court Forebay, Woodward Island, Bouldin Island, Jersey Island, Tassajara, Antioch South, and Antioch North. Next, the CNPS database was queried to identify special-status plant species with the potential to occur in the aforementioned USGS quadrangles. Finally, the NMFS Species and Habitat App, Critical Habitat Mapper, and EFH Mapper were used to determine if NMFS-regulated species have the potential to occur in the BSA, along with designated critical habitat and EFH. Raw data from the USFWS, CNDDB, and CNPS species database queries are provided in **Appendix B** (B.1).

After conducting the species queries, topographic, soil, vegetation, and aerial data were reviewed to characterize the physical setting of the study area. Finally, previous reports assessing biological resources in the BSA and the East Contra Costa County HCP/NCCP were reviewed for existing data on biological resources in the region. Subsequent to the desktop review, a field survey was conducted to verify and update information on biological resources in the BSA.

Field Surveys

The following biological surveys have been conducted in support of the project to date:

Reconnaissance-level Habitat Assessment and Land Cover Mapping

Habitat and land cover were assessed in the BSA on September 11 and 12, 2023. During the survey, vegetation communities were mapped in accordance with the Manual of California Vegetation (Sawyer et al. 2009) and cross-walked with the land cover types characterized in the HCP/NCCP. The land cover types presented in this CEQA document are consistent with those characterized in the HCP/NCCP. Habitat suitability for HCP/NCCP covered species and other special-status species was also evaluated consistent with HCP/NCCP planning survey requirements. Notes were collected on specific habitat features and characteristics, including but not limited to dens and burrows, soil types, rocky outcrops, and vegetation structure.

Aquatic Resources Delineation

The aquatic resources delineation of the project site was conducted on September 11 and 12, 2023, in accordance with U.S. Army Corps of Engineers (USACE) methodologies outlined in Part IV, Section D, of the *Corps of Engineers Wetland Delineation Manual* (USACE Manual; Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Version 2.0* (Supplement; Environmental Laboratory 2008), and the Interim Version of the *National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams* (Cold Regions Research and Engineering Laboratory 2022). The delineation

was limited to the project site and did not cover additional portions of the BSA. The delineation has not yet been submitted to USACE for verification. The unverified delineation map is included in Appendix B (B.3).

Protocol-level Rare Plant Surveys

Rare plant surveys were conducted on April 22 and 23 and June 17 and 18 of 2024. The project site was also visited on September 11 and 12, 2023 to conduct the aquatic resources delineation and habitat assessment tasks; although special-status plant data collection was not the focus of these visits, all plant species observed were noted and included in the delineation plant list. The 2024 surveys were floristic in nature and implemented in accordance with CDFW's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). Whenever possible, all plant species encountered were identified to species, using the Jepson Manual, 2nd Edition (Baldwin et al. 2012). Rare plant surveys were limited to the project site and did not cover additional portions of the BSA.

Surveys were conducted during the typical blooming periods of regional and covered species. During botanical surveys, meandering transects were walked through the project site with extra attention given to areas providing suitable habitat for target special-status species. Other portions of the project site were included in the survey; however, most of the project parcel is characterized by highly disturbed annual grassland dominated by non-native species and does not provide high-quality habitat for rare plants. Incidental sightings of milkweed (*Asclepias* spp.), host plants for monarch butterfly (*Danaus plexippus*), which is proposed for federal listing as threatened, were also mapped during the rare plant surveys.

Topography, Hydrology, and Soils

The BSA sits in a shallow valley bounded on all sides by rolling hills. The valley floor is mostly flat, gently sloping downwards from south to north. Topographic low points are associated with the Marsh Creek channel and Reservoir. Topographic high points are associated with the hillside slopes bounding the western and eastern edges of the BSA, the Reservoir Dam, and the levee west of Marsh Creek Road. Elevation in the BSA ranges from approximately 160 to 300 feet above mean sea level.

Soils in the BSA are primarily clay (USDA 2024). No serpentine outcrops or other unique soil types, such as highly alkaline soils, were identified during the desktop review or field survey; however, some areas around the Reservoir supported alkaline-associated species such as alkali heath (*Frankenia salina*), indicating soils may be mildly alkaline (USDA 2024; DOC 2024).

Marsh Creek Reservoir was a perennially inundated reservoir prior to sediment accumulation, which has made the pool shallow and resulted in regular drying down. In the project site, Marsh Creek is an intermittent channel, often drying up in the summer and fall months.

The Marsh Creek watershed is approximately 128 square miles and includes rangeland, farmland, and mixed residential and urban land use. Marsh Creek originates in the foothills of

Mount Diablo and flows north, through the cities of Brentwood and Oakley, before flowing into the Delta. Marsh Creek has undergone significant alteration, particularly downstream of the Reservoir and outside the BSA. The alignment and complexity of Marsh Creek has been drastically altered as a result of agricultural and residential development and associated flood control infrastructure, resulting in a steep reduction in riparian habitat along the creek. Although Marsh Creek has been significantly altered and straightened, some reaches below the Reservoir have been restored, and generally the creek above the Reservoir follows its historical alignment.

Habitat and Land Cover Types

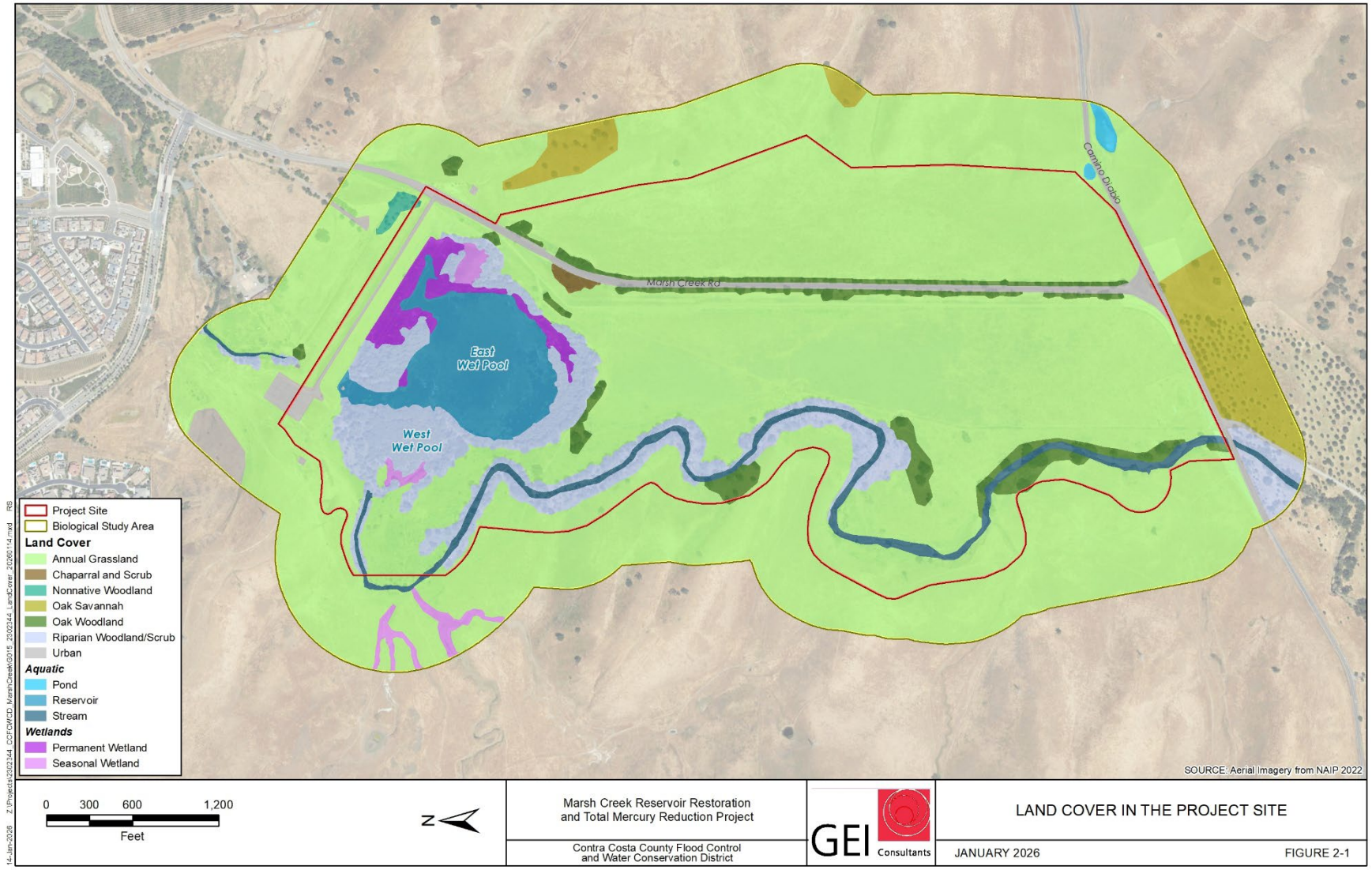
Land cover types identified in the project site include annual grassland, chaparral and scrub, oak woodland, riparian woodland/scrub, permanent wetland, seasonal wetland, reservoir/open water, stream, non-native woodland, and urban. Other land cover types occurring outside the project site but within the BSA include oak savannah and pond. Each of the land cover types is described in more detail below (**Table 2.4-1**) and shown in Figure 2-1.

The majority of the BSA is currently used as rangeland for cattle. Over time, heavy grazing has led to an herbaceous vegetation layer dominated by non-native species and reduced regeneration of woody species. Areas around the creek channel and Reservoir are especially disturbed (both soil and vegetation) from cattle congregating for access to shade and water.

Table 2.4-1 Summary of Land Cover Types in the Biological Study Area

Land Cover	Acres in Project Site	Acres in Biological Study Area
Annual Grassland	229.6	415.5
Chaparral and Scrub	0.7	0.7
Non-native Woodland	0.1	0.8
Oak Savannah	-	19.4
Oak Woodland	14.9	15.5
Permanent Wetland	5.7	5.7
Pond	-	1.0
Reservoir	20.4	20.4
Riparian Woodland/Scrub	35.9	40.0
Seasonal Wetland	1.6	4.0
Stream	9.5	10.7
Urban	8.0	16.4
Total	326.3	550.1

Figure 2.4-1 Land Cover in the Project Site



Annual Grassland

Annual grassland is the most common land cover type in the BSA, covering the majority of the valley floor and hillsides. This community is characterized by a variety of non-native annual grasses intermixed with both non-native and native forbs. Dominant species observed in this community include wild oat (*Avena* spp.), rip-gut grass (*Bromus diandrus*), soft brome (*Bromus hordeaceus*), perennial rye grass (*Festuca perennis*), wall barley (*Hordeum murinum*), yellow star-thistle (*Centaurea solstitialis*), shortpod mustard (*Hirschfeldia incana*), tarweed (*Holocarpha virgata* ssp. *virgata*), rose clover (*Trifolium hirtu*m), bindweed (*Convolvulus arvensis*), and American deervetch (*Acmispon americanus*).

Some areas mapped as annual grassland, including the central project site between the Marsh Creek channel and Marsh Creek Road, are dominated by non-native yellow star-thistle. Low terraces along Marsh Creek are also dominated by dense stands of non-native broadleaf species, typically with a mix of young tree tobacco (*Nicotiana glauca*), cocklebur (*Xanthium strumarium*), and stinkwort (*Dittrichia graveolens*).

Chaparral and Scrub

One small patch of coyote brush scrub occurs in the BSA in a depression between levee and Marsh Creek Road. This area is a dense monotypic stand of coyote brush (*Baccharis pilularis*) with patchy annual grassland in the understory.

Oak Savannah

Oak savannah is not present in the project site, but it located elsewhere in the BSA. Specifically, this cover type occurs on the upper hillsides in the eastern BSA as well as an area south of Camino Diablo that is planted with young oak trees and has an open canopy. This land cover type is characterized by a sparse canopy of valley oak (*Quercus lobata*) and an understory of annual grassland species.

Oak Woodland

Valley oak woodland occurs in small patches along the southern reach of Marsh Creek and upland edges of the Reservoir. These areas are characterized by a relatively open canopy dominated by valley oak. Associates include California buckeye (*Aesculus californica*), Northern California black walnut (*Juglans hindsii*), and Fremont cottonwood (*Populus fremontii*). The understory is open and comprised of species typical of annual grasslands.

Other areas mapped as oak woodland include Northern California black walnut woodland, which occurs as planted edges along Marsh Creek Road, as well as a patch of cottonwood woodland natural occurring along Marsh Creek Road. The planted edges along Marsh Creek Road are dominated by Northern California black walnut in the canopy. The understory is mostly open annual grassland or disturbed road shoulder. A single stand of Fremont cottonwood woodland occurs along the eastern edge of Marsh Creek Road. This community differs from the cottonwood willow riparian woodland described below because it is dominated solely by

Fremont cottonwood. In addition, the positioning in the landscape is different in that it is not associated with a body of water and is therefore not characterized as a riparian community. Although these two areas have no oak trees in the canopy, oak woodland seemed to be the most appropriate land cover type of those identified in the HCP/NCCP because they are native woodland areas and would provide habitat for a similar suite of species.

Riparian Woodland/Scrub

Riparian woodland/scrub occurs around the perimeter of Marsh Creek Reservoir and along Marsh Creek. Several forms of this cover type are present in the BSA, including cottonwood willow riparian woodland and mixed willow riparian communities, which occur in both woodland (late successional) and scrub (early successional) forms.

Cottonwood willow riparian woodland occurs along the western and southern edges of the Reservoir as well as along the northern and southernmost extents of Marsh Creek. This community is characterized by mature riparian cover with a canopy dominated by Fremont cottonwood and Goodding's black willow (*Salix gooddingii*). The lower canopy and shrub layer are dominated by other willow species including narrow-leaf willow (*Salix exigua*) and arroyo willow (*Salix lasiolepis*). In most areas the canopy closure is dense; however, trees are primarily dead or declining in some stands along Marsh Creek, leaving a more open canopy. The understory in this community ranges from sparse to densely vegetated. Portions of cottonwood willow riparian woodland around the Reservoir were deemed to be forested wetland during the aquatic resources delineation because they are regularly inundated and meet other wetland indicators such as presence of hydric soils.

The mixed willow riparian community is dominated by a mix of Goodding's black willow, narrow-leaf willow, and arroyo willow and occurs in both woodland and scrub forms. Woodland areas are present mostly on the northern edge of the Reservoir and are characterized by mature trees with a relatively open understory. Earlier successional versions of this community can be described as scrub and occur both on the southern rim of the Reservoir and in the sediment fan area near where Marsh Creek flows into the Reservoir. Mixed willow riparian scrub is characterized by dense shrub and young tree cover. The mixed willow riparian community is characterized as either forested wetland or scrub wetland in the aquatic resources delineation because they are regularly inundated and meet other wetland indicators such as presence of hydric soils.

Permanent Wetland

Permanent wetlands in the BSA are limited to areas bordering Marsh Creek Reservoir. These areas are characterized as bulrush marsh, or fresh emergent wetland, and are subjected to frequent flooding with a hydroperiod sufficient to support emergent hydrophytic species. These areas are dominated by mostly monotypic stands of bulrush (*Schoenoplectus* sp.). Other emergent vegetation such as cattail (*Typha* sp.) and tall flatsedge (*Cyperus eragrostis*) also occur. Swamp prickle grass (*Crypsis schoenoides*), annual beard grass (*Polypogon monspeliensis*), and rush (*Juncus* sp.) were observed on the drier edges of this community.

Seasonal Wetland

Within the project site, seasonal wetlands occur in isolated patches around the Reservoir. In the larger BSA, seasonal wetlands also occur in low depressions associated with ephemeral tributary channels west of Marsh Creek. The seasonal wetlands around the Reservoir are part of the larger floodplain whereas the seasonal wetlands in the western BSA are depressional. These areas are seasonally inundated or saturated and dominated by herbaceous cover. Common species associated with this community include cocklebur, perennial pepperweed (*Lepidium latifolium*), alkali heath (*Frankenia salina*), rushes, and annual beard grass. Soils in these areas are moderately alkaline (~7.5 pH) but did not have the typical species composition or any other indicators of a true alkali wetland.

Pond

Ponds do not occur in the project site; however, two ponds occur in the southeastern BSA on either side of Camino Diablo. These ponds are shallow, seasonally inundated depressions that appear to be used as a water source for cattle. Vegetation in these features was similar to that found in seasonal wetlands.

Reservoir/Open Water

Reservoir/open water is mapped in the center and northern portions of Marsh Creek Reservoir, primarily associated with the East Wet Pool. These areas are mostly unvegetated and hold water during much of the year.

Stream

Marsh Creek is described as an intermittent channel, meaning the creek has seasonally flowing water and often dries out in the summer. At the time of the September 2023 surveys, the creek channel was completely dry; however, flowing water was present during the spring and early summer surveys in 2024. Most of the channel is unvegetated because of scouring and cattle disturbance. Portions of creek above the low-flow channel are vegetated with species such as cocklebur and curly dock (*Rumex crispus*). The majority of riparian trees are rooted outside of the channel, but some encroachment of Fremont cottonwood and willows occurs sporadically.

Non-Native Woodland

One small ornamental tree stand occurs in the northern BSA. This area appears to be a planted stand of ornamental juniper (*Juniperus* sp.). The understory is annual grassland.

Urban

Urban portions of the BSA include the concrete-lined portions of the spillway, paved and unpaved roads, transmission towers, and other structures near the dam. In addition, one area of new residential development occurs in the northwestern corner on the hilltop above the spillway. Most of these areas are characterized by hardscape which keeps vegetation from establishing. The edges of areas mapped as urban are vegetated and dominated by species typical of disturbed

areas such as yellow star-thistle, vinegar weed (*Trichostema lanceolatum*), telegraph weed (*Heterotheca grandiflora*), and Russian thistle (*Salsola tragus*).

Sensitive Biological Resources

Sensitive biological resources include special-status species and their habitats, sensitive communities, and aquatic resources, all of which are described in more detail below.

Special-status Species

Special-status species are commonly characterized as species that are at potential risk or actual risk to their persistence in a given area, or across their native habitat. These species have been identified and assigned a status ranking by governmental agencies such as CDFW, USFWS, NMFS, and private organizations such as CNPS. The degree to which a species is at risk of extinction is the determining factor in the assignment of a status ranking. Some common threats to a species' or population's persistence include habitat loss, degradation, and fragmentation, as well as human conflict and intrusion. For the purposes of this CEQA analysis, special-status species are defined as the following:

- Listed, proposed for listing, or candidates for listing under the federal ESA.
- Listed or proposed for listing under the California Endangered Species Act (CESA).
- Designated as Species of Special Concern (SSC) by CDFW.
- Designated as Fully Protected by CDFW.
- Meet the definition of rare or endangered under CEQA including CNPS List Rank 1B and 2.
- Covered by the East Contra Costa County HCP/NCCP.

The results of USFWS, NMFS, CDFW, and CNPS database queries identified several special-status species with the potential to occur in the BSA. The tables in Appendix B (B.2) summarize all special-status plant and wildlife species included in the database queries and a description of the habitat requirements and conclusions regarding the potential for each species to occur in the BSA.

Plants

Of the 49 special-status plants identified in Appendix B (B.1 and B.2), only nine were determined to have the potential to occur in the BSA; however, the likelihood for these species to occur is considered low due to the predominance of non-native invasive species and absence of unique microhabitats with which many of the special-status species in the region are strongly associated. None of these species were identified during the protocol-level floristic surveys in 2024 or previously documented in the project site.

Fish

Historically, the Reservoir supported a variety of native and non-native fish species including native hitch (*Lavinia exilicauda*), and California roach (*Lavinia symmetricus*) (not the special-

status subspecies) (Slotton et. al. 1996). The Dam functions as a barrier to passage of anadromous salmonids and sturgeon from downstream. Downstream portions of Marsh Creek closer to the Delta are used by a variety of special-status fish including salmonids (Natural Heritage Institute and the Delta Science Center at Big Break 2003). There are no recent records of special-status fish occurring upstream of the Reservoir Dam; however, it is likely anadromous fish utilized Marsh Creek prior to the dam blocking passage and suitable spawning gravels have been identified in the reaches above the dam (Natural Heritage Institute and the Delta Science Center at Big Break 2003). The presence of fish passage barriers, current silted-in condition and frequent drying down of the Reservoir, and absence of non-anadromous special-status species upstream of the BSA, results in the determination that special-status fish do not occur in the Reservoir or upstream extent of Marsh Creek.

Wildlife

Of the 71 special-status wildlife identified in Appendix B (B.1 and B.2), 23 species were determined to have the potential to occur in the BSA and/or be impacted by the project. Some species that only have potential to occur in the larger BSA and not the project site, or only use the BSA for overwintering, were excluded from the impact analysis. Rationales for inclusion or exclusion in the analysis are included in Appendix B.2. **Table 2.4-2** below identifies HCP/NCCP-covered species, federally and State-listed wildlife species (including those proposed or candidates for listing), and other special-status wildlife species that have the potential to occur in the BSA, based on the project's location within the current range and known or potential distribution of these species and field-verified presence of suitable habitat.

Table 2.4-2 Special-status Wildlife Species with the Potential to Occur in the Biological Study Area

Common Name (Scientific Name)	Listing Status	Covered By HCP/NCCP
Crotch's bumblebee (*Bombus crotchii*)	SCE	No
monarch (Danaus plexippus)	PT	No
California tiger salamander - central California DPS (*Ambystoma californiense*)	FT/ST	Yes
California red-legged frog (*Rana daytronii*)	FT/SSC	Yes
northwestern pond turtle (*Actinemys marmorata*)	PT/SSC	Yes
tricolored blackbird (*Agelaius tricolor*)	ST/SSC	Yes
grasshopper sparrow (*Ammodramus savannarum*)	SSC	No
golden eagle (Aquila chrysaetos)	FP	Yes
short-eared owl (*Asio flammeus*)	SSC	No
long-eared owl (*Asio otus*)	SSC	No
burrowing owl (Athene cunicularia)	SCE/SSC	Yes
Swainson's hawk (*Buteo swainsoni*)	ST	Yes
northern harrier (*Circus hudsonius*)	SSC	No
white-tailed kite (*Elanus leucurus*)	FP	No
yellow-breasted chat (*Icteria virens*)	SSC	No
loggerhead shrike (*Lanius ludovicianus*)	SSC	No

Common Name (Scientific Name)	Listing Status	Covered By HCP/NCCP
yellow warbler (Setophaga petechia)	SSC	No
yellow-headed blackbird (Xanthocephalus xanthocephalus)	SSC	No
pallid bat (Antrozous pallidus)	SSC	No
Townsend's big-eared bat (*Corynorhinus townsendii*)	SSC	Yes
western red bat (Lasiurus blossevillii)	SSC	No
American badger (*Taxidea taxus*)	SSC	No
San Joaquin kit fox (*Vulpes macrotis mutica*)	FE/ST	Yes

SCE = State candidate for endangered; FT = Federal threatened; PT = proposed for Federal threatened; ST = State threatened; SE = State endangered; SSC = species of special concern; FP = fully protected; FE = Federal endangered

Sensitive Natural Communities, Habitats, and Aquatic Resources

This section includes a discussion around sensitive natural communities designated by CDFW, critical habitat and EFH designated by USFWS or NMFS, and aquatic resources protected under Section 401 and Section 404 of the Clean Water Act, and/or California Porter-Cologne Water Quality Control Act.

Critical Habitat and Essential Fish Habitat

An area west of the Reservoir is designated as critical habitat for vernal pool fairy shrimp (*Branchinecta lynchi*). No other designated critical habitat for USFWS- or NMFS-regulated species occurs in the BSA. The vernal pool fairy shrimp critical habitat is largely associated with the open space hilly grasslands to the west of the project site in Marsh Creek State Park; however, one portion overlaps the project site and the eastern bank of Marsh Creek. Although the designated critical habitat overlaps the project site, suitable habitat for vernal pool fairy shrimp does not occur in this area (Marsh Creek channel and adjacent riparian woodland) and furthermore, activities associated with the project would fully avoid this area. As a result, critical habitat and vernal pool fairy shrimp are not discussed further. Refer to Appendix B.2 for more information on vernal pool fairy shrimp habitat and why this species does not have potential to occur in the project site.

The Magnuson-Stevens Fishery Conservation and Management Act requires federal agencies to consult with NMFS on all actions that may adversely affect EFH. EFH has been designated for Chinook salmon (*Oncorhynchus tschawytscha*) in the entire San Joaquin Delta watershed, which overlaps the BSA. Although the entire watershed is mapped as EFH for salmonids, passage for anadromous fish into the majority of the BSA is blocked by the Marsh Creek Reservoir Dam.

CDFW Sensitive Natural Communities

CDFW evaluates natural communities across California to assign state rarity rankings through the Vegetation Classification and Mapping Program (VegCAMP). Standardized quantitative rarity and threat rankings are applied by CDFW to California's Natural Communities. The rarity scores are based on range and distribution of a given vegetation type, and the proportion of occurrences that are of good ecological integrity. Threat scores are based on type – urban

development, agriculture, energy production and mining, and invasive/problematic species; scope – typically assessed within a 20-year timeframe for vegetation; and severity. The rarity and threat scores are added to define a single rank of 1 through 5. Natural Communities with ranks of S1-S3 (Critically Imperiled to Vulnerable) are considered Sensitive Natural Communities by CDFW and are to be addressed in the environmental review processes of CEQA and its equivalents (CDFW 2024b). All wetlands, riparian woodland and scrub, and oak woodland and savannah communities on the project site are considered sensitive natural communities.

Aquatic Resources

Eighteen aquatic resources totaling 52.8 acres were mapped as seven feature classes in the project site during the delineation effort, including reservoir (open water), fresh emergent wetland, forested wetland, scrub wetland, seasonal wetland, intermittent channel, and ephemeral channel. Most of the features, apart from the intermittent and ephemeral channels, occur as a wetland mosaic around the impounded Marsh Creek Reservoir. **Table 2.4-3** summarizes the acreage of each aquatic resource feature class mapped in the aquatic resources survey area, and the map provided in Appendix B.3 shows the location and extent of aquatic resources mapped as part of the delineation effort. The BSA and the aquatic resources delineation survey area differ slightly, and as a result, some aquatic resources in the BSA, such as the extent of Marsh Creek downstream of the Reservoir, as well as ponds and seasonal wetlands, are not reflected in these acreages. The delineation survey area includes all potentially jurisdictional features that would be affected by project implementation.

Table 2.4-3 Summary of Aquatic Resources by Feature Class

Feature Class	Area (acres)
Reservoir (Open Water)	20.4
Fresh Emergent Wetland	5.7
Forested Wetland	9.5
Scrub Wetland	6.2
Seasonal Wetland	1.6
Intermittent Channel	6.5
Ephemeral Channel	<0.1
Total	**52.8**

It is anticipated that all wetlands and other aquatic resources in the project site would be considered Waters of the U.S. under the *Revised Definition of "Waters of the United States"; Conforming* rule (88 Federal Register 61964) because of their adjacency to Marsh Creek Reservoir and direct connection to downstream traditionally navigable waters. The extent, location, and jurisdiction of aquatic resources on the project site is considered preliminary until verified by USACE. All onsite aquatic resources would also be considered waters of the state and subject to RWQCB and CDFW jurisdiction.

Discussion

Impact Analysis Methodology

This analysis of impacts on biological resources that could result from project implementation focuses on each of the thresholds listed in the table at the beginning of this section, with a focus on special-status species and their habitats, as well as sensitive communities such as riparian areas, wetlands, and other aquatic resources. This evaluation considers temporary and permanent habitat loss and disturbance and potential for direct or indirect injury or death of individuals.

The analysis considers both construction-related, and O&M impacts associated with the project. Impacts on biological resources resulting from construction would not only include activities associated with excavation of sediment to restore hydraulic capacity to the Reservoir, but also initial restoration and enhancement activities. Specifically, Reservoir work includes sediment excavation, drying, and stockpiling, cleaning out the outfall gate, construction of the high flow diversion, as well as all associated dewatering activities. Restoration work includes site preparation, invasive species control, planting and seeding, and installation of bioengineering features in Marsh Creek and wildlife-friendly fencing.

Operations and maintenance related impacts include those associated with future maintenance of the primary outfall, as well as ongoing restoration and enhancement activities such as invasive control, irrigation maintenance, and adaptive management such as installing replacement plantings. Impact conclusions consider the habitat quality, impact extent, impact duration, and impact intensity (e.g., level of harm, injury/loss, or degradation suffered by the resource) resulting from the aforementioned activities.

Future reuse of soil from the sediment stockpile area is included in the impact analysis and is considered a covered activity under the HCP/NCCP. Where necessary, mitigation measures such as worker environmental awareness training, the presence of a biological monitor, and pre-construction clearance surveys per the monitor's discretion or in accordance with HCP/NCCP conditions have been applied to minimize potential impacts.

Finally, riparian and wetland habitat enhancement and an increase in the functional values of onsite aquatic resources are considered as part of the impact analysis. In most instances, the overall net gain in habitat area or quality, along with a reduction in mercury, is considered a benefit to biological resources.

East Contra Costa County HCP/NCCP Participation

The project is located within the HCP/NCCP plan area and is a covered activity under 2.3.2 Rural Infrastructure Projects, Flood Protection Projects, Expansion of County Flood Control Reservoirs, and Marsh Creek Reservoir Expansion. The HCP/NCCP is intended to provide an effective framework to protect natural resources and special-status species recovery in eastern Contra Costa County while improving and streamlining the environmental permitting process for impacts on these species and associated habitats. The East Contra Costa County Habitat

Conservancy (Conservancy) was created to oversee assembly and operation of the HCP/NCCP Preserve System and ensure compliance with all terms of the HCP/NCCP, permits, and Implementing Agreement. Typically, participation in the HCP/NCCP results in payment of fees to mitigate impacts on open space, habitats, and covered species. Fees may be negotiated or waived should the project be determined beneficial to covered species and result in a net gain in habitat.

Many of the mitigation measures included in this analysis are required by the HCP/NCCP and benefit species covered by the plan as well as additional special-status species addressed in this section species. Measures required through the HCP/NCCP are included as mitigation measures in the following impact analysis discussion. These include general construction BMPs, species-specific avoidance and minimization measures, and other resource-specific measures.

The HCP/NCCP states that the project is a covered activity as long as restoration opportunities described in the HCP/NCCP (restoration and enhancement of riparian, grassland, and/or valley oak savannah) are considered in project design and there is no change in the potential exposure of covered species to biologically available mercury as a result of the project. The potential for increased mercury exposure to wildlife is described in more detail below.

Mercury in the Environment and Potential for Methylation

The Reservoir is currently almost entirely filled with sediment that has accumulated since Reservoir construction in 1962. Initially, the Reservoir provided an extensive open water area and reportedly supported a fish population. In recent years siltation has resulted in the loss of open water (and disappearance of the fish population), replaced by intermittently flooded mudflats and fringing vegetation. The sediment that filled the Reservoir contains mercury that was transported downstream (both suspended and dissolved) from releases at upstream abandoned mercury mines. This has resulted in sediment containing on the order of 0.8 to 1.8 milligrams/kilogram (mg/kg) total mercury present in the Reservoir (refer to Section 2.9 Hazards and Hazardous Materials). Total mercury, which is of limited concern to aquatic or terrestrial biota in its inorganic form, can under some conditions be converted biogenically to a methylated form, MeHg. This form is more soluble into the water column and is both highly toxic and highly bioaccumulative. It biomagnifies through the food chain and can become a concern for carnivorous species dependent on prey exposed to the mercury-laden sediment. It is especially a concern for piscivorous animals (including humans consuming a lot of fish).

The management of mercury is a goal for the restoration activities, because under the applicable total maximum daily load for Marsh Creek a reduction of MeHg loading into the watershed and the larger Delta ecosystem is a priority. Project restoration activities include design features and management principles intended to minimize production of MeHg from the inorganic mercury present in the sediment, and to minimize the export of MeHg from the system. The dredging and removal of approximately 330,000 CY of sediment from the Reservoir would reduce the total amount of mercury in the system available for methylation and have a twofold benefit. First, if the existing sediment were left in place and capacity continued to diminish through ongoing

sedimentation, more mercury laden sediment would flow downstream, exposing other waterways, habitats, and associated species to mercury. Second, lowering the Reservoir bottom elevation, removing the existing sediment which historically had higher mercury levels than existing sediment coming down Marsh Creek, and lining the bottom of the Reservoir with sand, would reduce the area (and volume) of mercury-containing sediment that would be subject to wet-dry cycles and anoxic water conditions, thereby reducing the prospect for methylation compared to the existing condition.

In summary, while some exposure to bioavailable, toxic MeHg is present in the system, especially to any species depending on sediment-associated biota, the net effect of the restoration will be a marked reduction in total mercury and reduced MeHg generation, as well as potential exposure to downstream systems. The restoration therefore is expected to reduce mercury exposure relative to current conditions.

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, or National Marine Fisheries Service?

Special-status Plants

Protocol-level surveys conducted in 2024 found no special-status plant populations on the project site. Post-project, habitat conditions would be improved through restoration and enhancement activities. Most of the special-status plant species determined to have potential to occur in the BSA during the desktop review are associated with annual grassland habitats. Annual grassland communities would be enhanced by limiting cattle grazing and promoting the establishment and recruitment of native species. As a result, the project would not have an adverse effect on special-status plants and is anticipated to increase habitat suitability for special-status plant species should they recruit into the area in the future. As a result, the project is anticipated to have a **beneficial impact** on special-status plants.

Special-status Fishes

Suitable habitat for special-status fish species does not occur in the project site. The entire watershed is mapped as EFH for Chinook salmon; however, Marsh Creek above the dam is not available habitat for this species. Restoring the Reservoir wet pools may allow for re-introduction and sustaining those fish species previously identified to occur in the upper Marsh Creek watershed. In addition, removal of mercury-laden sediments and a reduced potential for mercury methylation would minimize the potential for mercury to become bioavailable in both in the BSA and downstream waterways. The project would have a net benefit on special-status and native fish and their habitats. As a result, the project is anticipated to have a **beneficial impact** on special-status fishes.

Special-status Wildlife

Crotch's Bumble Bee

Crotch's bumble bee is a candidate for State listing as endangered and is not covered under the HCP/NCCP. These bees require foraging, nesting, and overwintering habitats. Primary land cover types that provide the three habitat requirements are grassland, chaparral, and scrub (i.e., open habitats); oak woodland and forest likely provide suitable habitat as well. Secondarily, riparian areas, coastal and valley freshwater marshes, seasonal wetlands, and agricultural areas can provide foraging habitat, and drier sites within these habitats can provide nesting or overwintering habitat. This species lives in colonies that are annual, with all individuals except new queens (gynes) dying each fall. The nesting biology is poorly known, though known nests have been in abandoned rodent burrows. The queen flight season is generally thought to be February through March, while the gyne flight season is September through October. The time between these two flight seasons is known as the colony active period (April-August). Collectively, these months are known as the Crotch's bumble bee active season (February through October) (CDFW 2023).

The species is known from the region, and focused surveys have not been conducted in the BSA; and as a result, information about Crotch's bumble bee occurrence in the BSA is not known and it is assumed that this species could occur in the project site and larger BSA (CDFW 2024a; Xerces 2024; H.T. Harvey 2020). There is one unprocessed CNDDB record of an individual found along Marsh Creek at Marsh Creek Road; however, unprocessed occurrences have not been verified so presence cannot be confirmed.

Project construction would temporarily remove vegetation that provides potential pollen and nectar sources and could result in mortality and disturbance (from noise, vibration, and visual impacts of equipment and personnel) of foraging Crotch's bumble bees. Ground disturbing activities in upland habitats could destroy subterranean nests and gyne overwintering sites, if present, and their occupants. As part of the project, habitat would be enhanced through limiting cattle grazing and promoting the establishment and recruitment of native, pollinator-friendly herbaceous species, resulting in a net benefit to pollinator habitat. Reducing disturbance by cattle is also anticipated to improve potential nesting habitat by minimizing soil compaction.

Operations and maintenance activities would largely occur outside of suitable nesting habitat for this species. Controlled burning and mowing would be limited to areas densely vegetated with yellow star-thistle. These areas are characterized by compacted stands of chest-high thistle and do not provide suitable nesting habitat for Crotch's bumble bee. Given the majority of activities would occur outside of suitable habitat, along with the periodicity and minimal ground disturbance associated irrigation maintenance, replanting, and other work in restoration areas, impacts associated with operations and maintenance would have a **less-than-significant** impact on Crotch's bumble bee.

Other ongoing activities, such as reuse of soil from the long-term sediment stockpile have the potential to impact Crotch's bumblebee. The stockpile would be seeded with native herbaceous

species, and as a result would provide pollinator foraging habitat and has potential to develop suitable nest sites until the soils material is exhausted for use in future projects. Therefore, future sediment reuse activities could result in mortality and disturbance (from excavation, noise, vibration, and visual impacts of equipment and personnel) to Crotch's bumble bees should they be present.

Although a net benefit to pollinator and nesting habitat is anticipated to result from project implementation, mortality of bumble bee individuals could occur during construction activities or ongoing reuse of soil from the long-term sediment stockpile. Destruction of an active nest could result in mortality of many individuals and could have a substantial adverse impact on the local population. Therefore, this would be a **potentially significant** impact.

Mitigation Measures

The following mitigation measures have been identified to address this impact.

> **Mitigation Measure BIO-1: Worker Environmental Awareness Training Program and Qualified Biological Monitor.**
>
> The District and its contractor(s) will retain a qualified biological monitor for the duration of construction (sediment excavation, drying, stockpiling, other ground disturbance), initial restoration installation activities, and during future stockpile soil removal activities. During vegetation clearing, initial ground disturbance and dewatering, as well as at Project-appropriate intervals, a qualified biologist(s) would monitor construction activities that could potentially cause significant impacts on sensitive biological resources. The amount and duration of monitoring would depend on the activity and would be determined by the qualified biologist. The duties of the qualified biologist will comply with all agency conditions outlined in project-related permits, but could include activities such as clearance surveys, flagging or fencing off environmentally sensitive areas for avoidance, and construction monitoring. The qualified biologist will have the necessary approvals for surveying and monitoring through the East Contra Costa County Habitat Conservancy.
>
> In addition, a qualified biologist would be retained to conduct mandatory contractor/worker environmental awareness training for any personnel required to enter the project site, including personnel entering the site during future stockpile soil removal activities. The awareness training would be provided to all personnel required to enter the project site to inform them on the locations of sensitive biological resources, the need to avoid impacts on biological resources (for example, wildlife and aquatic resources), and to brief them on the penalties for not complying with biological mitigation requirements. If new construction personnel are added, the contractor would require them to receive the mandatory training prior to starting work. On completion of this training, each person will sign a form, confirming attendance and their understanding of all the avoidance and minimization measures.

Timing: Before and during construction, including future activities in the sediment stockpile area

Responsibility: District and its contractor(s)

Mitigation Measure BIO-2: Crotch's Bumble Bee Surveys, Avoidance, and Minimization.

The District and its contractor(s) will implement the following measures to avoid and minimize potential for adverse impacts on Crotch's bumble bee that may result from project implementation. Biologist qualifications for bumble bee surveys will conform to current CDFW guidance prevailing at the time surveys are performed. Focused surveys in suitable upland habitat will be conducted in accordance with CDFW's *Survey Considerations for CESA Candidate Bumble Bee Species* (2023) (or with CDFW guidance prevailing at the time surveys are performed) during the season immediately prior to ground disturbing activities are scheduled to occur. Surveys shall cover areas where Crotch's bumble bee suitable habitat has the potential to be impacted by project activities as determined by the qualified biologist, based on habitat mapping conducted for the project to date. Crotch's bumble bee focused surveys ("foraging surveys") will be conducted by a qualified biologist at 2-to-4-week intervals (ideally monthly) during the active season (February through October), ideally during the colony active period (April through August) when Crotch's bumble bees are most likely to be detected. Survey guidelines recommend at least three forging surveys done in this time period; however, if Crotch's bumble bee is observed during the first or second round of foraging surveys then the biologist can move onto nesting surveys as described below. The total number, timing, and duration of surveys performed shall depend on the biologist's judgment, in consideration of weather, site conditions, and protocol requirements, and what is agreed upon in negotiation with CDFW.

If Crotch's bumble bee is observed onsite during the initial surveys, an additional survey or surveys shall be conducted to determine whether a nest or colony is present ("nesting survey"), unless the biologist is satisfied that the initial survey(s) were sufficient to rule out the presence of nests/colonies. Nesting surveys should be done during either the queen flight season (February through March) or the colony active period (April through August), but should be done between one week and 24 hours immediately prior to ground disturbing activities scheduled to occur during these seasons. If an active Crotch's bumble bee nest is detected, these nests shall be demarcated with a flagged no disturbance buffer zone, as determined by a qualified biologist and shall be avoided during the active season from February 1 through October 31, or until the qualified biologist, in consultation with CDFW, has determined that the nest is no longer active. The active nest shall be monitored by the qualified biologist to confirm effectiveness at minimizing disturbance of the nest and essential activities of its occupants. If no nests are found but the species is documented during the nest surveys, a qualified biological monitor will be present during vegetation removal and initial ground disturbing activities

that occur during the flight season (February through October). If a Crotch's bumble bee is observed, a temporary buffer will be established around the individual until the biologist determines it is no longer present in the construction area. Because bumble bees move nest sites each year, preconstruction foraging surveys (and if found, follow-up nesting surveys) will be required during each year of construction, regardless of the previous year's findings, whenever vegetation removal and/or ground disturbing activities would occur during the flight season (February through October).

Timing: Before and during construction

Responsibility: District and its contractor(s)

The implementation of **Mitigation Measures BIO-1** and **BIO-2**, would lessen impacts on Crotch's bumble bee habitat and minimize the potential for direct loss of individuals, including active nests, through implementation of a worker environmental awareness training, presence of an onsite biological monitor, preconstruction surveys, and avoidance of active nests. Additionally, worker environmental awareness training and presence of a biological monitor would minimize impacts resulting from future soil stockpile reuse activities. Finally, restoration and enhancement activities are anticipated to have a net benefit on pollinator habitat. Therefore, impacts on Crotch's bumblebee would be **less-than-significant with mitigation incorporated**.

Monarch Butterfly

Monarch is a candidate for federal listing and is not covered under the HCP/NCCP. This species is dependent on milkweed host plants for development of eggs, larvae, and pupae. Numerous milkweed plants were identified in the grasslands of the BSA during 2023 and 2024 surveys, and the BSA supports many nectar bearing plants. During the September 2023 biological survey, adult monarchs were observed flying and roosting along the edge of the annual grassland and mature riparian woodland south of the Reservoir. The BSA is within the early breeding zone as defined in USFWS *Western Monarch Butterfly Conservation Recommendations* (2023). These areas are where monarchs likely breed and/or lay their eggs on milkweed after departing the overwintering sites in mid-winter to early spring each year. Early-emerging milkweed species are an important resource for monarchs in the early breeding zone and may be associated with the population trends of western monarchs: these plants are essential to create the next generation of migratory butterflies.

Project construction and long-term operations and maintenance activities could impact monarch butterflies by removing milkweed and/or killing eggs, larvae, or pupae, given milkweed and adult monarchs have been observed in the BSA. Project construction and operations and maintenance would also temporarily remove vegetation, including flowering plants that may provide nectar sources for this species, but the habitat loss would be temporary. As part of the project, habitat would be enhanced by limiting cattle grazing and promoting the establishment and recruitment of native, pollinator-friendly species. In addition, narrow-leaved milkweed would be included in the seed mix used in the upland grassland areas. These activities would result in a net benefit to pollinator and breeding habitat. However, project construction activities

could result in mortality and disturbance (from noise, vibration, and visual impacts of equipment and personnel) of adult monarchs, if present during vegetation removal with heavy equipment and other operation of heavy equipment near monarch habitat. Project construction activities could also destroy milkweed plants on which eggs, larvae, and/or pupae are present.

Operations and maintenance activities would largely occur in suitable habitat for this species and may result in loss of milkweed, especially during herbicide application, mowing or burning. Vegetation management would occur in annual grassland areas dominated by yellow star-thistle, as well as riparian areas, where milkweed is known to sporadically occur. The majority of milkweed observed onsite occurs on the eastern side of Marsh Creek Road where no management is proposed.

The sediment stockpile area would be on the eastern side of Marsh Creek Road where milkweed has been observed. The stockpile would be seeded with native herbaceous species, and as a result would provide pollinator foraging habitat until the soils material is exhausted for use in future projects. Milkweed would be excluded from the seed mix used on the sediment stockpile to minimize the potential for species impacts during future soil reuse activities; however, given the abundance of milkweed on the east side of the project site, there is potential for natural recruitment to occur. As a result, future reuse activities could impact monarch butterflies by removing milkweed and/or killing eggs, larvae, or pupae, should they be present.

Although a net benefit to pollinator and breeding habitat is anticipated, mortality of monarch individuals and loss of hostplant milkweed could occur during construction and operations and maintenance. Removal of milkweed when eggs, larvae, or pupae are present could result in mortality of many individuals and have a substantial adverse impact on the local population. Therefore, this would be a **potentially significant** impact.

Mitigation Measures

The following mitigation measure has been identified to address this impact.

> **Mitigation Measure BIO-3: Monarch Surveys, Avoidance, and Minimization.**
>
> The District and its contractor(s) will implement the following measures to avoid and minimize potential for adverse impacts on monarch to result from project implementation.
>
> A qualified biologist will survey for monarch butterfly larval host plants within suitable habitat within 4 weeks prior to construction, (sediment excavation, drying, stockpiling, other ground disturbance), initial restoration installation activities, and prior to future stockpile soil removal activities. If host plants are found, the biologist would conduct surveys for adult monarch butterflies to determine presence/absence, or presence may be assumed. Where adult monarch butterflies are present, or assumed to be present, construction personnel would avoid host plants (milkweed) in temporary impact areas during the breeding/flight season (March through November), where possible.

If milkweed removal is unavoidable and would occur during the breeding/flight season, plants would be searched for eggs/pupae/larvae prior to removal. If eggs/pupae/larvae are detected, an appropriate no disturbance buffer zone will be established around the hostplant to reduce the risk of disturbance or accidental mortality. The appropriate buffer size and shape will be determined by the qualified biologist and monitored to confirm effectiveness at minimizing disturbance of the nest and essential activities of its occupants. Avoidance buffers may be removed at the completion of metamorphosis (eggs, pupae, larvae no longer present) and/or once the qualified biologist deems breeding no longer active.

Alternatively, early season (prior to breeding) clearance and salvage of milkweed could occur by salvaging soil/seedbank or young plants in areas where ground disturbance is proposed, and milkweed is known to occur and cannot be avoided. Salvaged soil should be replaced after construction. Young plants should be transplanted onsite, prioritizing areas with similar conditions (associates, soil, exposure, moisture, aspect, etc.) compared to the location from where they were removed. Transplanting should only occur prior to monarch breeding season or if it is confirmed no monarch eggs/pupae/larvae are present.

If no eggs/pupae/larvae are found but the species is documented during surveys, a qualified biological monitor will be present during vegetation removal and initial ground disturbing activities that occur during the flight season (February through October). If a monarch is observed, a temporary buffer will be established around the individual until the biologist determines it is no longer present in the construction area. Preconstruction surveys will be required during each year of construction, regardless of the previous year's findings, whenever vegetation removal and/or ground disturbing activities would occur during the flight season.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Mitigation Measure BIO-4: Monarch Management Measures.

The District and its contractor(s) will implement the following management measures to avoid and minimize potential for adverse impacts on monarch during pre- or post-construction site maintenance activities.

- Vegetation management, including herbicide application, burning, and mowing will be conducted in the recommended management window for the region (November 15 to March 15) as defined in the USFWS's *Western Monarch Butterfly Conservation Recommendations* (2023), to the greatest extent possible.
- Insecticides will not be used onsite.
- Avoid use of pesticides and herbicides within 40 feet of milkweed, to the greatest extent possible.

- If burning during the monarch breeding season is necessary for weed control or other management objectives, either flag and avoid milkweed, or clear milkweed for eggs/pupae/larvae prior to management.

Timing: Before, during and after construction and restoration activities

Responsibility: District and its contractor(s)

The implementation of Mitigation Measures BIO-1, **BIO-3,** and **BIO-4**, would minimize impacts on monarch habitat and avoid direct loss of individuals to the greatest extent possible through implementation of a worker environmental awareness training, presence of an onsite biological monitor, preconstruction surveys, and avoidance of host plants being used for breeding. In addition, management recommendations benefiting monarch and milkweed, including seasonal timing and avoidance buffers, would be considered when planning mowing, burning, herbicide use and other vegetation management and site maintenance activities. Further, worker environmental awareness training and presence of a biological monitor (if preconstruction surveys deem a monitor necessary), would minimize impacts resulting from future soil stockpile reuse activities. Finally, restoration and enhancement activities are anticipated to have a net benefit on pollinator and breeding habitat. Therefore, impacts on monarch would be **less-than-significant with mitigation incorporated.**

California Tiger Salamander

California tiger salamander is a federally and State-threatened species that is covered under the HCP/NCCP. The BSA lies within modeled breeding, aestivation, and dispersal habitat for California tiger salamander identified in the HCP/NCCP. Field surveys identified two ponds and two seasonal wetlands that may provide suitable breeding habitat for California tiger salamander. These features are outside of the project site but within the larger BSA. Based on a review of aerial imagery, all features appear to have a hydroperiod sufficient to support breeding.

Within the project site, the Reservoir and adjacent wetlands may provide low quality breeding habitat for California tiger salamander. Although California tiger salamander is not typically associated with reservoirs, current hydrologic conditions in the Marsh Creek Reservoir result in regular periods of dry down in the late summer months, preventing predatory fish and bullfrog populations from persisting. Ground squirrel burrows and other refugia were observed, but rare. The densely vegetated riparian woodland and scrub communities surrounding the Reservoir do not provide suitable upland habitat for this species, which is typically limited to grasslands and open woodland. In comparison, several stock ponds in the project vicinity provide high quality breeding habitat for the species. These features would be preferable breeding sites given their smaller pool size, predictably seasonal nature, and grassland surroundings, and as a result, California tiger salamander is unlikely to breed in the Reservoir or within the project site but may breed in the ponds in the larger BSA. Potential upland aestivation, foraging, and movement habitat also occurs in the BSA. This includes areas of annual grassland and open woodland.

Based on field survey results and desktop analysis, California tiger salamander may occur in the uplands of the project site.

Operations and maintenance activities would largely occur outside of suitable habitat for this species. Controlled burning would be limited to annual grassland areas densely vegetated with yellow star-thistle. These areas are characterized by compacted stands of chest-high thistle and do not provide suitable habitat for California tiger salamander. Given the majority of activities would occur outside of suitable habitat, along with the periodicity and minimal ground disturbance associated with irrigation maintenance, replanting, and other work in restoration areas, impacts associated with operations and maintenance would have a **less-than-significant** impact on California tiger salamander.

Drawing down soil from the long-term sediment stockpile has the potential to impact California tiger salamander in the future should suitable refugia be dug by ground squirrels or other burrowing mammals. Although the proposed stockpile area is not within breeding habitat, it is adjacent to two ponds deemed suitable breeding habitat for the species, and as a result, there is potential for overwintering individuals to use the area. Future soil reuse activities could result in mortality and disturbance (from excavation, noise, vibration, and visual impacts of equipment and personnel) to California tiger salamander should they be present.

Project construction and operations and maintenance activities have the potential to impact California tiger salamander by destroying subterranean refugia, if present, and their occupants. In addition, high quality aquatic habitat outside of the proposed construction area could be impacted by reduced water quality and runoff resulting from construction activities. Furthermore, project activities could result in mortality and disturbance (from noise, vibration, and visual impacts of equipment and personnel) of California tiger salamander, if present in areas where heavy equipment is being used or moved. Mortality of California tiger salamander could occur during construction and would be a **potentially significant** impact.

Mitigation Measures

The following mitigation measures have been identified to address this impact.

> **Mitigation Measure BIO-5: California Tiger Salamander Avoidance and Minimization (HCP/NCCP Species Specific Minimization Measure).**
>
> The District and its contractor(s) will implement the following measures consistent with those specified in the HCP/NCCP to avoid and minimize potential for adverse impacts on California tiger salamander to result from project implementation:
>
> Written notification to USFWS, CDFW, and the Conservancy, including photos and breeding habitat assessment, is required prior to disturbance of any suitable breeding habitat. The District will also notify these parties of the approximate date of removal of the breeding habitat at least 30 days prior to this removal to allow USFWS or CDFW staff to translocate individuals, if requested. USFWS or CDFW must notify the District of

their intent to translocate California tiger salamanders within 14 days of receiving notice from the District. The applicant must allow USFWS or CDFW access to the site prior to construction if they request it.

There are no restrictions under the HCP/NCCP on the nature of the disturbance or the date of the disturbance unless CDFW or USFWS notify the District of their intent to translocate individuals within the required time period. In this case, the District must coordinate the timing of disturbance of the breeding habitat to allow USFWS or CDFW to translocate the individuals. USFWS and CDFW will be allowed 45 days to translocate individuals from the date the first written notification was submitted by the District (or a longer period agreed to by the District, USFWS, and CDFW).

Timing: Before and during construction

Responsibility: District and its contractor(s)

Mitigation Measure BIO-6: Best Management Practices (HCP/NCCP Conservation Measure 1.13).

The District and its contractor(s) will implement the following measures consistent with those specified in the HCP/NCCP general best management practices specific to flood control facility projects to reduce impacts on waterways and aquatic species:

1. Silt fencing or other sediment trapping methods will be installed down gradient from construction activities, to minimize the transport of sediment off-site.
2. After cleaning culverts, subdrains, and other flood-control infrastructure, silt will be disposed of in an approved upland stockpile site where the material cannot reenter a waterway.
3. If water and sludge must be pumped from a subdrain or other structure, the material will be conveyed to a settling basin to prevent sediment from entering the waterway.
4. Power tools and heavy equipment used for flood-control maintenance (e.g., silt or vegetation removal) will be serviced and fueled away from waterways in a designated area. Spills will be absorbed and waste disposed of in a manner that will prevent pollutants from entering a waterway.
5. Timing of maintenance activities in rural areas will consider seasonal requirements for aquatic species (including covered species).

Timing: Before, during, and after construction

Responsibility: District and its contractor(s)

Mitigation Measure BIO-7: Aquatic Resources Avoidance and Minimization (HCP/NCCP Conservation Measure 2.12).

The District and its contractor(s) will implement the following measures consistent with those specified in the HCP/NCCP to reduce impacts on Marsh Creek, the Reservoir, and other aquatic resources in the vicinity:

1. Prior to the start of construction, all portions of Marsh Creek and other waterways to be avoided by the Project will be temporarily staked in the field by a qualified biologist.

2. Before conducting construction activities, all construction personnel will attend environmental awareness training (see BIO-1).

3. To eliminate possibly attracting predators of protected species, all food-related trash items (e.g., wrappers, cans, bottles, and food scraps) will be disposed in solid, closed containers (trash cans) and will be removed from the BSA at the end of each working period.

4. No construction or maintenance vehicles will be refueled within 200 feet of the streams unless a bermed and lined refueling area is constructed and hazardous material absorbent pads are available in the event of a spill.

5. Appropriate erosion-control measures (e.g., fiber rolls, filter fences) will be used on site to reduce siltation and runoff of contaminants into the stream. Filter fences and mesh will be of material that will not entrap reptiles and amphibians. Erosion control blankets will be used as a last resort because of their tendency to biodegrade slowly and to trap reptiles and amphibians.

6. Fiber rolls used for erosion control will be certified as free of noxious weed seed and not contain plastics of any type.

7. Seed mixtures applied for erosion control will not contain invasive non-native species and will be composed of native species or sterile non-native species.

8. Herbicide will not be applied within 100 feet of wetlands, ponds, streams, or riparian woodland/scrub; however, where appropriate to control serious invasive plants, herbicides that have been approved for use by EPA in or adjacent to aquatic habitats may be used as long as label instructions are followed and applications avoid or minimize impacts on covered species and their habitats. In seasonal or intermittent stream or wetland environments, appropriate herbicides may be applied during the dry season to control non-native invasive species (e.g., yellow star-thistle). Herbicide drift should be minimized by applying the herbicide as close to the target area as possible."

Timing: Before, during, and after construction

Responsibility: District and its contractor(s)

Implementation of Mitigation Measures BIO-1, **BIO-5**, **BIO-6**, and **BIO-7** would minimize impacts on California tiger salamander habitat and avoid direct loss of individuals through implementation of a worker environmental awareness training, biological monitoring, implementation of species-specific HCP/NCCP minimization measures, and other construction BMPs to protect aquatic habitat. Additionally, worker environmental awareness training and [preconstruction surveys would minimize impacts resulting from future soil stockpile reuse activities. Therefore, impacts on California tiger salamander would be **less-than-significant with mitigation incorporated.**

California Red-legged Frog

California red-legged frog is a federally listed species covered under the HCP/NCCP. The BSA lies within modeled breeding, aestivation, and dispersal habitat for California red-legged frog identified in the HCP/NCCP. Field surveys identified breeding habitat for California red-legged frog in the BSA, including the Reservoir and surrounding permanent and seasonal wetlands, Marsh Creek, and two stock ponds.

Most features are in the project site, except for the two ponds which are outside the project site in the southeastern portion of the BSA. Field survey results indicated that the stream reach within the BSA may provide suitable breeding habitat for this species; however, there is an absence of emergent vegetation and few plunge pools which are commonly associated with in-channel red-legged frog breeding habitat. Marsh Creek is considered potential breeding habitat for the purposes of this analysis, based on the requirements of the HCP/NCCP. In addition, breeding has been recorded in Marsh Creek just upstream of the BSA in Round Valley Regional Park and there is a high density of known occurrences in the vicinity. Therefore, it is assumed that the BSA provides suitable breeding, dispersal, aestivation and foraging habitat which encompasses onsite annual grassland, oak woodland, ponds, riparian woodland, and chaparral and scrub areas.

Project construction and operations and maintenance activities have the potential to impact California red-legged frog by destroying subterranean refugia, if present, and their occupants. Additionally, mortality and disturbance (from noise, vibration, and visual impacts of equipment and personnel) could occur, if frogs are present in areas where heavy equipment is being used or moved. Dewatering and potential sedimentation, as well as sediment removal and grading in the Reservoir, and restoration work in Marsh Creek channel, could temporarily affect aquatic breeding habitats. Enhancement activities along Marsh Creek could include incorporating bio-engineered log structures in the channel, which could encourage longer-duration wet pools increasing availability of breeding habitat and providing summer refuge for California red-legged frog. In addition, riparian cover and aquatic habitat would be expanded and enhanced. Although a net benefit to onsite habitat for California red-legged frog is anticipated to result from project implementation, mortality of California red-legged frog could occur during construction and operations and maintenance. This would be a **potentially significant** impact.

Drawing down soil from the long-term sediment stockpile has the potential to impact California red-legged frog in the future should they be utilizing upland refugia. Although the proposed stockpile area is not within breeding habitat, it is adjacent to two ponds deemed suitable breeding habitat for the species, and as a result, there is potential for individuals to use the area. Future reuse activities could result in mortality and disturbance (from excavation, noise, vibration, and visual impacts of equipment and personnel) to red-legged frog should they be present.

Operations and maintenance activities may occur in suitable habitat for this species; however, given the periodicity and minimal ground disturbance associated with irrigation maintenance, replanting, and other work in restoration areas, impacts associated with operations and maintenance would have a **less-than-significant** impact on California red-legged frog.

Mitigation Measures

The following mitigation measure has been identified to address this impact.

> **Mitigation Measure BIO-8: California Red-legged Frog Avoidance and Minimization (HCP/NCCP Species Specific Minimization Measure).**
>
> The District and its contractor(s) will implement the following measures consistent with those specified in the HCP/NCCP to avoid and minimize potential for adverse impacts on California red-legged frog to result from project implementation:
>
> Written notification to USFWS, CDFW, and the Conservancy, including photos and breeding habitat assessment, is required prior to disturbance of any suitable breeding habitat. Marsh Creek, the Reservoir, and fringing wetlands have been identified as potentially suitable breeding habitat. The District will also notify these parties of the approximate date of removal of the breeding habitat at least 30 days prior to this removal to allow USFWS or CDFW staff to translocate individuals, if requested. USFWS or CDFW must notify the District of their intent to translocate California red-legged frog within 14 days of receiving notice from the District. The applicant must allow USFWS or CDFW access to the site prior to construction if they request it.
>
> There are no restrictions under the HCP/NCCP on the nature of the disturbance or the date of the disturbance unless CDFW or USFWS notify the District of their intent to translocate individuals within the required time period. In this case, the District must coordinate the timing of disturbance of the breeding habitat to allow USFWS or CDFW to translocate the individuals. USFWS and CDFW will be allowed 45 days to translocate individuals from the date the first written notification was submitted by the District (or a longer period agreed to by the Project proponent, USFWS, and CDFW).
>
> **Timing**: Before and during construction
>
> **Responsibility**: District and its contractor(s)

Implementation of Mitigation Measures BIO-1, BIO-6, BIO-7, and **BIO-8**, would minimize impacts on habitat and avoid direct loss of individuals through implementation of a worker environmental awareness training, biological monitoring, implementation of species-specific HCP/NCCP minimization measures, and other construction BMPs to protect aquatic habitat. Additionally, worker environmental awareness training and preconstruction surveys would minimize impacts resulting from future soil stockpile reuse activities. Finally, restoration and enhancement activities are anticipated to have a net benefit on California red-legged habitat, especially aquatic habitat in Marsh Creek. Therefore, impacts on California red-legged frog would be **less-than-significant with mitigation incorporated.**

Northwestern Pond Turtle

Northwestern pond turtle is proposed for federal listing as threatened, a California species of special concern, and an HCP/NCCP covered species. Although no pond turtles were observed during planning level surveys in the BSA, this species is known to occur in and around the project site (Jones & Stokes 2012, CDFW 2024a). Most of the land cover types in the BSA provide either suitable aquatic or upland habitat for northwestern pond turtle. Specifically, Marsh Creek, the Reservoir, and fringing wetlands provide suitable aquatic habitat for this species. Adjacent undeveloped upland habitats may be used for nesting, winter refuge, and movement.

Project activities will include excavation and earthwork in the aquatic habitat within the Reservoir. Upland areas will also be impacted by the potential deposition of sediment onsite in the eastern portion of the property and by temporary construction activities such as staging and sediment drying. Although some vegetated portions of the Reservoir and fringing wetlands would be permanently converted to open water in an effort to restore hydrology to the system, no loss of habitat area is anticipated. If anything, the project would increase habitat value for this species by restoring a more perennially wet pool to the Reservoir and expanding and enhancing adjacent wetland, riparian, and other upland habitats.

Project construction and operations and maintenance activities have the potential to impact northwestern pond turtle by destroying underground nests. Additionally, mortality and disturbance (from noise, vibration, and visual impacts of equipment and personnel) could occur if turtles are present in areas where heavy equipment is being used or moved. Dewatering and potential sedimentation could temporarily affect aquatic breeding habitats. If pond turtles are present in these work areas when construction occurs, they would likely move upstream or downstream in the creek or into other portions of the Reservoir, away from the areas of disturbance, as work commences, but there is a potential for individuals to become stranded if present in areas being dewatered.

Future soil reuse activities are unlikely to impact northwestern pond turtle because the two nearby ponds provide poor quality habitat for this species and potential for pond turtle to occur in the stockpile area is very low.

Operations and maintenance activities would occur in suitable habitat for this species; however, most activities would result in very minimal ground disturbance. Controlled burning would be limited to annual grassland areas densely vegetated with yellow star-thistle. These areas are characterized by compacted stands of chest-high thistle and do not provide suitable habitat for northwestern pond turtle. Given the periodicity and minimal ground disturbance associated with irrigation maintenance, replanting, and other work in restoration areas, impacts associated with operations and maintenance would have a **less-than-significant** impact on northwestern pond turtle.

Restoration activities along the Reservoir banks and Marsh Creek would expand and enhance habitat value for pond turtle in the long term. Although a net benefit to onsite habitats is anticipated, mortality of northwestern pond turtle could occur during construction and operations and maintenance. Potential loss of northwestern pond turtle could occur as a result of the project. This would have a **potentially significant** impact.

Mitigation Measures

The following mitigation measures have been identified to address this impact.

Mitigation Measure BIO-1: Worker Environmental Awareness Training Program: and Qualified Biological Monitor.

Please refer to Mitigation Measure BIO-1, above, for the full text of this mitigation measure.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Mitigation Measure BIO-6: Best Management Practices (HCP/NCCP Conservation Measure 1.13).

Please refer to Mitigation Measure BIO-6, above, for the full text of this mitigation measure.

Timing: During construction

Responsibility: District and its contractor(s)

Mitigation Measure BIO-7: Aquatic Resources Avoidance and Minimization (HCP/NCCP Conservation Measure 2.12).

Please refer to Mitigation Measure BIO-7, above, for the full text of this mitigation measure.

Timing: During and after construction

Responsibility: District and its contractor(s)

There are no species-specific HCP/NCCP avoidance and minimization measures for northwestern pond turtle, however, implementation of Mitigation Measures BIO-1, BIO-6, and BIO-7, would minimize impacts on habitat and avoid direct loss of individuals through implementation of a worker environmental awareness training, biological monitoring during ground disturbance and dewatering, and other construction BMPs protecting aquatic habitat. Finally, restoration and enhancement activities are anticipated to have a net benefit on habitat for this species. Therefore, impacts on northwestern pond turtle would be **less-than-significant with mitigation incorporated.**

Burrowing Owl

Burrowing owl is an HCP/NCCP-covered species and a California species of special concern and became a candidate for state listing in October 2024. The BSA lies within modeled suitable habitat for burrowing owl identified in the HCP/NCCP. The biological survey verified that the BSA contains annual grassland, the preferred habitat for burrowing owl, and provides potentially suitable burrow and foraging habitat for burrowing owl. No burrowing owls or burrowing owl sign was observed during the planning surveys though some scattered ground squirrel burrows that are potentially suitable for burrowing owl occupation were observed in the BSA.

Burrowing owl is not known to occur in the BSA and no evidence of burrowing owl presence was observed during the field surveys; however, protocol-level surveys were not conducted and the potential exists for burrowing owls to occur in the BSA at least seasonally and to be present when construction occurs. As a result, the project could impact burrowing owl and its habitat. Should burrowing owls be present in or adjacent to construction areas, occupied burrows could be destroyed and active nests could be disturbed as a result of ground disturbance or other activities such as increased noise, dust, vibration, or generally higher level of human and equipment activity. This could result in injury or mortality of burrowing owls, nest abandonment, and reduced care of eggs and young and would be a **potentially significant** impact.

Operations and maintenance activities would largely occur outside of suitable habitat for this species. Controlled burning would be limited to annual grassland areas densely vegetated with yellow star-thistle. These areas are characterized by compacted stands of chest-high thistle and do not provide suitable habitat for burrowing owl. Given the majority of activities would occur outside of suitable habitat, along with the periodicity and minimal ground disturbance associated with irrigation maintenance, replanting, and other work in restoration areas, impacts associated with operations and maintenance would have a **less-than-significant** impact on burrowing owl.

Future reuse of material from the long-term sediment stockpile has the potential to impact burrowing owl if they occupy the stockpile area. Soil stockpiling reuse activities could result in similar impacts to those resulting from construction activities.

Mitigation Measures

The following mitigation measure has been identified to address this impact.

Mitigation Measure BIO-9: Burrowing Owl Avoidance and Minimization (HCP/NCCP Species Specific Minimization Measure).

The District and its contractor(s) will implement the following measures consistent with those specified in the HCP/NCCP to avoid and minimize potential for adverse impacts on burrowing owl to result from project implementation:

Prior to any ground disturbance related to covered activities, a USFWS/CDFW-approved biologist will conduct a preconstruction survey in areas that support potential burrowing owl habitat. The surveys will establish the presence or absence of western burrowing owl and/or habitat features and evaluate use by owls in accordance with CDFW survey guidelines (California Department of Fish and Game 2012).

The biologist will survey the proposed disturbance footprint and a 500-foot radius from the perimeter of the proposed footprint to identify burrows and owls. Adjacent parcels under different land ownership will not be surveyed. Surveys will occur near sunrise or sunset in accordance with CDFW guidelines. All burrows or burrowing owls will be identified and mapped. Surveys will take place no more than 30 days prior to construction. During the breeding season (February 1– August 31), surveys will document whether burrowing owls are nesting in or directly adjacent to disturbance areas. During the nonbreeding season (September 1–January 31), surveys will document whether burrowing owls are using habitat in or directly adjacent to any disturbance area. Survey results will be valid only for the season (breeding or nonbreeding) during which the survey is conducted.

If burrowing owls are found during the breeding season (February 1 – August 31), the District will avoid all nest sites that could be disturbed by Project construction during the remainder of the breeding season or while the nest is occupied by adults or young. Avoidance will include establishment of a non-disturbance buffer zone (described below). Construction may occur during the breeding season if a qualified biologist monitors the nest and determines that the birds have not begun egg-laying and incubation or that the juveniles from the occupied burrows have fledged. During the nonbreeding season (September 1 – January 31), the District will avoid the owls and the burrows they are using, if possible. Avoidance will include the establishment of a buffer zone (described below).

During the breeding season, buffer zones of at least 250 feet in which no construction activities can occur will be established around each occupied burrow (nest site). Buffer zones of 160 feet will be established around each burrow being used during the nonbreeding season. The buffers will be delineated by highly visible, temporary construction fencing.

If occupied burrows for burrowing owls are not avoided, passive relocation will be implemented. Owls will be excluded from burrows in the immediate impact zone and within a 160-foot buffer zone by installing one-way doors in burrow entrances. These

doors should be in place for 48 hours prior to excavation. The Project area should be monitored daily for 1 week to confirm that the owl has abandoned the burrow. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation. Plastic tubing or a similar structure should be inserted in the tunnels during excavation to maintain an escape route for any owls inside the burrow.

Timing: Before and during construction, including future activities in the sediment stockpile area

Responsibility: District and its contractor(s)

Implementation of Mitigation Measures BIO-1 and **BIO-9** would minimize impacts on burrowing owl habitat and avoid direct loss of individuals during construction and other covered activities associated with the soil stockpile through implementation of a worker environmental awareness training, biological monitoring, and protocol-level surveys and avoidance. Therefore, impacts on burrowing owl would be **less-than-significant with mitigation incorporated.**

Swainson's Hawk

Swainson's hawk is state-listed as threatened and covered under the HCP/NCCP. Although the BSA is on the westernmost boundary of the Swainson's hawk species range, there are several records of this species in the region, including one occurrence from 2012 associated with the riparian corridor along the extent of Marsh Creek overlapping with the project site. No Swainson's hawks or potential nests were observed during the September planning surveys; however, the surveys were completed after the nesting season and when the trees were fully leafed, making nest observation difficult. Mature stands of trees along Marsh Creek Reservoir, Marsh Creek, and Marsh Creek Road provide suitable nesting habitat for this species. In addition, annual grassland in the BSA provides suitable foraging habitat.

Construction associated with the project could result in disturbance to breeding activity should active Swainson's hawk nests be present in or near areas proposed for disturbance, vegetation clearing, access, and/or staging. Impacts could include mortality from removal of active nest trees or abandoned nests or reduced care of eggs and young resulting from increased noise, dust, or activity levels associated with construction. In addition, loss of nesting trees could occur.

Operations and maintenance activities would occur in and near suitable nesting habitat for Swainson's hawk and may result in impacts described above for construction. Vegetation management would occur in annual grassland areas dominated by yellow star-thistle that provide marginal quality foraging habitat. Therefore, potential for adverse impacts on foraging activities would be minimal, and vegetation management is anticipated to result in a long-term enhancement of foraging quality.

The sediment stockpile would be seeded with native herbaceous species and may provide suitable foraging habitat for Swainson's hawk, but soil removal from this relatively limited area would have a minor impact on potential foraging activities. Trees along Marsh Creek Road

provide lower quality nest sites than those along Marsh Creek, but there is potential for Swainson's hawk to nest in trees along the road near the stockpile area. If active nests are present during soil removal, impacts described above for construction could also occur during future soil removal from the stockpile area.

Structure, diversity, and age class of riparian vegetation along Marsh Creek and the Reservoir would be restored as part of the project by excluding cattle and enhancing with plantings. This would allow for improved nesting habitat for raptors, including Swainson's hawk. Although a net benefit to Swainson's hawk habitat is anticipated, mortality or disturbance to breeding could occur as a result of the project. This would have a **potentially significant** impact.

Mitigation Measures

The following mitigation measure has been identified to address this impact.

> **Mitigation Measure BIO-10: Swainson's Hawk Survey, Avoidance, and Minimization (HCP/NCCP Species Specific Minimization Measure).**
>
> The District and its contractor(s) will implement the following measures consistent with those specified in the HCP/NCCP to avoid and minimize potential for adverse impacts on Swainson's hawk to result from project implementation:
>
> Prior to any ground disturbance related to covered activities (including construction, operations and maintenance activities that require heavy equipment use, and future stockpile soil removal activities) that occurs during the nesting season (March 15–September 15), a qualified biologist will conduct a preconstruction survey no more than 1 month prior to construction to establish whether Swainson's hawk nests within 1,000 feet of the project site are occupied. If potentially occupied nests within 1,000 feet are off the project site, then their occupancy will be determined by observation from public roads or by observations of Swainson's hawk activity (e.g., foraging) near the project site. If nests are occupied, minimization measures and construction monitoring are required (see below).
>
> During the nesting season (March 15–September 15), covered activities within 1,000 feet of occupied nests or nests under construction will be prohibited to prevent nest abandonment. If site-specific conditions or the nature of the covered activity (e.g., steep topography, dense vegetation, limited activities) indicate that a smaller buffer could be used, the Conservancy will coordinate with CDFW/USFWS to determine the appropriate buffer size. If young fledge prior to September 15, covered activities can proceed normally. If the active nest site is shielded from view and noise from the project site by other development, topography, or other features, the District can apply to the Conservancy for a waiver of this avoidance measure. Any waiver must also be approved by USFWS and CDFW. While the nest is occupied, activities outside the buffer can take place.

All active nest trees will be preserved on site, if feasible. Nest trees, including non-native trees, lost to covered activities will be mitigated by the District according to the requirements below.

Mitigation for Loss of Active Nest Trees:

The loss of non-riparian active Swainson's hawk nest trees will be mitigated by the project proponent by:

- If feasible on-site, planting 15 saplings for every tree lost with the objective of having at least 5 mature trees established for every tree lost according to the requirements listed below. AND either
    1. Pay an additional fee to purchase, plant, maintain, and monitor 15 saplings on the HCP/NCCP Preserve System for every tree lost according to the requirements listed below, OR
    2. The District will plant, maintain, and monitor 15 saplings for every tree lost at a site (e.g., within an HCP/NCCP Preserve or existing open space linked to HCP/NCCP preserves), according to the requirements listed below.

The following requirements will be met for all planting options:

- Tree survival will be monitored at least annually for 5 years, then every other year until year 12. All trees lost during the first 5 years will be replaced. Success will be reached at the end of 12 years if at least 5 trees per tree lost survive without supplemental irrigation or protection from herbivory. Trees must also survive for at least 3 years without irrigation.
- Irrigation and fencing to protect from deer and other herbivores may be needed for the first several years to ensure maximum tree survival.
- Native trees suitable for this site should be planted. When site conditions permit, a variety of native trees will be planted for each tree lost to provide trees with different growth rates, maturation, and life span, and to provide a variety of tree canopy structures for Swainson's hawk. This variety will help to ensure that nest trees will be available in the short term (5-10 years for cottonwoods and willows) and in the long term (e.g., Valley oak, sycamore). This will also minimize the temporal loss of nest trees.
- Riparian woodland restoration conducted as a result of covered activities (i.e., loss of riparian woodland) can be used to offset the nest tree planting requirement above, if the nest trees are riparian species.
- Whenever feasible and when site conditions permit, trees should be planted in clumps together or with existing trees to provide larger areas of suitable nesting habitat and to create a natural buffer between nest trees and adjacent development (if plantings occur on the development site).

- Whenever feasible, plantings on the site should occur closest to suitable foraging habitat outside the urban development area.
- Trees planted in the HCP/NCCP preserves or other approved offsite location will occur within the known range of Swainson's hawk and as close as possible to high-quality foraging habitat.

Timing: Before, during, and after construction

Responsibility: District and its contractor(s)

Implementation of Mitigation Measures BIO-1 and **BIO-10** would minimize impacts on Swainson's hawk through implementation of a worker environmental awareness training, biological monitoring, protocol-level nest surveys and avoidance, and mitigation for loss of active nest trees should impacts be unavoidable. Finally, restoration and enhancement activities are anticipated to have a net benefit on habitat for this species. Therefore, impacts on Swainson's hawk would be **less-than-significant with mitigation incorporated.**

Golden Eagle

Golden eagle is a California fully protected species covered under the HCP/NCCP. There are several records of this species in the region, including one nest occurrence approximately 1 mile southeast of the project site and numerous records around Los Vaqueros Reservoir to the south. No golden eagles or nests were observed during the September 2023 planning surveys. Golden eagles typically nest on cliffs; however, large trees and transmission towers can also be used for nesting and those in the BSA may provide suitable nest sites. In addition, the annual grassland provides suitable foraging habitat for this species.

Construction associated with the project could result in disturbance to breeding activity should active golden eagle nests be present in or adjacent to areas proposed for disturbance, vegetation clearing, access, and/or staging. Impacts could include mortality from vegetation clearing or abandoned nests resulting from increased noise, dust, or activity levels associated with construction.

Some operations and maintenance activities also could result in disturbance to breeding activity described above for construction. Vegetation management would occur in annual grassland areas dominated by yellow star-thistle that provide marginal quality foraging habitat. Therefore, potential for adverse impacts on foraging activities would be minimal, and vegetation management is anticipated to result in a long-term enhancement of foraging quality.

The sediment stockpile would be seeded with native herbaceous species and may provide suitable foraging habitat for golden eagle, but soil removal from this relatively limited area would have a minor impact on potential foraging activities. However, if active nests are present in the vicinity during soil removal, impacts described above for construction could also occur during future soil removal from the stockpile area.

No loss of nesting or foraging habitat would occur as a result of project implementation. However, mortality or disturbance to breeding could occur during project implementation. This would have a **potentially significant** impact.

Mitigation Measures

The following mitigation measure has been identified to address this impact.

> **Mitigation Measure BIO-11: Golden Eagle Survey, Avoidance, and Minimization (HCP/NCCP Species Specific Minimization Measure).**
>
> The District and its contractor(s) will implement the following measures consistent with those specified in the HCP/NCCP to avoid and minimize potential for adverse impacts on golden eagle to result from project implementation:
>
> Prior to implementation of covered activities (including construction, operations and maintenance activities that require heavy equipment use, and future stockpile soil removal activities), a qualified biologist will conduct a preconstruction survey to establish whether active nests of golden eagles are present within 0.5 mile of the project site. If active nests are present, minimization requirements and construction monitoring will be required as described below.
>
> Covered activities will be prohibited within 0.5 mile of active nests. Nests can be built and active at almost any time of the year, although mating and egg incubation occurs late January through August, with peak activity in March through July. If site-specific conditions or the nature of the covered activity (e.g., steep topography, dense vegetation, limited activities) indicate that a smaller buffer could be appropriate or that a larger buffer should be implemented, the Conservancy will coordinate with CDFW/USFWS to determine the appropriate buffer size.
>
> Construction monitoring will focus on ensuring that no covered activities occur within the buffer zone established around an active nest.
>
> **Timing**: Before and during construction
>
> **Responsibility**: District and its contractor(s)

Implementation of Mitigation Measures BIO-1 and **BIO-11** would minimize impacts on golden eagle through implementation of a worker environmental awareness training, biological monitoring, protocol-level nest surveys and avoidance, and other construction BMPs. Therefore, impacts on golden eagle would be **less-than-significant with mitigation incorporated.**

Tricolored Blackbird, Other Special-status Birds not Covered by the HCP/NCCP, and Common Birds

Tricolored blackbird is an HCP/NCCP-covered species, state listed as threatened, and a California species of special concern. There are several records of this species in the region, including an observation of a colony in Marsh Creek Reservoir. According to the occurrence data, nesting was presumed but never confirmed onsite (CDFW 2024a). No tricolored blackbirds

were observed during the September planning surveys; however, surveys were not conducted during typical nesting season. Vegetated edges of the Reservoir provide suitable breeding habitat for tricolored blackbird and grasslands provide foraging habitat. HCP Conservation Measure 1.11 states "Covered activities with the potential to take tricolored blackbird nests will be avoided during the nesting season (April 1 to July 1)".

The BSA provides potentially suitable nesting, foraging, and/or wintering habitat for several other special-status bird species not covered under the HCP/NCCP, including grasshopper sparrow, short-eared owl, long-eared owl, northern harrier, white-tailed kite, yellow-breasted chat, loggerhead shrike, yellow warbler, and yellow-headed blackbird. Please refer to Appendix B.1 for the listing status of each species. Most of these species use riparian or emergent marsh vegetation for nesting, apart from grasshopper sparrow which nests in grasslands, and white-tailed kite and loggerhead shrike which could nest in trees and shrubs/small trees, respectively, throughout the BSA. Foraging habitat for special-status birds includes most of the BSA. The BSA also provides nesting, wintering, and/or foraging habitat for other common migratory and resident birds not identified in Appendix B.1. All native breeding birds (except game birds during the hunting season), regardless of their listing status, are protected under Section 3503 of the California Fish and Game Code.

Construction associated with the project could result in potentially significant impacts on tricolored blackbird and other special-status birds should active nests be present in or adjacent to areas where project disturbance, vegetation clearing, access, and/or staging would occur. Impacts could include mortality from vegetation clearing or abandoned nests or decreased care of eggs and young resulting from increased noise, dust, or activity levels associated with construction. Impacts on nesting birds could also occur during operations and maintenance activities and soil removal from the stockpile area.

Structure, diversity, and age class of riparian vegetation along Marsh Creek and the Reservoir would be restored as part of the project by excluding cattle and enhancing with plantings. In addition, wetland areas bordering the Reservoir would be expanded and enhanced. These project components would allow for improved nesting habitat. Although a net benefit to bird habitat is anticipated, mortality or disturbance to nesting birds could occur during construction, operations and maintenance activities, and future stockpile soil removal. This would be a **potentially significant** impact.

Mitigation Measures

The following mitigation measures have been identified to address this impact.

Mitigation Measure BIO-12: Nesting Bird Surveys.

If feasible, project construction and operations and maintenance activities that would disturb suitable nesting habitat would be conducted outside the bird nesting season (February 1 through August 31). However, if these activities would occur during the bird

nesting season, then preconstruction surveys to identify active bird nests, including raptors, would be conducted by a qualified biologist within 7 days of beginning the activities. Focused surveys will be conducted by a qualified biologist for the purposes of determining presence or absence of active nest sites within the project site and a 250-foot boundary, where feasible. If project activities occur in or near suitable tricolored blackbird nesting habitat during tricolored blackbird nesting season (April 1 to July 1), then surveys to identify active colonies should be conducted and if identified, avoided in consultation with the Conservancy.

Timing: Before ground disturbance or vegetation clearing, including future activities in the sediment stockpile area

Responsibility: District and its contractor(s)

Mitigation Measure BIO-13: Nest Avoidance.

If active nest sites are identified within the survey areas, a no-disturbance buffer will be established for all active nest sites prior to commencement of project activities to avoid disturbances to bird nesting activities. A no-disturbance buffer constitutes a zone in which project-related activities (vegetation removal, earth moving, noise generation, and other construction and operations and maintenance activities) cannot occur. The size of the no disturbance buffers would be determined by a qualified biologist based on the species, activities proposed near the nest, and topographic and other visual barriers. A qualified biologist will monitor each nest to confirm the buffer is adequate to avoid disturbance until it is deemed inactive or until construction activities move out of the no-disturbance buffer. The qualified biologist has the right to stop work if disturbance to care of eggs or young or nestling behavior is observed.

If active nests are detected in the survey area, work within 0.5 mile of golden eagle nests, 1,000 feet of Swainson's hawk nests, 300 feet of other raptor nests, and 50 feet of passerine nests will be avoided until a qualified biologist determines that nesting activity has been completed. If it is not feasible to implement this avoidance buffer, a site-specific plan will be developed by a qualified biologist in coordination with the appropriate agencies to determine if a reduced avoidance buffer is appropriate based upon 1) the type and duration of construction activities being conducted, 2) sensitivity or acclimation to disturbance, 3) the topography surrounding the nest site, and/or 4) the implementation of additional protective measures.

Timing: Before and during construction, ground disturbance, and vegetation clearing, including future activities in the sediment stockpile area

Responsibility: District and its contractor(s)

There are no species-specific HCP/NCCP avoidance and minimization measures for tricolored blackbird; however, implementation of Mitigation Measures BIO-1, **BIO-12** and **BIO-13** would

minimize impacts on tricolored blackbird and other special-status birds through implementation of a worker environmental awareness training, biological monitoring, preconstruction nest surveys and avoidance, and other construction BMPs. Finally, restoration and enhancement activities are anticipated to have a net benefit on habitat for birds. Therefore, impacts on special-status and other birds would be **less-than-significant with mitigation incorporated**.

Special-status Bats

Three special-status bat species were determined to have potential to occur in the BSA, all of which are California species of special concern. Pallid bat and western red bat are not covered under the HCP/NCCP; however, Townsend's big-eared bat is a covered species. Very few records of these species are known from the project area, but that is typical for most bat species. No bats or bat sign were observed during surveys, nor did the biologists observe any evidence of caves, mines, or buildings, which could provide suitable roost sites for pallid bat and Townsend's big-eared bat in the BSA.

Nevertheless, suitable foraging habitat for these species includes annual grasslands, over the Reservoir, and other open habitats. In addition, larger trees and cottonwood snags in the BSA could potentially provide suitable maternity, day and/or night roosting habitat, where hollowed trunks and branches have developed. Trees suitable for roosting may need to be removed as a result of project implementation.

Operations and maintenance activities would occur in suitable habitats for this species; however, no tree removal or direct impacts on roosting habitat would occur. Additionally, because of periodicity and minimal ground, noise, and human/equipment disturbance associated with irrigation maintenance, replanting, and other adaptive management work in restoration areas, impacts associated with operations and maintenance would have a less-than-significant impact on special-status bats. Future soil removal from the stockpile area would not directly impact roosting habitat and potential indirect impacts would be less than significant.

Construction associated with the project could result in bat mortality or disturbance to roosting or foraging activity should special-status bats be present in or adjacent to areas where project-related disturbance, vegetation clearing, access, and/or staging would occur. Impacts could include mortality from vegetation clearing or roost abandonment resulting from increased noise, dust, or activity levels associated with construction. No permanent loss of roosting or foraging habitat would occur as a result of project implementation. Although trees used for roosting may be removed, an overall expansion and enhancement of riparian habitat would occur. However, although a net benefit to bat habitat is anticipated, mortality or disturbance to breeding/roosting could occur during construction and could result in mortality of numerous individuals. This would be a **potentially significant** impact.

Mitigation Measures

A species-specific measure for Townsend's big-eared bat is included in the HCP/NCCP; however, the measure is specific to structure roosting sites, which are not present at the project

site. The mitigation measure has been adapted to address all three bat species and expanded to include tree roosting habitat.

Mitigation Measure BIO-14: Special-status Bat Survey, Avoidance, and Minimization.

The District and its contractor(s) will implement the following measures to reduce potential effects on special-status bats associated with project construction:

- **Habitat Assessment.** Within 8 weeks prior to initiation of project activities, a qualified biologist will conduct a daytime survey to assess all trees and structures in the construction area to determine if they contain suitable bat roosting habitat (e.g., cavities, crevices, deep bark fissures), noting features with high potential for use by roosting bats. The survey will identify locations of potential roost habitat features and potential direct and indirect project-related disturbing activities to those features. The daytime survey will include visual inspection of potential roost features to determine whether there is evidence of use by bats (e.g., urine staining, guano, etc.). If bats are observed, attempts will be made to identify individuals to species and estimate number of individuals. If special-status bats are identified, CDFW will be notified.
- **Bat Survey.** Based on the results of the habitat assessment, the qualified biologist will determine whether a nighttime emergence survey will be conducted at each potential roost feature. Nighttime emergence surveys will document the number of bats exiting each feature and identification to species, if possible. If special-status bats are identified, CDFW will be notified.

  In addition, occupancy surveys will be conducted immediately prior to disturbance of roost features determined by the qualified biologist to have high potential for bat use. If potential roost features are unoccupied, work activities may proceed. The qualified biologist will have the authority to determine if it is necessary to direct and monitor activities relating to disturbance or removal of roost features. Biologist direction may include tiered removal of trees or modification of structures, as described in the following section.
- **Tiered Tree Removal and Structure Modification.** To minimize the likelihood of impacting roosting bats, tiered removal of trees or modification of structures with roost features known or suspected to support bats, based on the results of the habitat and bat surveys described above, will be conducted at the direction of the qualified biologist. Tiered tree removal or structure modification will occur over 2 or more days to make these trees/structures less desirable for roosting, and to encourage any bats that could be in residence to relocate to alternate roosts prior to tree felling, or to move to other areas of structures before exiting structures of their own volition at night. Removal or modification of these roost features will occur under the supervision of a qualified biologist during periods when bats are active and capable of flight, approximately between March 1 to April 15 and August 15 to October 15;

outside of bat maternity roosting season (approximately April 15 – August 31), and outside of months of winter torpor (approximately October 15 – February 28), to the extent feasible.

- If removal of trees or disturbance to other roost features during the periods when bats are active and capable of flight is not feasible, and active bat roosts being used for maternity or winter torpor purposes are found within or in the immediate vicinity of planned tree removal or other disturbance, an appropriate no-disturbance buffer will be established around the roost sites until they are determined by a qualified biologist to be no longer active. Recommended buffers will follow guidelines from the Caltrans Bat Mitigation Report (H. T. Harvey & Associates 2021, Table 7-1). The qualified biologist will have the authority to order the cessation of all nearby project activities until an appropriate buffer can be established. If appropriate buffers cannot be maintained, CDFW will be contacted to determine a site-specific approach for minimizing impacts to roosting bats.
- Trees/structures with roost features known or suspected to support roosting bats will only be disturbed/removed when no rain is occurring or projected to occur for 3 days, when nighttime winds are projected to be below 11 miles per hour, and when daytime temperatures are at least 50 degrees Fahrenheit.
- For each tree removed that is known or suspected to support roosting bats, tiered tree removal may include some or all the following approaches, as determined by the qualified biologist.
    - Remove all unaffected limbs (those without potential roosting habitat) from the tree and leave the remaining trunk and limbs overnight. Fell the remaining trunk and affected limbs the following day.
    - If logistically feasible, fell affected trees or limbs gently to minimize the likelihood of crushing bats that may be roosting inside. The qualified bat biologist will inspect all potential roost habitat for bats once the trees are felled.
    - Leave all fallen material on the ground at least 1 night prior to removal from the project site.
    - If bats are detected at any point, work in that area will cease and the qualified biologist will be notified. Work will resume as directed by the qualified biologist.
    - If any compromised bats are found, the qualified bat biologist may collect and deliver the bat(s) to a permitted bat rehabilitator, as needed. The qualified bat biologist should have any necessary Scientific Collecting or CESA permits from CDFW before handling bats.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Implementation of Mitigation Measures BIO-1 and **BIO-14** would minimize impacts on special-status bats through implementation of a worker environmental awareness training, biological monitoring, preconstruction surveys and avoidance, and other construction BMPs. Finally, restoration and enhancement activities are anticipated to have a net benefit on habitat for bats. Therefore, impacts on special-status bats would be **less-than-significant with mitigation incorporated**.

American Badger

American badger is a California species of species concern but is not covered by the HCP/NCCP. The biological survey verified that the BSA provides potentially suitable foraging, movement, and denning habitat for American badger. However, no evidence of badger dens was observed in the BSA during the surveys.

Annual grassland and open woodland areas in the project site and larger BSA support suitable foraging and movement habitat for American badger. While no evidence of badger dens was identified during planning surveys, the potential exists for dens to be created before project construction begins. The sediment stockpile area also has potential to provide suitable badger habitat after sediment placement. As a result, the project could directly impact American badger if active dens are present in the construction footprint, including the sediment stockpile area. or indirectly impact badger if increased noise and disturbance during construction or soil stockpile removal results in den abandonment. This would be a **potentially significant** impact.

Operations and maintenance activities would largely occur outside of suitable habitat for this species. Controlled burning would be limited to annual grassland areas densely vegetated with yellow star-thistle. These areas are characterized by compacted stands of chest-high thistle and do not provide suitable habitat for badger. Given the majority of activities would occur outside of suitable habitat, along with the periodicity and minimal ground disturbance associated with irrigation maintenance, replanting, and other work in restoration areas, impacts associated with operations and maintenance would have a **less-than-significant** impact on American badger.

Mitigation Measures

The following mitigation measures have been identified to address this impact.

> **Mitigation Measure BIO-15: American Badger Survey and Avoidance.**
>
> No more than 14 days prior to implementation of project related activities, a qualified biologist will conduct a focused survey to determine if American badger dens occur in or within 250 feet of the construction footprint, including construction access routes. If potential dens are identified, additional surveys (e.g., camera monitoring and/or tracking) will be conducted to determine if the potential dens are actively being used by badger.
>
> If an active den is identified within 250 feet of the construction footprint, including access routes, a no-disturbance buffer will be established prior to commencement of any project activities to avoid construction or access-related disturbances to natal dens and

minimize disturbance of non-natal dens. A qualified biologist will determine the appropriate no-disturbance buffer. The buffer will be imposed until a qualified biologist determines the den is no longer occupied.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Implementation of Mitigation Measures BIO-1and **BIO-15** would minimize impacts on badger through implementation of a worker environmental awareness training, preconstruction surveys and avoidance, and other construction BMPs. Therefore, impacts on American badger would be **less-than-significant with mitigation incorporated.**

San Joaquin Kit Fox

San Joaquin kit fox is an HCP/NCCP-covered species, federally listed as endangered and State-listed as threatened. The BSA lies within modeled suitable habitat for San Joaquin kit fox identified in the HCP/NCCP. The BSA contains annual grassland and oak savannah cover types, offering potentially suitable foraging, movement, and denning habitat for San Joaquin kit fox. No evidence of San Joaquin kit fox dens was observed in the BSA, and the species has not been recorded in Contra Costa County since 1993 (Jones & Stokes 2012; CDFW 2024a). Ground squirrel burrows were present in the BSA, but sparse.

Potential for San Joaquin kit fox to occur in the BSA is unlikely given the lack of known occurrences in the project vicinity for more than 30 years; however, the project site supports marginally suitable foraging and movement habitat and potential for the species to very occasionally occur in the project vicinity cannot be entirely dismissed. As a result, the project could impact San Joaquin kit fox and its habitat. Should kit fox be present in or adjacent to construction areas, including the sediment stockpile area, destruction of dens and disturbance to breeding could occur as a result of ground disturbance or other activities such as increased noise, dust, vibration, or generally higher level of human and equipment activity. This would be a **potentially significant** impact.

Operations and maintenance activities would largely occur outside of suitable habitat for this species. Controlled burning would be limited to annual grassland areas densely vegetated with yellow star-thistle. These areas are characterized by compacted stands of chest-high thistle and do not provide suitable habitat for San Joaquin kit fox. Given the majority of activities would occur outside of suitable habitat, along with the periodicity and minimal ground disturbance associated with irrigation maintenance, replanting, and other work in restoration areas, impacts associated with operations and maintenance would have a **less-than-significant** impact on San Joaquin kit fox.

Mitigation Measures

The following mitigation measures have been identified to address this impact.

Mitigation Measure BIO-16: San Joaquin Kit Fox Avoidance and Minimization (HCP/NCCP Species Specific Minimization Measure).

The District and its contractor(s) will implement the following measures consistent with those specified in the HCP/NCCP to avoid and minimize potential for adverse impacts on San Joaquin kit fox to result from project implementation:

Prior to any ground disturbance related to covered activities, a USFWS/CDFW–approved biologist will conduct a preconstruction survey in areas identified in the planning surveys as supporting suitable breeding or denning habitat for San Joaquin kit fox. The surveys will establish the presence or absence of San Joaquin kit foxes and/or suitable dens and evaluate use by kit foxes in accordance with USFWS survey guidelines (USFWS 1999). Preconstruction surveys will be conducted within 30 days of ground disturbance. On the parcel where the activity is proposed, the biologist will survey the proposed disturbance footprint and a 250-foot radius from the perimeter of the proposed footprint to identify San Joaquin kit foxes and/or suitable dens. Adjacent parcels under different land ownership will not be surveyed. The status of all dens will be determined and mapped. Written results of preconstruction surveys will be submitted to USFWS within 5 working days after survey completion and before the start of ground disturbance. Concurrence is not required prior to initiation of covered activities.

If San Joaquin kit foxes and/or suitable dens are identified in the survey area, the measures described below will be implemented.

- If a San Joaquin kit fox den is discovered in the project footprint, the den will be monitored for 3 days by a USFWS/CDFW– approved biologist using a tracking medium or an infrared beam camera to determine if the den is currently being used.
- Unoccupied dens should be destroyed immediately to prevent subsequent use.
- If a natal or pupping den is found, USFWS and CDFW will be notified immediately. The den will not be destroyed until the pups and adults have vacated and then only after further consultation with USFWS and CDFW.
- If kit fox activity is observed at the den during the initial monitoring period, the den will be monitored for an additional 5 consecutive days from the time of the first observation to allow any resident animals to move to another den while den use is actively discouraged. For dens other than natal or pupping dens, use of the den can be discouraged by partially plugging the entrance with soil such that any resident animal can easily escape. Once the den is determined to be unoccupied it may be excavated under the direction of the biologist. Alternatively, if the animal is still present after 5 or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of a biologist, it is temporarily vacant (i.e., during the animal's normal foraging activities).
- If dens are identified in the survey area outside the proposed disturbance footprint, exclusion zones around each den entrance or cluster of entrances will be demarcated.

No covered activities will occur within the exclusion zones. Exclusion zone radii for potential dens will be at least 50 feet and will be demarcated with four to five flagged stakes. Exclusion zone radii for known dens will be at least 100 feet and will be demarcated with staking and flagging that encircles each den or cluster of dens but does not prevent access to the den by kit fox.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Implementation of Mitigation Measures BIO-1 and **BIO-16** would minimize impacts on kit fox through implementation of a worker environmental awareness training, biological monitoring, protocol-level surveys and avoidance, and other construction BMPs. Therefore, impacts on San Joaquin kit fox would be **less-than-significant with mitigation incorporated.**

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

The project has been designed to avoid impacts on CDFW jurisdictional riparian communities to the greatest extent possible. Design was modified to minimize potential impacts on the mature riparian woodland bordering the Reservoir and focus the bulk of the excavation on areas where sedimentation has occurred in the Reservoir and allowed scrubby willows and other earlier successional riparian vegetation to establish. Despite these design considerations, both permanent and temporary impacts on riparian vegetation would occur. Other than riparian areas, additional sensitive natural communities in the BSA include oak woodland and savannah, which will not be permanently impacted by project activities, as well as wetlands, and other aquatic communities, which are addressed in following section. No designated critical habitat regulated by USFWS would be impacted as part of the project.

Overgrazing by cattle has negatively impacted riparian habitat along Marsh Creek and around and within the Reservoir, resulting in deterioration of riparian trees and an inability for riparian habitat to regenerate due to lack of natural recruitment of native riparian tree and shrub species. One of the purposes of the project is to expand and enhance riparian habitats in the project site. Although riparian vegetation, primarily willow scrub and to a significantly lesser extent mature woodland, will be removed as a result of sediment excavation to restore hydrologic capacity and remove mercury laden sediments in the Reservoir, onsite restoration and enhancement activities are anticipated to offset this removal and prevent a permanent reduction in the amount of riparian habitat. Project activities are anticipated to result in a net increase of over 1.5 acres of riparian woodland/scrub as well as enhancement of more than 4 acres of existing riparian areas. Structure, diversity, and age class of riparian vegetation along Marsh Creek and the Reservoir would be restored as part of the project by excluding cattle and enhancing with plantings. Not only would these activities offset any loss, but a net increase in both area and functional value of riparian habitats would also occur.

A Lake and Streambed Alteration Agreement will be obtained from CDFW, and all permit requirements will be followed to minimize impacts on riparian habitats. Restoration components of the project are expected to adequately offset impacts from excavation; however, should additional compensatory mitigation for permanent and temporal loss of habitats be deemed necessary by CDFW or the Conservancy, payment of HCP/NCCP fees would further reduce potential impacts. Although the project could result in temporal loss of riparian vegetation during construction and a conversion of some vegetated areas to open water, these activities would support the goals of habitat restoration and are anticipated to result in a net increase in both riparian area and functional value, resulting in a **beneficial impact** to onsite sensitive communities.

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?

Permanent loss of aquatic resources is not anticipated to occur as a result of the project; however, conversion of aquatic resource types would occur as a result of deepening and excavating the Reservoir wet pools. The project includes the excavation of accumulated sediments in the existing Reservoir to return the Reservoir to its as-built capacity. Because of the accumulated sediments, the Reservoir capacity and depth has substantially decreased since its construction in the 1960s, resulting in the establishment of emergent, scrub, and forested wetland communities around the perimeter. Although no net loss of total aquatic resource area would occur as a result of the project and the excavation footprint was designed to avoid as much vegetation as possible, the classification of several aquatic resources would be altered, with some vegetated wetland areas being converted back to open water consistent with the as-built condition of the Reservoir.

Conversion of portions of the Reservoir from vegetated to open water would be offset by the creation and enhancement of wetlands fringing the Reservoir and riparian areas along both the Reservoir and upstream Marsh Creek. No net loss of overall aquatic resources would occur as a result of project implementation. In addition, over 3.5 acres of fresh emergent wetland (characterized as permanent wetland per HCP/NCCP land cover) and forested wetland (characterized as riparian woodland/scrub per HCP/NCCP land cover) would be enhanced. Although the project would include grading and vegetation management activities within potentially jurisdictional wetlands and waters, and temporal dewatering of wetlands and waters during construction, these activities would support the goals of habitat restoration and are anticipated to result in a net increase in both area and functional value. No permanent loss of aquatic resources would occur. Bio-engineered log structures would be placed in the creek as part of the restoration and enhancement activities with the goal of encouraging longer-duration wet pools increasing availability of breeding habitat and providing summer refuge for aquatic species such as California red-legged frog.

Project implementation would result in impacts on wetlands and waters. However, implementation of Mitigation Measures BIO-1, BIO-6, and BIO-7 would minimize impacts on

wetlands and waters a through implementation of a worker environmental awareness training, biological monitoring, and construction BMPs to minimize degradation of water quality that could occur during construction. In addition, onsite enhancement and restoration activities will minimize offset any temporal loss of aquatic resources. Moreover, the project site is located within the HCP/NCCP inventory area and is a covered activity. As such, the District will pay fees, as negotiated considering the restoration component of the project, for both permanent and temporary impacts at the site to the Conservancy which serves as compensatory mitigation for the project. The project would require a 404 Clean Water Act permit from the USACE. The USACE has developed Regional General Permit 1 for 404 permits in the HCP/NCCP inventory area (RGP-1). The RGP-1 allows payment of HCP/NCCP fees as mitigation for wetland impacts, as needed. A 401 Water Quality Certification will also be necessary.

The project is anticipated to result in long-term benefits despite temporal impacts associated with construction. Although the project could result in temporal loss and degradation of aquatic resources during construction and a conversion of some vegetated areas to open water, these activities would support the goals of habitat restoration and are anticipated to result in a net increase in both area and functional value, resulting in a **beneficial impact** to onsite aquatic resources.

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 BSA consists of open space providing local and regional wildlife movement habitat. No major barriers to wildlife movement currently exist in the BSA with the exception of the dam which effectively blocks fish passage. Marsh Creek Road, Camino Diablo, and the existing barbed wire cattle fencing bordering these roadways are barriers to wildlife movement present in the BSA. Marsh Creek Road and Camino Diablo are both moderately busy two-lane roads. The more significant movement barrier is the cattle fencing bordering both sides of the roadways. Smaller wildlife can pass through these areas relatively unimpeded; however, larger wildlife such as deer may experience injury when attempting to jump over or pass through the fences. The west side of the BSA shares an unfenced border with the open space of Marsh Creek State Park.

The project would not result in permanent disruption of wildlife movement. Temporary interference from ongoing construction activities and dewatering may occur, however, the project site is surrounded by open space, leaving many alternative routes for wildlife moving through the area. One component of the proposed enhancement efforts includes installation of wildlife-friendly fencing around Marsh Creek and the Reservoir, which would be designed to exclude cattle only and would not function as a barrier to native species which could either pass through or over the fence.

Post-construction, riparian habitats and overall habitat continuity and quality would be improved for common and special-status wildlife species that rely upon Marsh Creek and Reservoir for all or part of their life cycle and may use onsite habitats to move upstream and downstream. A more perennially wet pool in the reservoir would allow for increased utility for waterfowl and other aquatic species. The expanded riparian habitats enhancement of annual grasslands would increase overall wildlife movement value in the BSA post-construction in comparison with the existing condition. The project is anticipated to increase the extent and quality of movement habitat by expanding riparian cover and enhancing onsite conditions, as such there would be a **beneficial impact** to wildlife movement.

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

The Contra Costa County 2045 General Plan (Contra Costa County 2024) includes policies and actions related to protection of biological resources as part of Chapter 7: Conservation, Open Space, and Working Lands Element. The County also has a Tree Protection and Preservation Ordinance (Chapter 816-6 of the County Ordinance Code). The project would have a net benefit on the environment by reducing mercury in the system and restoring and enhancing onsite communities and special-status species, aligning with the goals outlined in the General Plan. In addition, although some tree loss would occur, it will be adequately offset tree removal by planting native riparian cuttings and saplings along the creek. Furthermore, the project will adhere to all measures required by the HCP/NCCP and provide mitigation fees, as negotiated, to offset impacts in compliance with the HCP/NCCP. The project is not anticipated to conflict with local policies and ordinances and the impact would be **less than significant**.

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?

The project site is located in the HCP/NCCP planning area and is a covered activity. The project will adhere to all measures required by the HCP/NCCP and provide mitigation fees, as negotiated, to offset impacts in compliance with the HCP/NCCP. No other adopted NCCP, HCP, or other approved local, regional, or state habitat conservation plan applies to the project or BSA. Therefore, the project would not conflict with the HCP/NCCP and there would be **no impact**.

2.5 Cultural Resources

#5. CULTURAL RESOURCES

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#5 -a. Cause a substantial adverse change in the significance of a historical resource pursuant to CCR Section 15064.5?	No	**Yes**	No	No	No
#5 -b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CCR Section 15064.5?	No	**Yes**	No	No	No
#5 -c. Disturb any human remains, including remains interred outside of dedicated cemeteries?	No	**Yes**	No	No	No

Cultural resources, defined as buildings, sites, structures, or objects, each of which may have historic, architectural, archaeological, cultural, or scientific importance, are discussed in this section. The State CEQA Guidelines Section 15064.5(a)(1) defines a "historical resource" as any resource listed in or determined to be eligible for listing in the California Register of Historical Resources (CRHR).

Regulatory Setting

California Register of Historical Resources

The CRHR includes resources listed in or formally determined eligible for listing in the National Register of Historic Properties (NRHP), as well as some California Historical Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be significant resources for purposes of CEQA, unless a preponderance of evidence indicates otherwise (PRC Section 5024.1, 14 CCR Section 4850). Eligibility criteria for the CRHR are similar to the NRHP but focus on importance of the resources to California history and heritage. A cultural resource may be eligible for listing in the CRHR if it:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of an important creative individual or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

State CEQA Guidelines also require consideration of unique archaeological resources (CCR Section 15064.5). As used in California PRC Section 21083.2, the term "unique archaeological

resource" refers to an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information,
- Has a special and particular quality such as being the oldest of its type or the best available example of its type, or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

In addition to meeting one or more of the above criteria, resources eligible for listing in the CRHR must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. These regulations apply to the eligibility determination of cultural resources in the project site.

Environmental Setting

Precontact Setting

Three different taxonomic systems are used to describe the cultural chronology of the San Francisco Bay Area. The first employs broad temporal sequences; the second generally focuses on cultural sequences; the third is a hybrid of these two. The third system can be refined further when applied to restricted areas that have more clearly distinctive cultural aspects or more finely resolved chronologies than the region. The following is the most recent, general cultural sequence for the San Francisco Bay Area taken from Milliken et al. (2007), which follows the hybrid system. Information from additional sources is included as appropriate. Date ranges are given in years before the current era (BCE) or current era (CE).

Terminal Pleistocene (11,500–8,000 BCE)

No evidence for occupation during this period has yet been discovered, presumably because it has been washed away through stream action, buried under more recent alluvium, or submerged on the continental shelf (Rosenthal and Meyer 2004) or within the San Francisco Bay as the bay formed approximately 10,000 years ago.

Early Holocene-Lower Archaic (8,000–3,500 BCE.)

Ancestral Native American groups during this period employed a generalized mobile forager pattern. Characteristic artifacts include well-made milling slabs and handstones as well as wide-stemmed and leaf-shaped projectile points (Jones et al. 2007). The earliest date for a milling slab component in the San Francisco Bay Area, 7,920 BCE, was obtained from a charcoal concentration found underneath a milling slab at Los Vaqueros Reservoir (CA-CCO-696) in the hills east of Mount Diablo. Archaeobotanical remains recovered from the same site suggested an

economy focused on acorns and wild cucumbers. According to the artifact sequence in Milliken and colleagues (2007:122-123), large nuts and seeds such as acorn, gray pine (*Pinus sabiana*), and buckeye (*Aesculus californica*) compose most of the floral record, as well as evidence of cobble-core tools. Flexed and cairn burials dating to the Lower Archaic were also found near the location of Los Vaqueros Reservoir. A variety of stone tools from Borax Lake obsidian identified east of Santa Rosa is thought to suggest a mobile forager economic pattern.

Hundreds of species plants and animals were used for food, medicine, and craft materials during this period. Some researchers have postulated that the wide variety of exploited resources resulted from a decrease in the availability of big game at the end of the Pleistocene. Early Holocene people used a range of different environments and scheduled their movements seasonally as resources became available. Early Holocene people developed or refined technologies such as ground stone tool production, basketry, and the manufacture of various scraper-tools. Non-utilitarian items such as ritual objects and personal ornaments were also elaborated (Chartkoff and Chartkoff 1984). In the Santa Clara Valley, the Lower Archaic Period is more specifically known as the Metcalf Creek Aspect and occurs from roughly 7,000 to 3,500 BCE.

Early Period (Middle Archaic) (3,500-500 BCE)

Ancestral Native American groups changed during the Early Period from being highly mobile to sedentary or semi-sedentary. Indicative of this is the appearance of substantial shell mounds in West Berkeley (CA-ALA-307), Ellis Landing (CA-CCO-295), and Pacheco (CA-MRN-152), as well as large house floors with postholes found at the Rossmoor site (CA-CCO-309). Mortars and pestles, some made of wood, greatly increase in number during this period, and burials contain greater amounts of ornamental goods. Changes in interment practices, such as occasional burning before burial as identified at Los Vaqueros Reservoir (CA-CCO-637), also occurred during the Early Period.

Trends that began during the Lower Archaic intensified during the Middle Archaic. Mobility became more restricted, as evidenced by greater use of local lithic materials, as well as the previously mentioned substantial shell mounds and house floors. The presence of milling slabs and handstones beginning during the Early Holocene evidenced the use of small, hard seeds; during the Early Period, however, the relative number of these artifact classes decreased while mortars and pestles increased greatly, indicating that acorn use became much more important. Evidence of far-ranging trade is also present during this period, as shown by the discovery as far inland as the Great Basin of beads made of shell from the central and southern California coasts (Bennyhoff and Hughes 1987).

Changes in the archaeological record indicate a transition to “sedentism, regional symbolic integration, and increased regional trade” (Milliken et al. 2007:114-115). The appearance of the mortar and pestle as well as *Olivella* and *Haliotis* rectangle beads indicates this transitional period. The *Olivella* and *Haliotis* rectangle beads mark the Early Period bead horizon. This pattern of the use of mortar and pestle to the exclusion of millingslabs and hand-stones, the

appearance of shell beads, ornamental burial associations (representing more complex internment practices as identified in a burial that also contained beads and red ochre at Los Vaqueros Reservoir), shell mounds, and elliptical house floors with postholes are suggestive of sedentism or semi-sedentism transition in the central east Bay Area. Side notch projectile points, net sinkers, cobble pestles and pestles utilized with wooden mortars, thick rectangle *Olivella* beads and *Haliotis* ornaments, fully extended and semi-extended burials, as well as loosely flexed burials mostly oriented in a northwest direction are indicative of this period for the Los Vaqueros Reservoir location.

Lower Middle Period (Initial Upper Archaic) (500 BCE to 430 CE)

Changes in ornamental items mark the beginning of this period. Rectangular shell beads, which had been used for 3,000 years, disappear from the archaeological record of the Bay Area, Central Valley, and Southern California. Split-beveled and small saucer beads made from Olivella shell enter the record, as do circular Haliotis beads. Spire-lopped Olivella beads, however, are more commonly found in burial contexts. Bead types such as Olivella saucer beads that previously had low representation become more prevalent.

Other artifact types that date to this period include barbless fish spears, elk femur spatulae, and bone-tubes whistles. In some parts of the Bay Area, basketry awls with shouldered tips appear in the record, indicating the manufacture of coiled basketry. Mortars and pestles were the sole grinding tools for most of the region, although milling slabs were still used around the periphery. Net sinkers, once prevalent, are now found only in very limited areas. Some areas that had not been heavily used in the past, such as the Napa Valley, now see more intensive use, with large accumulations of dark midden found at sites.

In the southern Bay Area, this period is called the Upper Berkeley Pattern. There is a general shift from hunting of northern fur seals to a greater emphasis on large terrestrial mammals. Acorn use also increases in the area. Along the San Mateo County coast this period is called the Año Nuevo Aspect. The period is not as well known for most of the Santa Clara Valley. In some localities it is called the Ellis Landing Complex. The Upper Berkeley Pattern for this area lasted until 1,000 CE.

Upper Middle Period (Late Upper Archaic) (430-1050 CE)

The Upper Middle Period is characterized by dramatic changes in mortuary practices and ornaments. Previously, individuals were buried in flexed positions, but this changed to an extended position during the Upper Middle Period. The earliest known such interment was found in the Livermore Valley at the Santa Rita village site (CA-ALA-413). The individual, an approximately 30-year-old male, was found buried with 30,000 Olivella saucer beads (the largest documented California bead lot), quartz crystals, and spatulae encrusted with beads. This funerary style, called Meganos, seems to have begun inland and traveled toward the bay.

The beginning of this period also saw the abandonment of more than half the sites that had been occupied previously, a large increase in the amount of sea otter bone in the still-occupied sites,

and a general collapse of the Olivella trade network. As the period progressed, it saw even more changes in bead styles, generally following the spread of Meganos mortuary style. Other artifacts that appear during this period are well-fashioned "show blades," fishtail charmstones, single-barbed bone fish spears, ear spools, and large mortars. Seed recovery from midden also increases on at least some sites. In the Santa Clara Valley, from roughly 1000 to 1400 CE, the period is known as the Meganos Complex, named after the mortuary practice.

Initial Late Period (Lower Emergent) (1050-1550 CE)

This period is marked by an increase in cultural complexity. Among the changes that occurred was an increase in sedentism, as well as higher levels of social ascription and ceremonial integration throughout central California. Mortuary practices also point to increasing social stratification. Partial cremations appear, usually associated with the wealthiest grave offerings, although overall the number of burials found with beads decreases.

Artifacts associated with this period include fully shaped show mortars, new types of Olivella beads, as well as new types of multi-perforated and bar-scored Haliotis ornaments. Other artifacts that appear are the flanged pipe, banjo shaped effigy ornaments, and bow-and-arrow technology. The banjo effigy ornaments may be the precursor to the ethnographically documented Kuksu cult, a widespread ceremonial system practiced by various language groups around the Bay Area. The first arrow-sized projectile points in the region were the Stockton serrated series, which were unique to central California.

The adoption of bow-and-arrow technology seems to have affected how lithic raw material was acquired in the region. Biface production and total amounts of debitage produced at Napa Glass Mountain obsidian quarries dropped significantly, while amounts of debris from that same source increased dramatically in the interior East Bay. Researchers have interpreted this as a rearranging of technology, in which large flakes from the Napa Glass Mountain sources were transported to more distant locales where small projectile points, performs, and various simple flake tools were produced. This would in contrast with earlier periods when more time would have been spent at the quarries to fashion tools that required more work and larger amounts of material to produce.

In the South Bay, this period is known as the Augustine Pattern. Little of this pattern has been studied in the Santa Clara Valley, while along the San Mateo County Coast it is called the Bonny Doon.

Terminal Late Period (1550 CE-Contact)

Beads are once again a marker for change during this period. The Olivella sequin and cup beads that distinguished the previous period disappear and are replaced by greater numbers of clamshell disk beads, while Olivella lipped and spire-lopped beads are found in some parts of the Bay Area. Site distribution does not change, however, although midden accumulations for this period are generally thinner. Interestingly, evidence of the manufacture of clam disk beads is

found not along the coasts, but farther inland in the Santa Rosa Plain and the Berryessa Valley (30 kilometers and 80 kilometers inland, respectively).

Another changing characteristic of this period is projectile point types. The Stockton serrated point series is replaced by simpler corner-notched arrow points in some areas, while Desert Side-Notched points appear in others. Other artifacts appearing during this period are the toggle harpoon, hopper mortar, and magnesite tube beads.

Researchers have put forward various reasons for these changes. Some hypotheses include that the population became larger than the landscape's carrying capacity, which led to conflict and wealth contraction. Others surmise that population groups were migrating, displacing, or marrying their way into neighboring territory. Another possibility put forward is that the archaeological record during the Terminal Late Period reflects the consequences of European-introduced epidemics, causing population crashes and cultural disruption.

Historic Setting

Contra Costa County and Early Development

Formed in 1850, the County originally encompassed most of the San Francisco Bay Area, but it shrunk substantially in 1853 when the greater part of that region seceded to form Alameda County. Europeans first settled CCC as early as the 1830s. In 1835, Jose Noriega received a grant for the 17,000-acre Rancho Los Méganos, which included the site where Marsh Creek Dam is located. Two years later, Noriega sold the rancho to John Marsh, a medical doctor who established a profitable medical clinic on the rancho. Born in the United States, Marsh was one of several Anglo-Americans who emigrated to California before its annexation after the Mexican American War. In 1850, he built a large house on the rancho, approximately 900 feet northeast of Marsh Creek Dam, though he never resided there. After Marsh died in 1856, Rancho Los Méganos was subdivided into smaller parcels intended for agricultural development (JRP Historical Consulting, LLC [JRP] 2007). Until the early 20th century, agricultural development consisted predominately of wheat and barley production with intermittent grazing. This changed after 1912 when the Balfour Guthrie Company built a large irrigation system around Brentwood, including within the Marsh Creek watershed (Richmond Daily Independent 1912; Martinez Daily Gazette 1912, 1913). Greater access to water allowed for cultivation of more crop varieties, and the access to markets provided by railroad facilities at Brentwood ensured the viability of more cost-intensive ventures, such as fruit and nut orchards (JRP 2007; City of Brentwood 2013).

Flood Control in the Marsh Creek Watershed

The greatest obstacle to the regional agricultural economy was cyclical flooding that occurred in the Marsh Creek floodplain. Floods took place regularly through the late 19th and early 20th centuries, and the increasing land values and crop investments eventually warranted the construction of flood control infrastructure. In 1959, the District prepared a management plan for the Marsh Creek watershed that called for several structural improvements to reduce flood

damages, including channelizing some waterways and constructing six earth-fill floodwater retarding structures. Marsh Creek Dam/Reservoir, which was completed in 1962, was one of these six structures built as part of the district's plan. All six were of similar design (JRP 2007).

Residential and Commercial Development

Eastern CCC suburbanized during the second half of the 20th century. Cities such as Brentwood, which had formed in the 19th century before remaining small, agricultural towns for decades, transformed into expanses of residential and commercial developments as residents of urban centers increasingly relocated to suburban communities (Contra Costa Times 1960 & 1968). With residential and commercial development accelerating, increasing demand for utilities prompted utility providers to undertake expansion projects. One such expansion project occurred at the Pittsburg Steam Plant, which supplied electricity to consumers in the eastern San Francisco Bay Area and Central Valley via the Tesla Substation in the city of Tracy. The Pittsburg-Tesla Transmission Line was constructed in 1959-1960 to transmit the energy produced from its additions (Historic Resource Associates 2017). Residential development slowed by the end of the century, but it resurged during the early 21st century after the rising costs of living in bayside towns prompted (CCC 2005:2-10; Oakland Tribune 2000, 2009).

Methods

Records Search

GEI archaeologist Amy L. Wolpert, MA, requested a records search at the Northwest Information Center (NWIC) of the project site and a 0.5-mile-buffer of the project area. The NWIC responded to the search request on July 28, 2023 (NWIC File No.: 22-2036). The records search included a review of NWIC's U. S. Geological Survey (USGS) Brentwood and Byron Hot Springs 7.5-minute topographic base maps indicating previously conducted investigations and previously reported cultural resources, California Department of Parks and Recreation (DPR) 523 forms, and California Historic Landmarks documentation.

The NWIC response indicated that 11 previous investigations have occurred at least partially within the project site, combined the previous investigations covered the entirety of the project site. Twenty-two previous investigations have been conducted in the 0.5-mile buffer of the project site.

The NWIC response also indicated that the project site contains six previously identified cultural resources. In addition, 21 cultural resources are within the 0.5-mile buffer of the project area. The cultural resources identified include three built environment resources, two precontact sites, and one historic era archaeological resources. These resources are summarized in **Table 2.5-1**.

Table 2.5-1 Resources within the Project Site

Primary	Trinomial	Type	Age	Name/Description
P-07-000420	CA-CCO-000663H	AH11/AH15	Historic	AM-AN-AO. Small wooden and metal structure likely related to ranching activities, historical plantings, possible cattle loading ramp.
P-07-000429	CA-CCO-000672H	AH05/AH06	Historic	AK/MCR-03. Consists of a cattle ramp and standing wood and metal structure.
P-07-002933	CA-CCO-000797	AP16	Precontact	MCR-09. Buried site, fire affected rock and charcoal.
P-07-002936	CA-CCO-000800	AP16	Precontact	MCR-12. Buried site, fire affected rock.
P-07-002956	N/A	HP11	Historic	Pittsburg-Tesla Transmission Line.
P-07-002991	N/A	HP11/HP21/HP22/HP46	Historic	Marsh Creek Dam. Large area including Dam, Reservoir, remnants of fences and gates.

Source: NWIC File No.: 22-2036

Geoarchaeological Sensitivity

Past geoarchaeological investigations were examined by GEI geoarchaeologist Kyle Brudvik, RPA, to assess the sensitivity of the project site for subsurface archaeological resources.

Past investigations have conducted geoarchaeological studies both within the project site and the local vicinity, including the City of Brentwood (Meyer and Rosenthal 2007; Rosenthal and Meyer 2009). Geoarchaeological investigations within the project site were conducted in support of the Marsh Creek Dam Rehabilitation Project and consisted of a pedestrian survey and excavation of 61 trenches, 50 of which were excavated within the project site. The trenches measured approximately 1 meter in width, 3.9 meters in length, and 3 meters in depth. Nineteen of the trenches were placed east of Marsh Creek Road all within the project site, while 31 were placed west of the road within the project site (Rosenthal and Meyer 2009).

East of Marsh Creek Road the upper 20 to 30 centimeters of deposit consist of a plow zone, i.e., disturbance due to agricultural activity across the entire area. A variety of surface deposits were encountered, ranging from clay loams and silty clay loams to clay and gravelly clay loams. Soils in the area are associated alluvial fans or terraces, all over older alluvial fans/terraces. Developed soils were only identified in six different trenches; five of those trenches found along the southwestern edge of the project site east of Marsh Creek Road; the other trench having a buried soil was located in the center-east. Radiocarbon dates were taken from depth of 260-300 centimeters below the surface (cmbs) and ranged in age from 15,870 calibrated Before Present (cal BP) to 16,590 cal BP, latest Pleistocene. This suggests that deeper deposits are too old to contain evidence of human occupation, they are, however, overlain with late or latest Holocene alluvial floodplain deposits.

West of Marsh Creek Road the surface area is characterized by Brentwood series soils, which occur in gently sloping fans and consist of clay loams or silty clay loams. The investigation found that deposits consisted of fine- and coarse-grained alluvium, ranging in texture from clay loam to sandy gravel. Coarse-grained alluvium consisted of sorted sand, rounded gravel and/or cobbles and were found near the base of the Brentwood series soils. The upper 20 to 30

centimeters of deposit also consisted of plow zone, underlain by undisturbed Brentwood series of weakly, moderately and well-developed soils to an average depth of 1.94 meters below the surface, ranging from 0.2 to 3 meters below the surface. A deeper buried soil was identified in several trenches east of Marsh Creek at depths of 1.1 to 4.1 meters below the surface. Two precontact resources were identified during trenching: a buried site, fire affected rock and charcoal; and a buried site, fire affected rock. Four radiocarbon dates were taken from the west of Marsh Creek Road ranging from the earliest date of 2860 cal BP to a maximum of 15,180 cal BP. One of the dates was taken from a cultural context (the buried site with fire affected rock and charcoal) which had a range of 2860 cal BP to 3070 cal BP. All of the buried cultural finds were located near Marsh Creek. The investigation suggests that Brentwood series soils are very sensitive for buried archaeological resources.

Archaeological Field Survey

GEI archaeologists conducted intensive archaeological pedestrian surveys of the project site on three different occasions. 1) August 17, 2023, by GEI archaeologists Kyle Brudvik, RPA, M.A. and Miles Jenks, M.A.; 2) April 9 and 10, 2024, by Amy Wolpert, M.A. and Andrea Nardin, M.A.; 3) June 6, 2024, by Amy Wolpert. On April 10, a representative from the Wilton Rancheria, Tacante Thomas, was also in attendance.

No newly identified archaeological cultural resources were found during the pedestrian survey. One previously reported resources was relocated and updated. This is summarized below.

P-07-000420 (CA-CCO-000663H) is a historic era resource consisting of three features: Feature 1 is two wooden posts mounting a metal wheel; Feature 2 consists of decorative bushes and plants; and Feature 3 is likely a cattle ramp. Features 1 and 2 were found but there was no evidence for Feature 3; it has likely been destroyed. A previous investigation also conducted limited subsurface testing but no artifacts or features were identified. GEI has recommended the resources as not eligible for listing in the CRHR or the NRHR.

The other two archaeological resources, (the two precontact buried sites with fire affected rock and charcoal) could not be revisited. For purposes of the project, these two resources are being considered eligible for listing in the CRHR.

Built Environment Survey

GEI conducted a built environment survey of the project site on June 6, 2024. Three historic-era resources were identified during the survey: the Pittsburg-Tesla Transmission Line, the Marsh Creek Dam Complex, and an irrigation ditch and check gate.

Discussion

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

Under CEQA, public agencies must consider the effects of their actions on "historical resources." CEQA defines an "historical resource" as any resource listed in or determined to be eligible for listing in the CRHR. The CRHR includes resources listed in or formally determined eligible for listing in the NRHP, as well as some California Historical Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise (California PRC Section 5024.1, 14 CCR Section 4850). The eligibility criteria for listing in the CRHR are presented earlier in this section, including for unique archaeological resources.

GEI identified three historic-era built environment resources in the project site vicinity: the Pittsburg-Tesla Transmission Line, the Marsh Creek Dam Complex, and an irrigation ditch and check gate. All three resources were previously evaluated, and the transmission line was recommended as eligible for the NRHP and the two remaining resources were recommended as not NRHP-eligible. GEI re-visited and re-evaluated the resources for NRHP/CRHR eligibility. GEI recommends the Pittsburg-Tesla Transmission Line as eligible for the NRHP/CRHR and the Marsh Creek Dam Complex and the Irrigation Ditch and Check Gate as not meeting NRHP/CRHR eligibility requirements. The John Marsh Historic District (P-07-00037), an adjacent historic property, is in the vicinity of but outside the project area and it is roughly 300 yards from project activities. As significant properties, both the transmission line and the historic district are considered historical resources per CEQA.

The project would not cause any direct alterations or modifications to the Pittsburg-Tesla Transmission Line and it would remain unchanged. In addition, project activities would not alter the viewshed of the nearby historic district and it would retain its rural character-defining features. Both of these properties would continue to convey their historical significance. Therefore, there would be no impact.

Three archaeological resources were identified as being within the project site: P-07-000420 (CA-CCO-000663H), P-07-002933 (CA-CCO-000797) and P-07-002936 (CA-CCO-000800). P-07-000420 (CA-CCO-000663H) is not recommended as eligible for listing in the CRHR, does not appear to have a subsurface component, and would regardless not be impacted by project components. P-07-002933 (CA-CCO-000797) and P-07-002936 (CA-CCO-000800) are both being considered eligible for listing in the CRHR for purposes of the project. Both of the resources are buried precontact sites: no project components involving excavation are occurring within resource boundaries and surface traffic would not impact the resources since they are buried. Ground disturbing activities, however, would occur near P-07-002936 (CA-CCO-000800). Examination of previous geoarchaeological studies indicates that the area west of Marsh Creek Road near Marsh Creek is sensitive for buried archaeological resources. Likewise, the full extent of P-07-002936 (CA-CCO-000800) is unknown. It is possible, therefore, that unknown archaeological resources may be inadvertently discovered or that P-07-002936 (CA-

CCO-000800) may extend into areas of the project site where the ground would be disturbed. If this were to occur, then a **potentially significant** impact would occur.

Mitigation Measures

The following mitigation measures have been identified to address this potential impact.

Mitigation Measure CUL-1: Environmentally Sensitive Area.

An Environmentally Sensitive Area (ESA) shall be established in areas where excavation in previously undisturbed soil would occur with potential to impact Tribal Cultural Resources. The ESA will exclude sediments that have accumulated in the wet pool, as delineated in the archaeological monitoring plan. The horizontal and vertical ESA shall be delineated on all project construction plans. A vertical ESA limit of 12 feet will be established, and no Project-related activities (e.g., excavation, trenching) shall take place below the vertical ESA limit.

The ESA will also establish exclusion zones with a 100-ft buffer around resources within and adjacent to the Project footprint and be physically delineated with orange safety fencing. No Project-related activities (e.g., excavation, trenching, staging, equipment parking) shall take place within the exclusion zones of the ESA that is within the orange safety fencing.

An archaeological monitoring plan shall be prepared prior to any ground disturbance. The plan shall outline the procedures for discoveries during construction; the chain of command and responsible parties; and special procedures should human remains be encountered. The AMP shall identify a safe and secure climate-controlled location for storage of cultural resources should storage of a potentially significant finding be recommended by Tribal representatives.

Archaeological monitoring by a qualified archaeologist shall be conducted during all ground disturbing activities within the boundaries of the Environmentally Sensitive Area between current ground surface and 12 feet below current ground surface. A daily archaeological monitoring log shall be completed by the archaeological monitor and submitted weekly to the District for review. Should archaeological resources or human remains be encountered the procedures outlined in the monitoring plan shall be implemented.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Mitigation Measure CUL-2: Archaeological and Native American Monitoring.

Prior to ground disturbing activities within ESA limits, Tribal monitor(s) shall be retained. Tribal monitoring by a qualified Tribal monitor approved on this project pursuant to Assembly Bill 52 shall be conducted during all ground disturbing activities

within the boundaries of the Environmentally Sensitive Area between ground surface and 12 feet below current ground surface.

The District shall invite representatives from Wilton Rancheria and the Confederated Village of Lisjan Nation (the "Tribes") to monitor the active areas of the Project within the ESA, including any soil piles, trenches, or other disturbed areas. The Tribes shall be notified with accurate times and dates of all ground disturbing activities at least 48 hours prior to start of construction. Tribal monitor(s) will have the authority to halt and redirect work should any archaeological or tribal cultural resources be identified during monitoring. Monitoring may be reduced or halted at the discretion of the Tribal monitor, in consultation with the District, as warranted by conditions such as encountering bedrock, sediments being excavated are fill, negative findings during the first 50 percent of the entire area of ground disturbance, etc. If monitoring is reduced to spot checking, spot checking shall occur when ground disturbing activities moves to a new location within the project site and when ground disturbance

If no Tribal monitor is available to monitor on a given day, an agreement will be made to periodically inspect the active site of the Project, including any soil piles, trenches, or other disturbed areas within the timeframe that is consistent with the contractor's scheduled activities. The Tribes shall still be notified at least 48 hours prior to all ground disturbing activities not previously agreed upon.

The Tribal monitor(s) shall complete daily monitoring logs that provide descriptions of the day's activities, including construction activities, locations, soil, and any cultural materials identified. During excavation or other substantial subsurface disturbance activities within the ESA, all construction personnel and on-site staff must follow procedures and direction of Tribal monitor if any cultural materials are observed.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Mitigation Measure CUL-3: Inadvertent Discovery Procedures.

Procedures for discovery include:

If potential archaeological or Tribal cultural resources materials are encountered during construction, the Contractor shall cease all ground disturbing activities within a 100-foot radius of the find and the find must be evaluated for listing in the CRHR and NRHP. The Contractor shall immediately notify the District Resident Engineer or their designated representative to request a qualified archaeologist, a Confederated Villages of Lisjan Nation representative, and a Wilton Rancheria representative to assess the nature and significance of the find to determine if the find is a Tribal Cultural Resource and thus significant under CEQA and/or the Tribe. The archaeologist shall stake the area of discovery, placing stakes no more than 10 feet apart, forming a circle having a radius of no less than 100 feet from the point of discovery.

If the finding(s) is not determined to be potentially significant, work may resume. If the finding(s) is determined to be potentially significant, the archaeologist in consultation with the Tribal representatives shall develop a mitigation plan (also known as data recovery plan) outlining management of the resource, analysis, reporting of the find, and curation or reburial of cultural items. The plan shall be implemented by the District in accordance with state guidelines and in consultation with the consulting Tribe. The mitigation plan shall include avoidance of the resource or, if avoidance of the resource is not feasible, the plan shall outline appropriate treatment of the resource in coordination with the consulting Tribe and, if applicable, a qualified archaeologist. Examples of appropriate mitigation for the Tribal cultural resources include, but are not limited to, protecting the cultural character and integrity of the resources, protecting traditional use of the resources, protecting the confidential.

Any previously undiscovered resources found during construction within the Project Site shall be recorded on appropriate California Department of Parks and Recreation (DPR) 523 forms and shall be submitted to Contra Costa County Department of Conservation and Development, the Northwest Information Center (NWIC), and the California Office of Historic Preservation (OHP), as required.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Mitigation Measure CUL-4: Cultural Awareness Training.

Contractor shall be notified of the possibility of encountering historic or archaeological materials during ground-disturbing activities. A standard inadvertent discovery clause will be included in every construction contract to inform Contractors of requirements during construction.

Prior to the initiation of construction activities, a qualified archaeologist and Tribal monitor shall provide Cultural Awareness Training (CAT) to construction personnel and any other key personnel participating in work, including the resident engineer, Contractor supervisor, and District project management staff. CAT training will include:

- An overview of applicable laws, protocols for avoidance, and consequences of violating State laws and regulations.
- Project mitigation measures, and procedures to be follow and who to contact if any potential to historical, archaeological, and Tribal resources are encountered over the course of the Project.
- Underscore the requirement for confidentiality and culturally appropriate treatment of any kind of significance to Native Americans and behaviors consistent with Native American Tribal values.

- Upon completion, individuals shall sign a form that acknowledges receipt and understanding of the training.

Timing: Before and during construction

Responsibility: District and its contractor(s)

The implementation of **Mitigation Measures CUL-1** through **CUL-4** (and Mitigation Measure TCR-1 [refer to Section 2.18, "Tribal Cultural Resources"]) would lessen impacts on unknown historic resources by establishing an ESA, conducting monitoring during ground disturbing activities, providing cultural awareness training to all on-site project personnel, and applying specific procedures to follow if in inadvertent discovery of resource(s) were to occur. All on-site project personnel would be aware of what may be found during construction activities and halt work to coordinate with the appropriate Tribal monitor and/or project professional for investigation and treatment of the resource, if needed. Therefore, this impact would be **less-than-significant with mitigation incorporated**.

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

No unique archaeological resources have been identified within the project site. However, given the identification of cultural resources within the project site and extensive cultural resources in close proximity to the project site, it is possible that a unique archaeological resource might be inadvertently identified during project related activities. If this were to occur, a **potentially significant** impact would occur.

Mitigation Measures

The following mitigation measures have been identified to address this potential impact.

Mitigation Measure CUL-1: Environmentally Sensitive Area.

Please see Mitigation Measure CUL-1, above, for the full text of this mitigation measure.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Mitigation Measure CUL-2: Archaeological and Native American Monitoring.

Please see Mitigation Measure CUL-2, above, for the full text of this mitigation measure.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Mitigation Measure CUL-3: Inadvertent Discovery Procedures.

Please see Mitigation Measure CUL-3, above, for the full text of this mitigation measure.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Mitigation Measure CUL-4: Cultural Awareness Training.

Please see Mitigation Measure CUL-4, above, for the full text of this mitigation measure.

Timing: Before and during construction

Responsibility: District and its contractor(s)

The implementation of Mitigation Measures CUL-1 through CUL-4 (and Mitigation Measure TCR-1 [refer to Section 2.18, "Tribal Cultural Resources"]) would lessen impacts on unknown archeological resources by establishing an ESA, conducting monitoring during ground disturbing activities, providing cultural awareness training to all on-site project personnel, and applying specific procedures to follow if in inadvertent discovery of resource(s) were to occur. All on-site project personnel would be aware of what may be found during construction activities and halt work to coordinate with the appropriate Tribal monitor and/or project professional for investigation and treatment of the resource, if needed. Therefore, this impact would be **less-than-significant with mitigation incorporated**.

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

No human remains have been identified within the project site either during the pedestrian survey conducted for the project or during past investigations. However, consultation with California Native American Tribes and previous investigations did find that in the region and similar context of the project site, interred human remains have previously been identified; therefore, it is possible that buried human remains exist within the project site. It is possible, therefore, that human remains may be inadvertently disturbed. If this were to occur, then a **potentially significant** impact would occur.

Mitigation Measures

The following mitigation measure has been identified to address this potential impact.

Mitigation Measure CUL-5: Impact to Previously Undiscovered Human Remains.

In the event of the accidental discovery or recognition of any human remains, all work within 100 feet of the remains should be redirected and the County Coroner notified immediately. There shall be no further excavation or disturbance within 100 feet of the remains until the Contra Costa County Coroner determines whether the remains are Native American and if an investigation of the cause of death is required. At the same time, an archaeologist shall be contacted to assess the situation.

If the Coroner determines the remains to be Native American, the Coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours of this identification. The NAHC shall identify a Most Likely Descendant (MLD) to inspect the

site and provide recommendations for the proper treatment of the remains and associated funerary objects.

Once NAHC identifies the MLD, the Tribe shall make every effort to recommend keeping ancestral remains and funerary objects in situ and protected. If removal of burials is necessary, Tribal representatives shall work with the qualified archaeologist to ensure that excavation and documentation are treated carefully, ethically, and respectfully. No photography or testing, shall be conducted on Native American human remains. All bone, if not identifiable as human or animal, shall be treated as human remains and the appropriate protocols followed. The archaeologist shall recover scientifically-valuable information, as appropriate and in accordance with the recommendations of the MLD and/or Tribal representative. The archaeologist shall prepare a report of all activities, including the recommendations for the treatment of the human remains and any associated funerary objects as provided by the MLD. The report shall be submitted to the District, the Northwest Information Center, and the Tribe.

Tribal representatives shall rebury the Native American human remains and associated funerary objects with appropriate dignity either: 1) In accordance with the recommendations of the MLD if available; or 2) In the project vicinity at a location mitigated between the Tribal representative and the District, where the reburial would be protected in perpetuity and would not be subject to further subsurface disturbance. The discovery is to be documented on DPR523 forms and otherwise kept confidential and secure to prevent any further disturbance.

A potential reburial location will be identified prior to commencing ground disturbing activities, as mediated between Tribal representatives and the District.

All treatment recommendations made by the tribe and other cultural resources specialists will be documented in the confidential portion of the Project record. Work in the area(s) of the cultural find may only proceed after authorization from the lead agency in coordination with the Tribe.

Timing: Before and during construction

Responsibility: District and its contractor(s)

The implementation of **Mitigation Measure CUL-5** would reduce the potential impact related to discovery of unknown human burials because avoidance measures and specific procedures would be implemented. Therefore, this impact would be less **than-significant with mitigation incorporated**.

2.6 Energy

#6. ENERGY

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#6 -a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	No	No	**Yes**	No	No
#6 -b. Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?	No	No	No	**Yes**	No

Environmental Setting

California has committed to achieving 100 percent carbon-free electricity by 2045 through Senate Bill 100, the 100 Percent Clean Energy Act of 2018. Pacific Gas and Electric (PG&E) provides electrical and natural gas services to Contra Costa County. The California Energy Commission shows that Contra Costa County consumed approximately 8337 million kilowatts per hour in 2022 (CEC 2022).

Discussion

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

The project would involve the use of gas- and diesel-fueled vehicles and equipment during construction activities, and from import and export of materials to and from the project site. Construction activities would occur over an approximately 3-year period, and the project's use of energy resources during construction would be non-recoverable, but temporary. Project construction would temporarily increase fuel consumption; however, it is anticipated that fuel would only be used to the extent it is needed to complete construction activities and would not be consumed in a wasteful manner during construction. Additionally, the selected construction contractor(s) would use the best available engineering techniques, construction practices, and equipment operating procedures. O&M activities would result in the consumption of minor amounts of energy resources from the use of vehicles and equipment. However, O&M activities would be similar to current conditions and therefore would not result in wasteful, inefficient, or unnecessary consumption of energy resources.

The project would not change the use of existing utilities in the area or include energy-consuming structures or facilities. Therefore, the project's energy consumption for construction and operations would not be considered wasteful, inefficient, or unnecessary and this impact would be **less than significant**.

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

The County's 2024 CAAP contains local energy provisions and codes that govern efficient energy use within the County, consistent with Senate Bill 100, which commits the State achieve 100 percent zero-carbon resources by 2045 (Contra Costa County 2024). The project would use energy resources during construction which would be non-recoverable but temporary, however, the project would result in very minimal operational energy usage resulting from maintenance activities (minor amounts of energy resources from the use of vehicles and equipment). The project would not conflict or obstruct California's climate commitment. Therefore, the project would not conflict with any State standards or renewable energy plans. **No impact** would occur.

2.7 Geology and Soils

#7. GEOLOGY AND SOILS. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#7 -a. 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 California Geological Survey Special Publication 42.)	No	No	No	**Yes**	No
#7 -a. ii. Strong seismic ground shaking?	No	No	**Yes**	No	No
#7 -a. iii. Seismic-related ground failure, including liquefaction?	No	No	**Yes**	No	No
#7 -a. iv. Landslides?	No	No	**Yes**	No	No
#7 -b. Result in substantial soil erosion or the loss of topsoil?	No	No	**Yes**	No	No
#7 -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 offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	No	No	**Yes**	No	No
#7 -d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated),), creating substantial direct or indirect risks to life or property?	No	No	**Yes**	No	No
#7 -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?	No	No	no	**Yes**	No
#7 -f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	No	No	**Yes**	No	No

Environmental Setting

Geology and Soils

The project site falls within the Coast Range geomorphic province and is just outside the Great Valley (CGS 2002). Bedrock at the site consists of Upper Cretaceous marine sedimentary rocks, including sandstone, shale, and conglomerate. Soils are mapped almost exclusively of Brentwood clay loam (NRCS 2021). To the west of Marsh Creek are areas of Altamont clay,

with 9 to 15 percent slopes, and Altamont-Fontana complex, with 30 to 50 percent slopes, in the central and northern portions of the Marsh Creek channel, respectively.

The Brentwood soil series developed from alluvium derived from sedimentary rock. They are described as moderately well- to well-drained clay loams that have very slow to medium runoff and moderately slow permeability (NRCS 2021). The Altamont series are deep, well-drained clay soils that formed from weathered sandstone and shale and are typically located on gently sloping to steep slopes (NRCS 2021).

The Greenville Fault Zone is located approximately 6 miles southwest of the project site and is identified as an Alquist-Priolo Fault Zone (CGS 2024; Hart 1981). This dextral strike-slip fault zone extends northwest through the Livermore Valley, following the Marsh Creek and Clayton Faults toward Clayton Valley (Bryant and Cluett 2002). The nearest known potentially active (Halocene or Historic) fault to the project site is the Marsh Creek-Greenville section of the Greenville Fault Zone, which spans approximately 35 km of the fault's total 91 km length and is classified as a late Quaternary fault active during the Holocene epoch (Bryant and Cluett 2002).

Within the southern extent of the project site, an unnamed pre-Quaternary fault line trends in a north-northwest to south-southeast direction. Additionally, five other unnamed pre-Quaternary fault lines and the Antioch fault line, a Quaternary age undifferentiated, are located within 2 miles of the project site to the northwest, north, and east (DOC 2015). These faults are considered inactive based on current geologic mapping and analysis.

Seismic and Geologic Hazards

Surface Fault Rupture

Seismically-induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude, sense, and nature of fault rupture can vary for different faults or even along different segments of the same fault. Ground rupture is considered more likely along active faults. The project site is not within an Alquist-Priolo Fault Rupture Hazard Zone, as designated through the Alquist-Priolo Earthquake Fault Zoning Act, and no mapped active faults are known to pass through the immediate project vicinity (CGS 2024). The purpose of the Alquist-Priolo Act is to regulate development and prohibit construction on or near active fault traces to reduce hazards associated with fault rupture. The Alquist-Priolo Earthquake Fault Zones are the regulatory zones delineated on maps that include surface traces of active faults.

Ground Shaking

Areas most susceptible to intense ground shaking are those located closest to an earthquake-generating fault, and areas underlain by thick, loosely unconsolidated, and saturated sediments. Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. Contra Costa County has experienced several seismic events, originating both on faults within the county and in other parts of the region. Since 1800, six major Bay Area earthquakes have impacted Contra Costa

County, with at least two of the faults responsible for these events running through or into the county. Contra Costa County was included in a FEMA major disaster/emergency declaration following the Loma Prieta Earthquake in October 1989 (Contra Costa County 2024).

Liquefaction

Liquefaction is a phenomenon where unconsolidated and/or near saturated soils lose cohesion and are converted to a fluid state as a result of severe vibratory motion. The relatively rapid loss of soil cohesion during strong earthquake shaking results in the temporary fluid-like behavior of the soil. Soil layers with high potential for liquefaction include unconsolidated sands and fine-grained material. The Brentwood quadrangle, of which the project site is located, is an identified Earthquake Zone of Required Investigation. The project site is mapped within a liquefaction zone (CGS 2018).

Landslides

Landslides are deep-seated ground failures (several tens to hundreds of feet deep) in which a large section of a slope detaches and slides downhill. In Contra Costa County, landslides are commonly triggered by heavy rainfall, with the potential for landslides increasing during severe storms that saturate steep, loose soils. Earthquakes can also induce landslides, and the county's upland areas are particularly susceptible to such events (Contra Costa County 2024). The California Geological Survey identifies several areas surrounding the project site and along Marsh Creek as landslide zones (CGS 2018).

Geologic Hazards

Expansive Soils

Expansive soils are predominantly comprised of clays, which expand in volume when water is absorbed and shrink when the soil dries. Expansion is measured by shrink-swell potential, which is the volume change in soil with a gain in moisture. Soils with a moderate to high shrink-swell potential can cause damage to roads, buildings, and infrastructure (NRCS 2004). Much of the soil in the county is considered expansive (Contra Costa County 2024). As described above, the project site's soils are predominantly made up of clay loam, which is not considered highly expansive.

Land Subsidence

Subsidence is the gradual settling or sudden sinking of the ground surface resulting from subsurface movement of earth materials. There are multiple causes and types of subsidence including decomposition of peat, pumping of groundwater, tectonic activity, and possibly gas or oil extraction. The project site is not located within an area known to experience significant subsidence (USGS 2024).

Unique Geologic Features and Paleontological Resources

Unique geologic features are generally defined as those that are unique (i.e., rare and/or singular) in the broad field of geology. These may include certain minerals, type locations (i.e., locations

where a geologic unit was first described/named), a representative of an important geologic principle, something notable/unique to the history of geology, a distinctive section that is used repeatedly for teaching or instruction, or units/outcrops that contribute to important natural habitats and/or ecology. There are no unique geologic features within the project site or vicinity.

Paleontological resources are the fossilized remains or impressions of plants and animals, including vertebrates (animals with backbones; mammals, birds, fish, etc.), invertebrates (animals without backbones; starfish, clams, coral, etc.), and microscopic plants and animals (microfossils). They are valuable, nonrenewable, scientific resources used to document the existence of extinct life forms and to reconstruct the environments in which they lived (Society of Vertebrate Paleontology [SVP] 2010).

Paleontological remains may be found in numerous types of rock formations. In the Bay Area, fossilized plants, animals, and microorganisms occur primarily in marine and non-marine (fluvial) sedimentary rock. The potential to preserve fossils in a particular rock formation depends on the depositional environment in which it was formed. For example, fast moving currents that form deposits of gravel and cobbles are less likely to preserve the remains of organisms than gently flowing currents that deposit mud and silt. Thus, the most fossil-bearing geologic units in Contra Costa County occur in rocks that formed in relic. marine environments such as inland embayment, coastal areas, and extensive inland bays. There are a total of 2,577 fossil localities in Contra Costa County according to the UC Museum of Paleontology Localities database. Most of these are invertebrate; 261 are vertebrates (Contra Costa County 2024).

As discussed above, geologic formations at the project site consists of Upper Cretaceous marine sedimentary rocks, including sandstone, shale, and conglomerate. These geologic units typically have higher paleontological sensitivity based on their rock type, which is primarily sandstone and shale (Contra Costa County 2024). Further, studies have been conducted for the City of Brentwood 2014 General Plan Update, which includes the project site as part of its planning area. These studies found that no significant fossils deposits were found in the project site; however, geologic conditions within the project site and surrounding area provide suitable conditions for the possibility of fossils to exist at depths of five to ten feet below the ground surface, which is consistent with the findings of the County's General Plan (City of Brentwood 2014; Contra Costa County 2024).

Discussion

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?

The project site is not located within an Alquist-Priolo Earthquake Fault Zone and there are no known active faults within or adjacent to the project site. Therefore, the project would have no effect on surface fault ruptures or increase risk of loss, injury, or death from surface fault ruptures. **No impact** would occur.

ii) Strong seismic ground shaking?

Contra Costa County has a history of seismic activity. The nearest known potentially active fault is approximately 6 miles southwest of the project site. This fault and others in the region have the potential to subject the project site and area to ground shaking. During project construction activities, ground shaking could expose persons working at the project site to seismic hazards while operating heavy equipment. The District and its contractors would be required to adhere to all California Division of Occupational Safety and Health (Cal/OSHA) requirements within active construction sites for the safety of all construction workers onsite.

The project includes removing, drying, and disposing of sediment; creating a high flow diversion channel; restoring habitat; cleaning and maintaining the existing primary outfall gate; and installing cattle exclusion fencing. The project does not include any permanent structures, including any that would house people. Further, the project design would comply with the California Building Code (CBC) which is based on, but more detailed and stringent than, the Federal Uniform Building Code. Chapter 18 of the CBC regulates excavation and geotechnical considerations, and Appendix J of the CBC addresses grading, excavation, fill, drainage, and erosion control considerations. Therefore, there would be no significant impact to people or structures from any seismic-related activity as a result of implementation of the project. This impact would be **less than significant**.

iii) Seismic-related ground failure, including liquefaction?

The project site is located within a mapped liquefaction zone as designated by the California Geologic Survey (CGS). Soils in the project site, including Brentwood clay loam and Altamont series soils, are predominantly clay, which are generally less susceptible to liquefaction compared to unconsolidated sands and fine-grained soils. However, localized areas with near-saturated conditions may exhibit increased susceptibility. Despite this, the project does not include the construction of permanent structures or habitable facilities. Project activities, such as sediment removal, habitat restoration, and the creation of a high flow diversion channel, would not result in substantial new risks of liquefaction-related ground failure. Compliance with applicable CBC requirements and Contra Costa County building permit, including geotechnical recommendations for grading and compaction, would further reduce potential risks. As such, potential impacts related to liquefaction would be considered **less than significant**.

iv) Landslides?

The project site and surrounding areas are partially mapped as landslide zones by the CGS. Landslides in the area are typically triggered by heavy rainfall or seismic activity, especially on

steep slopes. While certain areas west of Marsh Creek exhibit slopes of 9 to 50 percent, project activities are not expected to increase landslide risks. The high flow diversion channel and other project elements would be designed and implemented in a manner that stabilizes slopes and minimizes erosion. Furthermore, no permanent infrastructure is proposed that would be susceptible to landslide damage. Based on these factors, potential impacts related to landslides would be considered **less than significant**.

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

The project involves activities such as sediment removal, the creation of a high flow diversion channel, and the establishment of a sediment drying and stockpiling area, which have the potential to disturb soils and contribute to erosion or the loss of topsoil. The project site's soils, primarily Brentwood clay loam and Altamont series soils, are moderately well- to well-drained but may experience slow to medium runoff and erosion, particularly on steeper slopes. During construction, the removal and stockpiling of soil within the sediment drying and stockpiling areas, as well as other project activities may temporarily increase the potential for soil erosion.

To minimize these risks, the project would implement comprehensive erosion control measures as part of the construction process such as installing silt fences, stabilizing soils with vegetation, and covering soil stockpiles with tarps or other materials to reduce wind and water erosion. This would prevent long-term erosion and contribute to soil stability. Furthermore, the project would comply with all applicable regulatory requirements, including the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) under the NPDES Construction General Permit (CGP). The SWPPP would outline site-specific measures to control soil erosion and sediment discharge during and after construction (refer to Section 2.10, "Hydrology and Water Quality," for more details on the project's SWPPP). Given the implementation of these measures, the project is not anticipated to result in substantial soil erosion or the loss of topsoil. Impacts 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 offsite landslide, lateral spreading, subsidence, liquefaction or collapse?

Refer to Impact 2.7(a.ii) and 2.7(a.iv), above. During project construction activities, unstable soils could expose persons working in the project site to hazards while operating heavy equipment. The District and its contractors would be required to adhere to all California Division of Occupational Safety and Health (Cal/OSHA) requirements for working within active construction sites for the safety of all construction workers onsite.

As discussed previously, the project design would comply with the CBC, which regulates the design of projects to reduce potential hazards, including landslides, lateral spreading, subsidence, liquefaction or collapse. Therefore, relative to existing conditions, the project would not expose people or structures to new potential substantial adverse effects related to unstable soils. Impacts would be **less than significant**.

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

As described above, the project site's soils are predominantly made up of Brentwood clay loam and Altamont series soils, which are not considered highly expansive. Therefore, it is unlikely that the project would result in direct or indirect risks to life or property as a result of being located on expansive soils. Additionally, the project would adhere to geotechnical recommendations for soil management and grading, as well as all applicable CBC requirements, which include provisions to mitigate risks associated with expansive soils. These measures would appropriately address the potential for soil-related hazards during project implementation. For these reasons, this impact would be **less than significant**.

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 would not require the use of septic tanks or alternative wastewater disposal systems. During project implementation, the District or the contractor may have portable toilet facilities available onsite temporarily for use by construction workers. Once project-related construction activities are concluded, such portable facilities would be removed, and the wastewater properly handled and disposed in accordance with all applicable laws and regulations. There would be **no impact** associated with wastewater disposal.

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

The likelihood of discovering paleontological resources depends on the underlying geologic formation. In general, Holocene-age surface sediments have low paleontological sensitivity because most Holocene fossils are of extant species. Furthermore, previously disturbed soils, or fill sediments, are not considered paleontologically sensitive.

The project site is located on marine sedimentary rocks, which are highly sensitive for paleontological resources. However, the overlying soils in the project site are formed in alluvial fans of Holocene-age materials, which contain low paleontological sensitivity. As described above, previous studies conducted within the project vicinity found that no significant fossils were found in the project site; however, geologic conditions within the project site and surrounding area provide suitable conditions for the possibility of fossils to exist at depths of five to ten feet below the ground surface.

Although the removal of mercury-laden soils within the Reservoir wet pools would include excavation and ground-disturbing activities, there is very low potential to disturb unique paleontological resources because of the already-developed/disturbed dam and levee surrounding the Reservoir wet pool area. Additionally, the proposed restoration activities, plantings, and

wildlife-friendly fencing include minimal ground-disturbance at nominal depths. Furthermore, the placement of sediment in the stockpile area would not have the potential to impact paleontological resources because soils would be placed on the surface and not include excavation. Based on the proposed depth of ground disturbance for project work, as well as the nature of the project, it is anticipated that younger Holocene-aged deposits and previously disturbed sediments would be encountered, and it is unlikely that underlying marine sedimentary rocks would be impacted. Therefore, there is a very low likelihood that unknown paleontological resources would be encountered at the project site during project activities. This impact would be **less than significant**.

2.8 Greenhouse Gas Emissions

#8. GREENHOUSE GAS EMISSIONS

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#8 -a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	No	**Yes**	No	No	No
#8 -b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	No	No	**Yes**	No	No

Environmental Setting

Greenhouse gas (GHG) emissions are defined as carbon dioxide, Methane, Nitrous Oxide, Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride. Senate Bill 32 (Health & Safety Code § 38566) set a Statewide emission reduction mandate of 40 percent below 1990 levels by 2030. The California Air Resources Board (CARB) was appointed to develop policies to achieve this goal. Additionally, Executive Order B-55-18 set a target of Statewide carbon neutrality by 2045 (State of California 2018). In 2022, CARB published an updated Climate Change Scoping Plan, the 2022 Scoping Plan for Achieving Carbon Neutrality (CARB 2022).

GHGs are present in the atmosphere naturally, released by natural and human-caused sources, and formed from secondary reactions taking place in the atmosphere. Human sources include emissions associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural sectors. Evidence establishes that GHG emissions from locations around the world contribute to global climate change, which would have drastic impacts related to flooding and other natural disasters, agriculture, habitats, water supply, and the economy.

On November 5, 2024, Contra Costa County adopted the 2024 Climate Action and Adaptation Plan (CAAP) Update, which replaces the 2015 Climate Action Plan. The 2024 CAAP Update provides an updated baseline emissions inventory and forecast for the unincorporated areas of the county, which aligns Contra Costa County's GHG reduction efforts with State-recommended targets of Assembly Bill 1279. The 2024 CAAP Update is a comprehensive plan for the reduction of GHG emissions through a series of actions and strategies that would be undertaken by Contra Costa County, identifies strategies and measures to meet the State's GHG reductions targets, and includes an adaptation plan that recommends actions to reduce the community's vulnerability to the anticipated impacts of climate change (Contra Costa County 2024).

BAAQMD has not established construction-related GHG thresholds. Instead, BAAQMD's approach to developing thresholds of significance for climate impacts is to use a "fair share"

approach for determining whether an individual project's GHG emissions would be cumulatively considerable. If a project would contribute its "fair share" of what is needed to achieve the State's long-term GHG reduction goals, then the lead agency can find that the project is adequately contributing to solving the problem of global climate change and that project's impact is not significant (BAAQMD 2022). The BAAQMD has established design elements for land use projects and plans to help achieve California's long-term climate goal of carbon neutrality by 2045, however, these are not applicable as the project is not a land use project.

Discussion

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

The proposed project would generate GHG emissions from the use of equipment and vehicles operating during the construction. However, these emissions would be short-term and temporary and would cease upon completion of the project. The project would generate approximately 1,283 metric tons (MT) of carbon dioxide equivalents (CO2e) during 2026, and 1,914 MT CO2e in 2027. Neither the County nor BAAQMD has an adopted threshold of significance for construction related GHG emissions and does not require quantification. Therefore, due to the temporary nature of GHG emissions and the short construction timeline (15 months), the project would result in a **less-than-significant** impact. However, in order to minimize GHG emissions and emissions, BAAQMD recommends that projects should incorporate the best management practices for reducing GHG emissions listed in their *CEQA Guidelines, Table 6-1* (shown here as Mitigation Measure GHG-1) to reduce emissions from construction-related activities.

Mitigation Measure GHG-1: Best Management Practices for Construction-Related GHG Emissions.

The District will implement the following BMPs to reduce GHG emissions to the extent feasible, and if equipment is available at the time of construction.

- Use zero-emission and hybrid-powered equipment where commercially available and operationally feasible.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 2 minutes (A 5-minute limit is required by the state airborne toxics control measure [Title 13, Sections 2449(d)(3) and 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site and develop an enforceable mechanism to monitor idling time to ensure compliance with this measure.
- Prohibit off-road diesel-powered equipment from being in the "on" position for more than 10 hours per day, when feasible.
- Use California Air Resources Board–approved renewable diesel fuel in off-road construction equipment and on-road trucks.

- Require all construction equipment is maintained and properly tuned in accordance with manufacturer's specifications. Equipment should be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Use locally sourced or recycled materials for construction materials (goal of at least 20 percent based on costs for building materials and based on volume for roadway, parking lot, sidewalk and curb materials). Wood products used should be certified through a sustainable forestry program.
- Use low-carbon concrete, minimize the amount of concrete used and produce concrete on-site if it is more efficient and lower emitting than transporting ready-mix.
- Develop a plan to efficiently use water for adequate dust control since substantial amounts of energy can be consumed during the pumping of water.

Timing: During construction activities

Responsibility: District and its contractor(s)

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

The project would not conflict with any outlined actions and strategies that would be undertaken by Contra Costa County as part of the 2024 CAAP Update, or the BAAQMD's 2017 Bay Area Clean Air Plan, to meet the State's GHG reductions targets and reduce the community's vulnerability to the anticipated impacts of climate change. The project would temporarily emit GHG emissions during construction, however, following the completion of construction activities, the majority of GHG emissions would cease. The project would generate minimal GHG emissions during operation and maintenance from general maintenance activities detailed in Chapter 2 "Project Description." However, these impacts would be minimal and maintenance activities would be similar to current conditions. Therefore, this impact would be **less than significant.**

2.9 Hazards and Hazardous Materials

#9. HAZARDS AND HAZARDOUS MATERIALS.

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#9 -a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	No	No	**Yes**	No	No
#9 -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	No	**Yes**	No	No
#9 -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	No	No	**Yes**	No
#9 -d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	No	No	No	**Yes**	No
#9 -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?	No	No	No	**Yes**	No
#9 -f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	No	No	**Yes**	No	No
#9 -g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	No	**Yes**	No	No	No

Environmental Setting

The project site and immediate area is largely undeveloped, and includes the Reservoir, dam, levee, and surrounding open space which was historically used for agriculture production. Additionally, there is an abandoned mercury mine located upstream of the project area at the base of Mount Diablo.

Hazardous Material Sites

A database search was conducted including all data sources in the Cortese List (enumerated in Public Resources Code (PRC) Section 65962.5). These sources include the GeoTracker database, a groundwater information management system that is maintained by State Water Resources Control Board (SWRCB); the Hazardous Waste and Substances Site List (i.e., the EnviroStor database), maintained by the California Department of Toxic Substances Control (DTSC); and the EPA Superfund Site database (DTSC 2025a,b; SWRCB 2025a,b; CalEPA 2019). The project site does not include hazardous materials sites compiled pursuant to Government Code Section 65962.

Schools

There are no schools located within 0.25-mile of the project site. The nearest school facility to the project site is Los Medanos College, located approximately 0.34 miles north of the project site. Oak Tree Elementary School is located approximately 2.02 miles north of the project site.

Airports

The project site is not located within 2 miles of a public or public use airport The nearest airport to the project site is Byron Airport, which is located approximately 5.8 miles southeast of the project site. The project site is not located within an airport influence area (Contra Costa County 2000).

Emergency Operations, Response and Evacuation

The Contra Costa County Fire Protection District provides fire protection, as well as emergency medical services and ambulance transport services to unincorporated Contra Costa County. However, all fire protection agencies within Contra Costa County have signed mutual-aid agreements to provide assistance to neighboring agencies. The nearest fire station to the project site is the Contra Costa County Fire Station 92, which is approximately 2.5 miles north of the project site.

Contra Costa County has prepared the 2024 Hazard Mitigation Plan which serves the county as a guide to become more resilient to natural, human-caused, and technological hazards (Contra Costa County 2024a). The 2024 Hazard Mitigation Plan documents historical disasters, assesses probabilistic disasters through the Federal Emergency Management Agency's (FEMA) Hazus[2] and GIS analysis, and addresses specific strategies to mitigate the potential impacts of these disasters. Contra Costa County has identified 47 mitigation actions, one of them being to partner with cities and public protection agencies to delineate evacuation routes, identifying their capacity, safety, and viability under different hazard scenarios, as well as emergency vehicle

[2] FEMA's Hazus Program provides standardized tools and data for estimating risk from earthquakes, floods, tsunamis, and hurricanes.

routes for disaster response, and where possible, alternate routes where congestion or road failure might reasonably be expected to occur (Contra Costa County 2024).

Wildland Fires

The project site is located in a high fire hazard severity zone in a State Responsibility Area (SRA); meaning the State of California, or the California Department of Forestry and Fire Protection (CALFIRE) has financial responsibility for fire protection. Additionally, the project site is located approximately 1-mile from a very high fire hazard severity zone in SRA (CALFIRE 2023).

From 2010 to 2022, there were 24 wildfires in Contra Costa County and most burned over 100 acres, however, some burned considerably more acreage (Contra Costa County 2000). Wildfires may start in natural areas but can easily spread to developed areas bordering wildlands; these areas are called the Wildland-Urban Interface (WUI). While the project site is not located within a WUI, it is located within a wildfire influence zone, meaning it has wildland vegetation up to 1.5 miles from WUI (CALFIRE 2019).

Methodology

In order to quantify levels of contaminants in the project area, inform design of the project, and support permitting for the project, a Pre-Dredge Sediment Evaluation Report (hereafter, "Report") was prepared for the CVRWQCB (Contra Costa County Flood Control and Water Conservation District 2025). The Report summarizes sediment and soil sampling activities conducted in the project area, presents the results of those sampling activities, compares the soil sampling findings with CVRWQCB screening values for drinking water (refer to Section 2.10, "Hydrology and Water Quality," for more details relevant to water quality/constituents of concern), and proposes a soil sampling program consistent with Appendix D of the CVRWQCB Order R5-2022-0052, "Waste Discharge Requirements, Maintenance Dredging Operations."

The sampling was conducted in three phases to test various areas within the project area at different depths. Due to the abandoned mercury mine upstream of the project area, soil contamination and water quality concerns within the project area have historically focused on levels of mercury; however, all three phases of soil samples collected were tested for: total metals in their solid-phase (Arsenic [As], Cadmium [Cd], Chromium [Cr], Copper [Cu], Lead [Pb], Hg, Nickel [Ni], Selenium [Se], and Zinc [Zn]); Title 22 metals (Antimony [Sb], Beryllium [Be], Cobalt [Co], Molybdenum [Mo], Silver [Ag], Thallium [Tl], and Vanadium [V]); soluble metals using the Waste Extraction Test (WET) leachate[3]; and total and volatile solids. Additionally, Phase 3 sampling included pesticide testing due to the historical agricultural uses in upland areas of the project site. The three phases of sampling are summarized below:

[3] Leachate is a highly contaminated, toxic liquid, formed when water percolates through solid waste in sediment, dissolving harmful organic/inorganic compounds, heavy metals, and ammonia.

- **Phase 1** – In November 2023, soil samples were taken from the dry edges of the Reservoir wet pool to a depth between 2 and 4 feet.
- **Phase 2** – In October 2024, soil samples were taken in similar areas as Phase 1, but with different collection methods to test soils at deeper depths (up to 10 feet).
- **Phase 3** – In April 2025, soil samples were taken in upland areas within the proposed sediment drying and stockpile areas at varying depths, with a maximum depth of 15 feet below the ground surface.

Results

Results of the soil testing indicate that soil around Marsh Creek may be naturally elevated in metals due to its location downgradient of Mount Diablo, which has extensive serpentine rock outcroppings (the source of the previously mined mercury). Levels of Hg within the project site ranged from 0.8 mg/kg to 1.4 mg/kg (as compared to historic data of up to 1.8 mg/kg, and local soil up to 0.5 mg/kg). Concentrations of Hg and other metals were higher in deeper depths of the Reservoir wet pools, as compared to shallow sediments. These findings are consistent with historical sampling results in the area.

Solid-Phase Metals

The majority of Phase 1 and 2 sediment samples showed elevated levels of Hg, Ni, As, Cr, and Pb in their solid phase; however, only Hg and Ni exceeded CVRWQCB screening levels for drinking water. Furthermore, Phase 3 sampling resulted in no detection of pesticides in upland areas historically used for agriculture.

Soluble Metals

The majority of samples in Phase 1 and 2 exceeded Ni, As, Cr, and Pb WET leachate screening values. That is, these metal concentrations in the project area may be soluble enough to migrate to groundwater at concentrations that would exceed drinking water levels. Phase 3 sediment samples showed that only Ni exceeded drinking water screening levels. Mercury does not have a WET screening level but was only detected in one leachate sample.

Soil Sampling Program

Based on the findings of the Report, the District proposed a soil sampling program be developed for the project, which would require the development of a Sediment Sampling Plan and Contaminated Sediment Management Plan. Sediment sampling and testing would occur during excavation activities. Sampling methods and requirements would be established in coordination with the CVRWQCB.

Discussion

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

Mercury and other metal levels are well below thresholds established by the California Code of Regulations (CCR) Title 22, Section 66261.24, which characterizes materials as "toxic hazardous waste" (DTSC 2022). Specifically, Hg would need to exceed levels of 20 mg/kg to be considered a hazardous waste. Furthermore, no pesticide concentrations were detected within the project area. Therefore, sediment in the project area is not considered hazardous, and excavation, transportation, and placement of sediment within the project area during construction would not present a significant hazard to the construction workers, the public, or the environment.

However, the project would require the use of construction vehicles and equipment and thus involve the routine transport, use, storage, and disposal of diesel fuel, gasoline, oils, grease, equipment fluids, cleaning solutions and solvents, lubricant oils, and adhesives, all of which are considered hazardous materials. If such hazardous materials were not handled properly, a significant hazard to the public or environmental could occur.

Existing Federal and State law regulates the handling, storage and transport of hazardous materials and hazardous wastes. Pursuant to the Federal Hazardous Materials Transportation Act, 49 U.S.C. § 5101 et seq., the United States Department of Transportation promulgated strict regulations applicable to all trucks transporting hazardous materials. Occupational safety standards have been established in Federal and State laws to minimize worker safety risks from both physical and chemical hazards in the workplace, including construction sites. The Cal/OSHA has primary responsibility for developing and enforcing standards for safe workplaces and work practices in California in accordance with regulations specified in California Code of Regulations (CCR) Title 8. For example, under Title 8 CCR 5194 (Hazard Communication Standard), construction workers must be informed about hazardous substances that may be encountered, and under Title 8 CCR 3203 (Injury Illness Prevention Program) workers must be properly trained to recognize workplace hazards and to take appropriate steps to reduce potential risks due to such hazards. Thus, during construction and operation, contractors and/or District staff handling, storing or transporting hazardous materials or wastes must comply with regulations that would reduce the risk of accidental release and provide protocols and notification requirements should a release occur. Compliance with relevant Federal, State, and local laws, regulations, and thresholds would ensure the project would not result in a significant hazard to the public or to the environment through the routine transport, use, or disposal of hazardous materials during implementation of the project.

Based on Clean Fill Material Guidance from DTSC, the soils samples within the project site contain Hg levels that are acceptable (below 13 mg/kg) as fill material for local development reuse (DTSC 2025). That means that sediment removed from the Reservoir wet pools is considered safe enough to reuse for local development; and therefore, would be considered safe to humans if transported and stockpiled in the project area.

After construction is complete, a carbon-based sorbent, biochar, or natural materials such as a layer of clean sand may be applied/distributed into the Reservoir-bottom after grading to sequester Hg and reduce the production of MeHg. It is anticipated that chemical additives would

be distributed one time only, and these materials are not considered hazardous to the environment or humans. Other O&M activities such as planting and primary outfall gate opening/closing would not require the routine use of large quantities of hazardous materials at the project site. Impacts 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?

Refer to Impact 2.9(a). The project would involve the routine use of hazardous materials during construction activities, and accidental spills of small amounts of these materials could occur during routine transport, use, storage or disposal, and could potentially injure construction workers, contaminate soil, and/or affect the groundwater below the project site. However, the transport, use, storage and disposal of such hazardous materials would be required to comply with existing applicable Federal, State and local regulations. Construction specifications prepared for the project would identify BMPs requiring the lawful transport, use, storage, and disposal of hazardous materials. Therefore, potential impacts to the public or the environment related to reasonably foreseeable accident conditions involving hazardous materials 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?

The project is not located within one-quarter mile of a school. Therefore, there would be no potential for emitting or handling hazardous materials or waste near a school. The project would have **no impact**.

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

The project is not located on an active site included on the Cortese list compiled pursuant to Government Code Section 65962.5. The project would have **no impact**.

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

The project is not located within an airport land use planning area and is not located within 2 miles of an airport. Therefore, there would be no conflicts with an airport land use plan or generation of excessive noise. The project would have **no impact**.

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

As discussed above, Contra Costa County has established the 2024 Hazard Mitigation Plan for all of Contra Costa County, which includes data about historical disasters, assesses probabilistic disasters, and addresses specific strategies to mitigate the potential impacts of these disasters (Contra Costa County 2024a). This document does not identify any specific evacuation areas or routes; however, the Contra Costa General Plan identifies potential evacuation routes, including major and minor roadways. The nearest evacuation route to the project site is Marsh Creek Road to State Route 4 (Contra Costa County 2024b). The project would implement the General Plan policies and actions, combined with other relevant State and local regulations, which would minimize the potential for effects from potential hazards. If an emergency were to occur at the project site, the District would comply with the 2024 Hazard Mitigation Plan.

Further, the project would not affect emergency response or evacuation activities as emergency access would be established at all times. During sediment hauling to the proposed stockpile area, traffic control would be provided. Additionally, traffic control would be provided as needed for other entrances and exits of the project site. Implementation of the project would not require any road closures, and therefore, the project would not interfere with traffic routes or response vehicle transport.

O&M activities for the project would be substantially similar to current conditions, respective to emergency response and evacuation. No operation-related activities would occur within surrounding rights-of-ways that could impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. As a result, this impact would be **less than significant**.

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

The project site is located within a natural area containing the Reservoir, Marsh Creek, grazing land, recreational uses, and nearby residential uses. The project site is within a SRA with a high fire hazard severity classification (CAL FIRE 2023). The use of spark-producing construction machinery within this fire risk area could create hazardous fire conditions. Furthermore, the project would include at least one "controlled burn" lead by the Contra Costa Resource Conservation District, which could expose construction workers to wildfire risks. This potential impact would be **potentially significant**.

Mitigation Measures

The following mitigation measures have been identified to address this impact.

Mitigation Measure HAZ-1: Prepare and Implement BMPs for Wildland Fire Prevention.

As part of the SWPPP for the CGP, or otherwise, the District will develop and implement BMPs for wildland fire prevention. As part of these BMPs, the District will require that the construction contractor clear dried vegetation or other materials that could serve as

fuel for combustion from construction areas. To the extent feasible, the contractor will keep these areas clear of combustible materials to maintain a firebreak. Construction contractors will ensure that any construction equipment that normally includes a spark arrester will be equipped with an arrester in good working order. This includes, but is not limited to, vehicles and heavy equipment. Additionally, the District will provide construction workers with education regarding wildfire risk and fire prevention measures during tailgate safety meetings.

The Contra Costa Resource Conservation District will lead the controlled burn(s) effort required for the project and has specific BMPs and other measures in place to reduce the spread of fire during controlled burn events. In coordination with the Contra Costa Resource Conservation District, the District will ensure all BMPs for the project are consistent with specific procedures and measures required during controlled burns.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Mitigation Measure HAZ-2: Prepare and Implement Fire Safety Plan.

The coordination with the Contra Costa Resource Conservation District, the District will prepare and implement a Fire Safety Plan during project construction. The plan will describe the fire prevention process for construction activities, weather conditions during which fire risk is elevated and all equipment operations will cease, and other measures taken to reduce fire risk, equipment used to prevent fire and respond to a fire immediately, and responsibilities of the work crews when conducting construction activities.

Timing: Before and during construction

Responsibility: District and its contractor(s)

The implementation of **Mitigation Measures HAZ-1** and **HAZ-2** would reduce potentially significant impacts associated with wildfire ignition and spread by requiring use of BMPs during construction and controlled burn(s) to reduce the likelihood of accidental fires and preparing and implementing a Fire Safety Plan. Additionally, the District would coordinate with the construction contractor and the Contra Costa Resource Conservation District to make sure that the requirements outlined in these measures are implemented during construction activities. Impacts would be **less-than-significant with mitigation incorporated**.

2.10 Hydrology and Water Quality

#10. HYDROLOGY AND WATER QUALITY

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#10 -a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	No	No	**Yes**	No	No
#10 -b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	No	No	**Yes**	No	No
#10 -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:	No	No	**Yes**	No	No
#10 -c. i. result in substantial erosion or siltation on- or offsite;	No	No	**Yes**	No	No
#10 -c. ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	No	No	**Yes**	No	No
#10 -c. 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	No	No	**Yes**	No	No
#10 -c. iv. impede or redirect flood flows?	No	No	**Yes**	No	No
#10 -d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	No	No	**Yes**	No	No
#10 -e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	No	No	**Yes**	No	No

Environmental Setting

Surface Water Hydrology

The project site is in the Marsh Creek Watershed, which spans 128 square miles and is the second largest watershed in Contra Costa County (Contra Costa County 2024). Marsh Creek has an estimated mean daily flow of 26.3 cubic-feet/second (cfs) and an estimated 100-year flood

flow of 5,740 cfs (CCCDD 2003). The drainage area contributing to the Reservoir at the project site encompasses about 55 square miles (GEI 2019).

The Reservoir's primary outfall, a 4.5-foot box culvert located at an elevation of 170.5 feet (NAVD 88), provides an as-constructed storage capacity of 330 acre-feet (GEI 2019). At the secondary outfall (emergency spillway) crest (elevation 194.3 feet NAVD 88), the Reservoir is designed to hold up to 4,425 acre-feet. Both the primary outfall and the secondary outfall (emergency spillway) discharge directly into the Marsh Creek channel. Flows from the auxiliary storage area are conveyed through a 1.5-foot culvert that passes through the Dam and reenters the Marsh Creek channel near the secondary outfall. Within the project area, Marsh Creek flows are intermittent (SFEI 2011).

Groundwater

The project site is not located within a California Department of Water Resources (DWR) Bulletin 118 designated groundwater subbasin (DWR 2018) nor is it within a groundwater basin designated as "High Priority" or "Critically Overdrafted" (DWR 2022). There is no groundwater sustainability plan (GSP) for the project site or vicinity.

The project site lies within the Contra Costa County Integrated Water Management Plan area (ECWMA 2019). The soils on-site, primarily of the Brentwood clay loam series, are derived from sedimentary rock alluvium and are characterized as moderately well- to well-drained with very slow to medium runoff and moderately slow permeability indicating limited capacity for recharge (NRCS 2021). Groundwater levels measured approximately 2.5 miles east of the site at DWR monitoring well No. 378893N1216751W001 were recorded at 25.6 feet below ground surface in October 2024 (DWR 2024).

Water Quality

Marsh Creek and the Reservoir are listed on the on the Clean Water Act Section 303(d) impaired water body list due to elevated levels of Hg (CVRWQCB 2020). Marsh Creek is one of seven Delta subareas targeted by the CVRWQCB under the Delta Mercury Control Program. This program aims to control Hg and MeHg loads entering the Delta and to improve water quality through Total Maximum Daily Loads for each subarea (CVRWQCB 2010c, 2015, 2021).

Marsh Creek flows and suspended sediment carried to the Reservoir within the project site by those flows contain inorganic mercury (mostly as dissolved and particulate Hg^{2+}) and MeHg, with MeHg representing a particular risk to both human health and the environment. Some of this mercury originates from natural sources in the Watershed, but the majority is attributed to historic mining operations (Slotton et. al. 1996).

Soil Sampling

Refer to Section 2.9, "Hazards and Hazardous Materials," above for a more detailed discussion of soil sampling conducted for the project. Soil samples of the project site showed that Hg exceedances of the CVRWQCB screening levels for regional Waste Discharge Requirements

(WDRs) are minor, and lower than or equal to upstream levels within and around Marsh Creek. Hg levels were found to be higher near the Reservoir's West Wet Pool (adjacent to Marsh Creek) and within deeper sediments (older material). Compared to historic data, Hg levels within the project site are lower than historical and local soil data. Soil sampling indicated that Hg, As, Cr, Pb, and Ni could impact surface water and/or groundwater (GEI 2025).

Flood Hazards

The project site is located in FEMA Flood Hazard Zone 'A', or the 100-year floodplain, which indicates a 1 percent annual chance of flooding (FEMA 2024; Contra Costa County 2024). The project site is managed for flood control as part of the Marsh Creek Flood Control Zone 1, under the jurisdiction of the District, which finances regional drainage infrastructure (Contra Costa County 2025).

Key flood control infrastructure at the site includes the Dam, a 1-mile-long earthen levee parallel to Marsh Creek Road, the primary outfall (4.5-foot box culvert), and the secondary outfall (emergency spillway). The Dam is classified by the California Division of Safety of Dams (DSOD) as an extremely high hazard structure, meaning its failure could result in considerable loss of human life or inundation of an area with a population of 1,000 or more (DSOD 2021). Consequently, a small northern portion the project site upstream of the Dam is included within the DSOD's mapped Dam Inundation Area (Contra Costa County 2024).

The project site is not located within a tsunami zone due to the distance away from the Pacific Ocean (CGS 2022). Additionally, while a seiche, an oscillating wave in a large, enclosed water body, can occur due to atmospheric or seismic events, there are no bodies of water in the county that are large enough to be susceptible to this phenomenon (Contra Costa County 2024).

Discussion

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

The project is designed to restore the capacity of the Reservoir, improve water quality, and enhance ecosystem health by addressing mercury contamination in a manner that complies with water quality standards and waste discharge requirements. Construction activities, such as sediment excavation, grading, and dewatering, could temporarily increase sedimentation and turbidity in Marsh Creek. Additionally, the excavation of mercury-laden sediment has the potential to mobilize Hg into surface water, posing a risk to downstream habitats. Furthermore, construction activities would involve the use of chemicals and solvents such as fuel and oil for motorized heavy equipment, which could accidentally spill and subsequently impact stormwater quality. However, these potential impacts would be reduced through several measures including compliance with the project's regulatory requirements.

Construction associated with the project would disturb more than 1 acre of land surface and would therefore be subject to the NPDES General Permit of Stormwater Discharges Associated

with Construction and Land Disturbance Activities (Order WQ 2022-0057-DWQ, NPDES No. CAS000002). The CGP regulates stormwater discharges associated with construction activities, such as clearing and excavation.

The CGP requires the development and implementation of a SWPPP that includes specific BMPs designed to prevent sediment and pollutants from contacting stormwater from moving offsite into receiving waters. The BMPs fall into several categories, including erosion control, sediment control, hazardous material control, waste management and good housekeeping, and are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area. Routine inspection of all BMPs is required under the provisions of the CGP.

Such BMPs could include, but would not be limited to, silt curtains, silt fencing, straw bale barriers, fiber rolls, storm drain inlet protection, hydraulic mulch, and a stabilized construction entrance. The SWPPP will include development of site-specific structural and operational BMPs to prevent and control impacts on runoff quality, measures to be implemented before each storm event, inspection, maintenance of BMPs, and monitoring of runoff quality by visual and/or analytical means.

Additionally, sediment removal would be conducted in stages, and the project would avoid, to the extent possible, construction activities during wet conditions, further reducing the risk of sediment transport in Marsh Creek. Furthermore, the District would develop Sediment Sampling and Contaminated Sediment Management Plans in accordance with sampling methods, requirements, and regulations established by the CVRWQCB to manage constituents of concern[4]. Compliance with the SWPPP during construction would prevent project implementation from degrading water quality or violating water quality standards or WDRs.

As discussed previously in Section 2.9, "Hazards and Hazardous Materials," after construction is complete, a carbon-based sorbent, biochar, or other natural materials may be distributed to the Reservoir-bottom to sequester mercury and reduce the production of MeHg. These materials have been tested and would not be hazardous to the environment or humans and would not violate water quality standards, WDRs, or degrade surface or groundwater quality. Other O&M activities such as primary outfall debris removal or plantings would not include uses that would degrade water quality. This impact would be **less than significant**.

b, e) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

[4] Constituents of Concern identified by the CVRWQCB include volatile organic compounds, heavy metals (like Hg and As), nutrients (nitrates), salinity, and emerging contaminants like per- and polyfluoroalkyl substances, which pose risks to groundwater and surface water. These substances often stem from industrial, agricultural, and hazardous waste sites.

The project involves excavation and removal of sediment from the Reservoir to restore its capacity and improve water quality, but these activities are unlikely to affect groundwater recharge. The Brentwood clay loam soils within the site are described as moderately well-drained, with moderately slow permeability, indicating limited potential for significant recharge impacts.

The project would not use groundwater supplies during construction or operation. Groundwater dewatering may be required during construction. For dewatering, a relief trench would be excavated within the West and East Wet Pool dredging area, and water would be pumped out from behind the trench to expose the wet pool bottom. Dewatered effluent would be managed using relief trenches spaced about 75 to 100 feet apart. The dewatering system of sumps and pumps would move water from the trenches to settling tanks prior to discharging to Marsh Creek. Excavation would be completed mechanically from the bottom of each wet pool after it is dewatered. Material would be loaded near the point of excavation and hauled to the sediment drying, and stockpiling area (Figure 1-3). All activities associated with water diversion and dewatering would be governed in accordance with the CGP, which requires implementation of a SWPPP that included specific BMPs to prevent sediment conflict with water quality or WDRs contained within a water quality control plan. Impacts associated with construction dewatering would be negligible because dewatered surface or groundwater would ultimately return to the groundwater aquifer via surface water percolation via sumps. *De minimus* amounts of surface or groundwater may be lost to evaporation, prior to percolation back into the groundwater aquifer. Compliance with the SWPPP during construction would prevent project implementation from conflicting with water quality standards or WDRs of a water quality control plan.

Furthermore, the project site is not included in a high-priority basin or a basin requiring the preparation of a GSP under the Sustainable Groundwater Management Act, and therefore, would not interfere with implementation of any sustainable groundwater management plan. The project is consistent with the goals of regional water management, including improving water quality in the Marsh Creek Watershed and the Sacramento-San Joaquin Delta.

Given the above considerations, the project would not substantially decrease groundwater supplies, interfere with groundwater recharge, or conflict with the implementation of a water quality control or sustainable groundwater management plan. Therefore, impacts on groundwater supplies and recharge would be **less than significant**.

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, ii, iii, iv) Result in substantial erosion or siltation on or offsite? Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite? 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? Impede or redirect flood flows?

The project would not introduce new impervious surfaces that could alter the existing drainage pattern of the project site. Additionally, the project would increase flood storage capacity of the Reservoir, which would improve drainage in the project site and surrounding area. Construction activities, including grading, excavation, and sediment disposal, have the potential to cause temporary erosion or siltation on- or off-site, and implementation of the project components would require temporary earth-moving activities that would alter the topography of the project area. As discussed above in Impact 2.7(b) in "Geology and Soils," and Impact 2.10(a) above, with adherence to CGP requirements, a SWPPP and associated BMPs would be implemented to minimize potential soil erosion and siltation from construction of project components. Impacts would be **less than significant**.

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

As described previously, the project site is not susceptible to tsunamis or seiches; therefore, no impact would occur associated with the release of pollutants within a tsunami or seiche zone.

The project site is located within a flood zone and a small portion of the project site just north of the Dam that is within a dam inundation zone. The project site north of the Dam would not be impacted by construction activities of the project and would only be accessed during O&M activities of the project, similar to existing conditions. The project's restoration activities, including sediment removal, would increase the Reservoir's flood storage capacity, thereby improving the project site's ability to manage stormwater and reducing flood risks downstream.

Construction activities and O&M of the project site would be temporary and would not exacerbate the exposure of people or structures to risks associated with the release of pollutants due to inundation. The project would avoid, to the extent possible, construction activities during wet conditions, further reducing the risk of release of pollutants during the wet season.

Additionally, a SWPPP would be prepared and implemented during construction activities to require proper handling of chemicals and avoid release of pollutants to the project site. As such, impacts due to potential release of pollutants in a flood hazard area would be **less than significant**.

2.11 Land Use and Planning

#11 LAND USE AND PLANNING

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#11 -a. Physically divide an established community?	No	No	No	**Yes**	No
#11 -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?	No	No	No	**Yes**	No

Environmental Setting

The project's proposed components would be located on lands designated as Resource Conservation (RC) and Water (WA) (Contra Costa County 2024a). The Marsh Creek State Park surrounds the project site in all directions and residential and commercial areas are located north of the project site.

The RC designation is "applied to the watersheds of reservoirs owned by public utilities, mitigation banks, habitat restoration sites, ecologically significant or environmentally sensitive areas that are not within publicly owned parkland, and hazardous or otherwise constrained areas that are unsuitable for development. Resource management, low-intensity agriculture, low-intensity recreation, and similar activities are consistent with this designation when conducted in a way that is not damaging to the resources being protected. Construction of public and semi-public infrastructure, and one single-family residence on an existing legal lot under private ownership, is consistent with this designation. All types of urban development and subdivisions that increase density are prohibited (Contra Costa County 2024)."

The WA designation is "applied to approximately 41.5 square miles of water including the portions of San Francisco Bay, San Pablo Bay, and the Sacramento-San Joaquin River Delta that are within the county, large inland reservoirs, and other water bodies large enough to warrant designation. Typical uses include ferry terminals, shipping facilities associated with adjacent industry (marine terminals, wharves, etc), docks, water-oriented recreation uses, and aquaculture (Contra Costa County 2024)."

The project site is zoned as Agricultural Preserve (A-4) and Heavy Agriculture (A-3), which are primarily intended for agricultural-related uses such as general farming, livestock production, apiaries, forestry, and similar agricultural uses.

Discussion

a) Physically divide an established community?

The physical division of an established community generally refers to the construction of a feature such as an interstate highway or railroad tracks, or removal of a means of access, such as a local road or bridge that would impact mobility within an existing community or between a community and outlying area. Given the project is not located within or immediately adjacent to a community, and would not construct any permanent, linear physical structures that would physically divide a community, the project would result in **no impact** associated with the physical division of an established community.

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

The project would be consistent with the goals and policies of the CVRWQCB Delta Mercury Control Program, as it aims to remove mercury-contaminated sediments, thereby improving water quality. The project aligns with existing planning efforts by the EBRPD and California State Parks to enhance ecosystem functions, recreational opportunities, and aesthetic value. The project would not prohibit the intended uses of the designated zoning in the project site.

The project does not conflict with any land use plan, policy, or regulation adopted to avoid or mitigate environmental effects. Instead, it actively supports such policies by contributing to water quality improvement and habitat restoration efforts. The project would not change the overall rural character of lands in the vicinity of the project site or result in land use inconsistencies with local and regional plans. Therefore, there would be **no impact** associated with conflicts with land use plans or policies.

2.12 Mineral Resources

#12 MINERAL RESOURCES

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#12 -a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	No	No	No	**Yes**	No
#12 -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	No	No	**Yes**	No

Environmental Setting

In compliance with the Surface and Mining Reclamation Act, the CGS established a Mineral Resource Zones (MRZ) classification system to denote location and significance of key extractive resources. Lands throughout Contra Costa County are classified as Mineral Resource Zones (MRZs) of varying significance. The MRZ categories are as follows:

- MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence.
- MRZ-2: Areas where adequate information indicates significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
- MRZ-3: Areas containing mineral deposits the significance of which cannot be evaluated from available data.
- MRZ-4: Areas where available information is inadequate for assignment to any other MRZ.

The project site is within a Surface Mining and Reclamation Act of 1975 study area for aggregate materials in the San Francisco Monterey Bay Area but is outside of the limit of the area classified (DOC 2022; Stinson et. al 1982). The USGS' Mineral Resources Data System does not identify the project site as having history of mineral extraction (USGS 2024). Contra Costa County's *County-Designated Mineral Resource Areas* shows the county's deposits of diabase in Central County and domengine sandstone in East County. The project site has no County-Designated Mineral Resource Areas (Contra Costa County 2024).

Discussion

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

The project involves excavating excess sediment and debris from the Reservoir wet pools to improve flood capacity and water quality. The site is located outside areas classified for mineral resource extraction, is not identified as a mineral resource area, and has no history of mineral

extraction. Therefore, the project would not affect the availability of known mineral resources of regional or State importance, nor would it impede future access to potential subsurface resources that have not yet been identified. As a result, the project would have **no impact** on mineral resources.

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?

The project site is not located within the vicinity of a locally important mineral resource recovery site. There would be **no impact**.

2.13 Noise

#13. NOISE

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#13 -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 in other applicable standards of other agencies?	No	No	**Yes**	No	No
#13 -b. Generation of excessive groundborne vibration or groundborne noise levels?	No	No	**Yes**	No	No
#13 -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 2 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?	No	No	No	**Yes**	No

Environmental Setting

The project site is surrounded by the Marsh Creek State Park, which is an open space area with little to no development in the vicinity and agricultural areas. The Reservoir shoreline and Marsh Creek riparian zone are surrounded by natural vegetation offering natural noise barriers to the area. The nearest sensitive receptors are located 0.3-mile north of the project site, within the Vineyards at Marsh Creek residential neighborhood in the vicinity of Los Medanos College/Brentwood.

The Byron Airport is the nearest airport to the project site. The outer limits of its noise safety zone is located approximately 4.4 miles southeast of the project site (Contra Costa 2024a). The Contra Costa County 2045 General Plan designates maximum allowable noise standards by land use type, as shown in **Table 2.13-1**. The project site is designated as RC and W, which does not have an established noise level.

Table 2.13-1 Maximum Allowable Noise Exposure By Land Use

Land Use Type	Noise Level, DNL (dB)						
	0-55	56-60	61-65	66-70	71-75	75-80	>81
Residential	A	A	CA	CA	UA	UA	UA
Urban Residential Infill	A	A	A	CA	CA	CA	UA
Schools, Libraries, Hospitals, Religious Institutions, Extended Care Facilities	A	A	A	CA	CA	UA	UA
Hotels, Motels	A	A	A	CA	CA	CA	UA
Auditoriums, Concert Halls, Amphitheaters	A	A	A	CA	CA	UA	UA

Land Use Type	Noise Level, DNL (dB)						
	0-55	56-60	61-65	66-70	71-75	75-80	>81
Playgrounds, Local Parks	A	A	A	CA	CA	UA	UA
Sports Arenas, Outdoor Spectator Sports	A	A	A	CA	CA	UA	UA
Gold Courses, Riding Stables, Water Recreations (e.g., water parks), Cemeteries	A	A	A	CA	CA	UA	UA
Office, Commercial, and Professional Buildings (i.e, uses that are generally indoors and not noise sensitive)	A	A	A	CA	CA	UA	UA
Industrial, Manufacturing, Mining, Utilities, Agriculture	A	A	A	A	CA	CA	CA

Notes:
A means 'Normally Acceptable' - Specified land use is satisfactory based on the assumption that any buildings involved are of normal, conventional construction, without any special noise insulation requirements.
CA means 'Conditionally Acceptable' - New construction or development should be undertaken only after a detailed analysis of the noise-reduction requirements is made and needed noise insulation features have been included in the design.
UA means 'Unacceptable' – New construction or developments should not be undertaken.

The County does not have a Noise Ordinance with specific allowable construction hours; however, the General Plan 2045 Policy HS-P14.7 limits noise-generating construction activities to weekdays and non-holidays unless site-specific conditions warrant exceptions, within 1,000 feet of noise sensitive uses construction may occur between 7:30 am to 5:00 pm, and over 1,000 feet from noise-sensitive uses construction may occur between 7:00 am to 7:00 pm (Contra Costa 2024b). The County grading regulations (§716-8.1004) state that if operations under the permit are within 500 feet of residential or commercial occupancies, except as otherwise provided by conditions of approval for the project, grading operations would be limited to weekdays and to the hours between 7:30am and 5:30pm, except that maintenance on equipment may be performed at any time.

Discussion

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 in other applicable standards of other agencies?

Construction noise impacts typically occur when construction activities take place during noise-sensitive times of the day (e.g., early morning, evening, or nighttime hours), when construction activities occur immediately adjacent to noise sensitive land uses, or when construction durations last over extended periods of time. Construction of the project would temporarily increase the ambient noise levels within the vicinity of the project site and along haul routes.

The project would generate temporary construction noise from the use of heavy machinery during construction activities, and from the transport of construction workers and materials to the site. The project site is surrounded by the Marsh Creek State Park, a largely undeveloped open space area characterized by natural vegetation and variable topography, as well as agricultural areas, both of which provide natural noise attenuation.

The list of construction equipment that may be used for project construction activities is shown in Table 1-2 in Section 1, "Project Description". Noise levels at 50 feet from the source of construction would be as high as 88 decibels (dB) for cranes (the loudest piece of equipment proposed for construction activities) (FTA 2018). Sound pressure or dB-level depends not only on the power of the source but also on the distance from the source to the receiver and the acoustical characteristics of the sound propagation path (absorption, reflection, etc.). Outdoor sound levels decrease logarithmically as the distance from the source increases. This decrease is due to wave divergence, atmospheric absorption, and ground attenuation. Sound radiating from a source in a homogeneous and undisturbed manner travels in spherical waves. As the sound waves travel away from the source, the sound energy is dispersed over a greater area, decreasing the sound pressure of the wave. Spherical spreading of the sound wave from a point source reduces the noise level at a rate of 6 dB per doubling of distance in a soft medium such as air (FTA 2018).

Atmospheric absorption also influences the sound levels received by an observer. The greater the distance traveled, the greater the influence of the atmosphere and the resultant fluctuations. Atmospheric absorption becomes important at distances greater than 1,000 feet (FTA 2018).

Project construction would occur approximately 0.3-mile (1,580 feet) away from where the nearest sensitive receptor is located. At these distances, construction noise would be reduced to 0 dB (no sound); therefore, construction noise would not be heard from this distance. Construction noise levels would be short-term and temporary and would not conflict with or exceed noise limitations designated by the Contra Costa 2045 General Plan (Contra Costa 2024b). Increases to the ambient noise levels would not exceed standards established in the general plan, noise ordinance, or other applicable standards of agencies; therefore, this impact would be **less than significant**.

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

Activities associated with implementation of the project have the potential to generate low levels of groundborne vibration due to the operation of equipment (i.e., excavators, loaders). Groundborne vibrations propagate though the ground and rapidly diminish in intensity with increasing distance from the source. No high-impact activities, such as pile driving, drilling, or blasting, would be used during construction. However, some vibration may occur during construction equipment mobilization.

The Federal Transit Administration's Transit Noise and Vibration Impact Assessment (FTA 2018) has identified the human annoyance response to vibration levels as 72 to 80 vibration decibels (VdB) and building damage with a threshold of 0.2 inches/second peak particle velocity (PPV) for non-engineered timber buildings and 0.5 inches/second PPV for reinforced-concrete, steel or timber buildings/structures. The nearest sensitive receptors to the project site that could be exposed to vibration levels generated from project activities include single-family residential uses located 0.3-mile north within the Vineyards at Marsh Creek residential neighborhood in the vicinity of Los Medanos College/Brentwood. At a distance of 0.3-mile or 1,584 feet, vibration levels from equipment such as vibratory rollers (which is heavier equipment than what is

proposed for the project) would be approximately 0.00004 inches/second PPV, and 0.00021 inches/second PPV for a reinforced-concrete, steel or timber building/structure, respectively. Therefore, vibration levels would not exceed the potential building damage thresholds of 0.2 or 0.5 inches/second PPV. Therefore, structural damage from construction vibration would be less than significant. At the distance of 1,584 feet, VdB levels from a vibratory roller would be approximately 31 VdB and would not exceed the 72 to 80 VdB vibration significance criteria. Therefore, construction activity that would occur 1,584 feet from existing sensitive receptors would not exceed vibration impact criteria; and impacts would be less than significant.

Vibrations from construction mobilization would be temporary and there would be no new permanent vibration sources, therefore, the impact from the project in regard to groundborne vibration and noise levels 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 2 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 more than 2 miles from the nearest public airport or private airstrip. Therefore, the project would not expose people to excess noise levels due to the proximity to a public airport or private airstrip. **No impact** would occur.

2.14 Population and Housing

#14. POPULATION AND HOUSING

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#14 -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)?	No	No	No	**Yes**	No
#14 -b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	No	No	No	**Yes**	No

Environmental Setting

The project site is located approximately 4 miles southwest of the City of Brentwood (Figure 1-1) but is located within the City's planning area. The project site is located within a rural, low-density unincorporated area of Contra Costa County. The population of Contra Costa County was estimated in July 2023 to be 1,155,025 (U.S. Census Bureau 2024).

Discussion

a) Induce substantial 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 does not include construction of new homes or businesses that would result in a direct increase in population or create a substantial number of jobs. While the project could result in temporary employment during construction activities, the on-site workforce for construction is negligible over the temporary construction period. The construction workers would come from the existing labor pool within Contra Costa County and the surrounding areas. As such, the project would not require construction of housing to accommodate workers, since they would likely commute to the sites over the temporary construction period. Once construction activities are complete, the project would not otherwise directly induce population growth. No impact would occur.

The project would not remove an obstacle to growth, such as a constraint on a required public service, such as roads, water supply or wastewater treatment capacity. A primary objective of the project is to improve recreational access to the Reservoir, which would not significantly affect population levels in Contra Costa County. Additionally, the current use of the project site would

not be changed by the project. Therefore, the project would not directly or indirectly induce substantial population growth, and there would be **no impact**.

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

The project site vicinity is located in a rural, low-density area with sparse residential properties. No residences would be condemned or displaced by the project. Therefore, the project would not displace people or housing necessitating the construction of replacement housing elsewhere. There would be **no impact**.

2.15 Public Services

#15. PUBLIC SERVICES. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
Fire protection?	No	No	No	**Yes**	No
Police protection?	No	No	No	**Yes**	No
Schools?	No	No	No	**Yes**	No
Parks?	No	No	No	**Yes**	No
Other public facilities?	No	No	No	**Yes**	No

Environmental Setting

Fire Services

Fire protection services in Contra Costa County are provided by six fire protection districts and three city fire departments. The project site is within the Contra Costa Fire Protection District (Contra Costa County 2024).

Police Services

The Contra Costa County Sheriff's Office provides law enforcement services to the Contra Costa County unincorporated area, including the project site. Special districts may provide additional services as well (Contra Costa County 2024).

Schools

The project area is located within the boundaries of the Brentwood Union Elementary School District and Liberty Union High School District (Contra Costa County 2024). The nearest school facility to the project site is Los Medanos College, located approximately 0.34 miles north of the project site. Oak Tree Elementary School is located approximately 2.02 miles north of the project site.

Parks

Parks in Contra Costa County are generally managed by individual cities or districts with jurisdiction (Contra Costa County 2024).

Discussion

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for public services, including fire protection, police protection, schools, parks, or other public facilities.

Implementation of the project would not change existing demand for public services described above because the project would not result in a permanent increase of employees or population to the project area. The project would not substantially increase the need for new public services' staff or new facilities as compared to existing conditions. There would be **no impact**.

2.16 Recreation

#16. RECREATION

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#16 -a. 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?	No	No	No	**Yes**	No
#16 -b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	No	No	No	No	**Yes**

Environmental Setting

The project site is directly adjacent to the Marsh Creek State Historic Park, which includes the Historic John Marsh Home as a point of interest and is managed by California Department of Parks and Recreation. Currently, Marsh Creek State Historic Park is closed to the public due to the elevated levels of mercury. East of the Reservoir, the Marsh Creek Regional Trail is an 8-mile trail for bikers, hikers, joggers, and runners with a proposed extension to 14-miles that would extend south across Marsh Creek north of the Dam and south (then west) along Marsh Creek Road, within the project site, adjacent to the proposed sediment drying area (EBRPD 2024). The nearest community park, Orchard Park, is located in the city of Brentwood approximately 2.18 miles from the project site.

Discussion

a) 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 would not directly or indirectly induce population growth (see Section 2.14, "Population and Housing,") and as such would not introduce new residents to the project area. Because recreational activities within the project site are currently closed, the project would generate increased use of the area if it was permitted to reopen. However, since recreation is generally limited to trail use and visiting the Historic John Marsh House, an increase in use to the originally-expected levels is not anticipated to cause significant or accelerated deterioration. Furthermore, because the area is currently closed, recreational visitors would not be deterred from the area or increase the use of other recreational facilities in the area during construction of the project. There would be **no impact**.

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

The project's physical impacts on the environment are analyzed throughout Section 2, "Environmental Checklist," of this IS/MND. The removal and disposal of contaminated sediment from the Reservoir wet pools would have a beneficial effect on the environment by improving the safety of recreational activities and increasing opportunities within and around the project site. Implementation of the project would result in a **beneficial impact** in regard to the environment and the recreational uses it provides.

2.17 Transportation

#17. TRANSPORTATION

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#17 -a. Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	No	No	**Yes**	No	No
#17 -b. Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	No	No	**Yes**	No	No
#17 -c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	No	No	**Yes**	No	No
#17 -d. Result in inadequate emergency access?	No	No	**Yes**	No	No

Environmental Setting

The project site is located in unincorporated Contra Costa County south of the City of Brentwood. Regional access to the project site is provided via SR 4 and Marsh Creek Road. Local access to the project site is provided from the top of the existing levee northeast of the Marsh Creek Reservoir and from Marsh Creek Road (Figure 1-3). The Marsh Creek Road corridor travels north of the project site and is considered a Route of Regional Significance and supports multimodal transportation (Contra Costa 2024). The project site itself does not provide any bus routes, bicycle facilities, or railroads (CCTA 2024, 2023).

Discussion

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

Direct impacts to the local circulation system would occur due to the temporary addition of project-related vehicles to local roadways over the construction period. Implementation of the project could temporarily increase the number of vehicles on local roadways due to the transport and delivery of construction equipment and daily worker commute trips. All equipment and materials would be transported to the project site on public highways and local dirt roads, using standard transport vehicles. The construction equipment would be offloaded at staging areas and then mobilized to each construction station. Construction staging areas would be established by the District's contractor and would have a stabilized entrance and exist, designed to be consistent with Caltrans standards. Construction activities may temporarily slow circulation in these areas, but it is not expected to interfere with traffic or transit routes within the project area.

Traffic control would be provided for all construction vehicles/workers when crossing Marsh Creek Road, or as needed for other entrance and exits of the project site, and all worker parking would be accommodated at the staging areas on-site.

O&M activities associated with the project such as planting/seeding and primary outfall gate operation would not require the transportation of large amounts of materials and would not include large crews of construction workers or District staff traveling to and from the project site.

Stockpiled soils may be reused in the future to support local development and reuse would require the hauling of sediment along Marsh Creek Road to other areas in the local vicinity of the project. The number of haul trucks required to haul this material cannot be quantified at this time because it is unknown how much of the 330,000 cy of material to be excavated and dried would actually be reused. However, similar to project construction activities discussed above, any potential hauling of this material would be limited to the haul truck vehicle trips over a temporary amount of time, and therefore, would not result in any long-term degradation in operating conditions on local roadways in the project vicinity. Additionally, the project would not conflict with adopted policies, plans, or programs related to public transit or alternative modes of transportation because the project site does not contain these types of facilities. Impacts would be **less than significant**.

b) Conflict or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision b)?

"Vehicle miles traveled" (VMT) refers to the amount and distance of automobile travel attributed to a project. A maximum of 12 workers would be required during various construction activities. These trips would be temporary over the construction period and would not result in any perceivable increase in VMT that would exceed the County threshold of significance. General maintenance activities would remain similar to existing conditions resulting in no significant increase in VMTs due to long term O&M activities. Additionally, the County's Transportation Analysis Guidelines indicate projects with public facilities such as low-intensity recreation and open space, would not require further VMT analysis (Contra Costa County 2020). As a result, the project would be consistent with CEQA Guidelines Section 15064.3 subdivision (b), and a **less-than-significant** impact would occur.

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 project does not include the construction or design of any roadway infrastructure that would cause a safety risk to vehicle operations. The project would not adversely alter the physical configuration of the existing roadway network serving the project vicinity and would not introduce unsafe design features associated with large equipment transport. Additionally, the project would not introduce uses (types of vehicles) that are incompatible with existing uses already served by the area's road system. Therefore, this impact would be **less than significant**.

d) Result in inadequate emergency access?

Refer to Impact 2.9(f) in Section 2.9, "Hazards and Hazardous Materials," above. The project would temporarily add vehicles to the local roadway and circulation system. However, no lane or road closures would be required. All project-related activities such as excavation and most of all material hauling would occur within the project site and not interfere with emergency response access. O&M activities for the project would be substantially similar to current conditions respective to emergency response and evacuation. This impact would be **less than significant**.

2.18 Tribal Cultural Resources

#18. TRIBAL CULTURAL RESOURCES. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 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:

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#18 -a. Listed or eligible for listing in the California Register of Historical Resources (CRHR), or in a local register of historical resources as defined in PRC Section 5020.1(k), or	No	**Yes**	No	No	No
#18 -b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	No	**Yes**	No	No	No

State CEQA Guidelines require consideration of Tribal Cultural Resources (TCRs), which are either: (1) sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that is either on or eligible for inclusion in the CRHR or a local historic register; or, (2) resources the lead agency, at its discretion and supported by substantial evidence, chooses to treat as a TCR. Additionally, a cultural landscape may also qualify as a TCR if it meets the criteria to be eligible for inclusion in the CRHR and is geographically defined in terms of the size and scope of the landscape. Other historical resources, unique archaeological resources, and non-unique archaeological resources addressed in this section could also be TCRs if they conform to the criteria to be eligible for inclusion in the CRHR. The most pertinent background information for TCRs is presented here. For additional regulatory and environmental setting information, refer to Section 2.5, "Cultural Resources."

Regulatory Setting

Assembly Bill 52

Assembly Bill (AB) 52, effective on July 1, 2015, amended CEQA and added sections relating to Native American consultation and TCRs. California PRC Section 21084.2 provides that a project with an effect that may cause a substantial adverse change in the significance of a TCR may have a significant effect on the environment. California PRC Section 21080.3.1 (b) requires the lead agency to begin consultation with California Native American Tribes that are traditionally and

culturally affiliated with the geographic area of the project if the Tribe requests the lead agency, in writing, to be informed by the lead agency through formal notification of projects that are proposed in that geographic area, and the Tribe subsequently requests consultation. California PRC Section 21084.3 states that "public agencies will, when feasible, avoid damaging effects to any Tribal cultural resource."

AB 52 explicitly recognizes "that California Native American Tribes may have expertise with regard to their Tribal history and practices, which concern the Tribal cultural resources with which they are traditionally and culturally affiliated. Because the California Environmental Quality Act calls for a sufficient degree of analysis, Tribal knowledge about the land and Tribal cultural resources at issue should be included in environmental assessments for projects that may have a significant impact on those resources." AB 52 and California PRC Section 21080.3.1 and Section 21080.3.2 therefore include requirements for meaningful consultation with culturally and geographically affiliated Tribes to identify TCRs and to develop avoidance or mitigation, as appropriate.

Environmental Setting

Ethnographic Setting

The project site is located in an area where several Tribal ethnographic territories overlap: the Miwok, Ohlone, and Yokuts (Native Land Digital 2024). These Tribal territories are discussed individually below.

Miwok

The Plains Miwok (Miwok) are one of the Eastern Miwok groups which also include the Bay, Northern Sierra, Central Sierra, and Southern Miwok groups. The Miwok is the sole representative of a language group which is itself part of the larger Sierra Miwok language group. Miwok territory ethnographically extended from the lower Mokelumne River, the Cosumnes River, and the Sacramento River from Rio Vista to Sacramento. The Sierra Nevada foothills represented the eastern boundary for the Miwok and the western boundary was between Fairfield and the Sacramento River (Bennyhoff 1977:165; Levy 1978).

The Miwok were seasonal hunter-gatherers with semi-permanent settlements. Like many California Native American groups, the largest political unit was the tribelet. Each tribelet contained 300 to 500 individuals and included a main village and usually one or more satellite villages. Each tribelet controlled specific lands and resources. The main village usually contained a large, semi-subterranean structure that served as a dance or assembly house, as well as several structures such as dwellings, granaries, sweat-houses and winter grinding houses (Levy 1978); Kroeber 1978:447, 452).

Similar to many groups throughout California, acorns (*Quercus* ssp.) were the staple diet food. Other important foods in the diet included fish, shellfish, waterfowl, and various small and large game, including deer (*Odocoileus* ssp.), elk (*Cervus* ssp.), pronghorn (*Antilocapra* ssp.), and

rabbits (*Oryctolagus* ssp.). Fish resources included lamprey (*Entosphenus* ssp.), salmon (*Oncorhynchus* ssp.), and sturgeon (*Acipenser* ssp.) (Bennyhoff 1977:165; Levy 1978).

Utilitarian tools used by the Miwok included the bow and arrow, traps, snares, nets, blinds, seines, hook and line, harpoons, and baskets. Other tools included tule balsa boats for traveling along navigable rivers, twined and coiled baskets, bedrock mortars, pestles knives, leaching and boiling baskets, and earth ovens for cooking and baking (Levy 1978).

Today, Miwok nations like the Wilton Rancheria are active in preserving and protecting their respective Tribes' cultural heritage and in assisting their Tribal members in areas ranging from housing, education, and employment.

Ohlone

This brief overview of the Ohlone and their traditional territory provides the precontact and ethnographic context of the region adapted from the study *Ohlone/Costanoan Indians of the San Francisco Peninsula and their Neighbors, Yesterday and Today* (Milliken et al. 2009). Although the study is focused on the Ohlone/Costanoan people and the indigenous people of the San Francisco Peninsula, Native Americans across the landscape underwent similar oppression during Spanish contact and post Mexican-American war in 1846 such as the formation of missions, secularization, development of rancherias and reservations, and finally became landless peoples through the secularization law (Congress of Mexico), and later, post 1846, through the dismantling and the dissemination of the remaining missions. This is representative of both the Plains Miwok and Ohlone.

The Plains Miwok, Sierra Miwok, and Yokuts were likely the main trading partners for the Ohlone. Cinnabar mined from the San Jose area was among the items with the highest trade value; it was used as a pigment (Margolin 1978:99). The Ohlone traded items such as mussels, abalone shells, salt, dried abalone, and *Olivella* shells for pine nuts from the Yokuts (Levy 1978) or rarely, items from farther away (Margolin 1978:98).

These peoples lived in small groups and maintained a gatherer-based economy, harvesting local plants and animal resources. Little is known of the contact era as most written records are mission records or are after secularization and the Mexican-American War.

Between 1769 and 1934, the peninsula inhabitants underwent a period of resistance, internal conflict, missionization, emigration, and immigration. They were placed in missions or left the area upon initial contact. In 1833, the Congress of Mexico passed the secularization law and regulations (1834), however, instead of distributing the land to the indigenous people as promised, private, well-placed Mexican citizens were given the vast mission ranch lands. These events initialized the Rancho Era, when the indigenous population started working, and creating personal connections, on the new, privatized ranch lands. After the Mexican-American war (1846), Native Americans continued to face continuing repercussions of oppression including decline in population, legalized marginalization, and continued discrimination.

Today, numerous Native American Tribes work to revitalize their language and culture, including the Ohlone. The Lisjan Nation has had an on-going revitalization project. In the 1920s the last fluent Chochenyo Ohlone speaker, José Guzmán was recorded singing and speaking on wax cylinders. These recording have been used for a cultural revitalization project, but the project also includes field trips to teach cultural practices such as tule gathering and weaving which incorporates language learning with those traditional activities (Confederated Villages of Lisjan 2024).

Yokuts

The ethnographic territory of the Northern Valley Yokuts overlaps the area of potential effect (APE) (Native Land Digital 2024; Wallace 1978). The nearest population estimates are from Cook in reference to the lower Merced River, which he estimates to be approximately 3,500 individuals (Cook 1955: 51). This estimate, however, is derived from information gathered from the vicinity and east side of the San Joaquin River, where populations were concentrated.

Unlike the Southern Yokuts, there are few ethnographic accounts from the Spanish, or any source, describing subsistence activities in any detail regarding the Northern Yokuts, but descriptions of neighboring tribes' subsistence patterns can supplement the little direct information available. The Yokuts economy in general depended heavily on fishing, waterfowl, and gathering shellfish, roots, and seeds. (Gayton 1948:14-15; Wallace 1978).

Various techniques were employed for catching waterfowl: snares and nets; shooting waterfowl from tule rafts while camouflaged; spring poles with triggers; water skipping arrows; and stuffed decoys. Eggs of waterfowl were harvested. Salmon was especially important among fish resources (Gayton 1948:15; Wallace 1978). Plant resources were vital components of the diet, and a wide variety of plant foods were used. Wild seeds and roots were a large part of the diet; tule roots were gathered, dried, pounded, and used as a flour (Gayton 1948:15; Wallace 1978). Tule (*Schoenoplesctus* spp.), grass, and flowering herb seeds were gathered by using a seed beater and basket. Grass nuts were roasted or made into a meal. Clover (*Trifolium* spp.) was an important food as was yellow mustard (*Brassica* spp.), fiddle-neck (*Amsinckia* spp.), and filaree (*Erodium* spp.) (usually eaten with salt grass [*Distichlis spicata*]). Many plants were also used as medicines. Acorns, rare for most Yokuts, was a staple for the Northern Yokuts (Gayton 1948:15-16; Wallace 1978).

Several types of structures were built by the Yokuts. The most basic were single family houses with oval floors and tule mats on a wooden frame. Communities did not appear to organize residences along lines, like Southern Yokuts, nor did they have the long, communal residences found to the south. They did, however, construct earth covered sweat houses and, unique among the Yokuts, ceremonial assembly houses (Gayton 1948:11-13; Wallace 1978).

There was no political unity between the various Yokuts tribes. Local groups of about three hundred individuals in associated villages made up politically autonomous units. Settlements tended to be built on low mounds on or near large water courses. Floods from melting snows

from the Sierra Nevada Mountains was a danger, but populations were apparently very sedentary because of abundant riverine resources. Villages would break up seasonally to harvest plants, though some part of the population always stayed in villages (Wallace 1978).

Methods

Native American Consultation and Coordination

AB 52 requires public agencies to consult with California Native American Tribes who are traditionally and culturally affiliated to the geographic area where a project (the project must be subject to CEQA) is located if the Tribe has previously requested that the lead state agency provide notification to the Tribe regarding projects in the Tribe's area. For the project, the District is the lead agency for CEQA compliance.

GEI archaeologist Amy Wolpert, MA, requested the NAHC search their Sacred Lands File (SLF). The NAHC responded on July 11, 2024, and in their letter stated that the SLF search had returned a positive result.

In compliance with AB 52, the District sent out letters inviting the Wilton Rancheria and the Confederated Villages of the Lisjan Nation (Lisjan Nation) to consult with the District regarding the project. The AB 52 letters inviting the Tribes to consult were sent via email and overnight mail; the letters were received by both Tribes on January 26, 2024.

Confederated Villages of the Lisjan Nation

Corrina Gould, Tribal Chair for the Lisjan Nation, responded on January 29, 2024, via email (Gould 2024). In her response, Ms. Gould responded that the Lisjan Nation wished to consult on the project and requested information regarding any records searches and the NAHC SLF search. The requested information was provided to the Lisjan Nation. In addition, a virtual meeting was held on May 15, 2024. In attendance were: District representatives; from GEI, Jesse Martinez (senior archaeologist); and for Lisjan Nation were Deja Gould (Tribal Historic Preservation Officer), Cheyenne Zepeda (Cultural Resources Manager), Lucy Gill (Cultural Resources Manager), Francis Ranstead (Administration), and Cha-tah Ellem (Land Team Member). The meeting began with a discussion of the background of the project, need for the project, and project components. This was followed by a discussion of what cultural resources investigations had occurred and the results which included the records search and initial pedestrian surveys. Lisjan Nation representatives stated their request for previous cultural resources investigations in the area. They also mentioned that the area is highly sensitive for cultural resources, with a reburial area in the region. Additionally, the Lisjan Nation stated they would like to be involved with any further investigations and have monitors present for any ground disturbing activities. It was then determined that a Tribal Monitoring and Treatment Plan agreement was being developed with Wilton Rancheria and Lisjan Nation stated they would also like to come to an agreement regarding a Tribal Monitoring and Treatment Plan. Lisjan Nation also asked if any subsurface testing was planned on being conducted, but no subsurface testing is currently planned. The Lisjan Nation requested to be informed as project specifics are developed.

A remote meeting between the Lisjan Nation and the District occurred on January 8, 2025. This meeting was conducted to update Lisjan Nation on project design, cultural resources within the project site, and potential impacts on resources. There were also discussions regarding possible avoidance of cultural resources and mitigation measures, consideration of suggested mitigation measures was taken and incorporated.

A remote meeting between the Lisjan Nation and the District occurred on March 5, 2025. This purpose of this meeting was to update Lisjan Nation on project design updates and review revisions to the proposed mitigation measures. Consideration of suggested mitigation measures was taken and incorporated.

Wilton Rancheria

The Wilton Rancheria also expressed interest in the project. A virtual meeting with Wilton Rancheria was held on February 21, 2024. In attendance were District representatives; from GEI, Jesse Martinez (senior archaeologist); and from the Wilton Rancheria Venesa Kremer (Cultural Resources Department). Topics discussed during the meeting included details on project components, the project site, background and need for the project, cultural resources previously identified in the project site, and results of the initial pedestrian survey. Ms. Kremer discussed that the Wilton Rancheria would be interested in using the area for traditional uses and therefore interested in contaminants in the project site. Ms. Kremer also provided background on the Wilton Rancheria and the Tribe's interests, and in particular Delta rivers and streams. Ms. Kremer also requested that Wilton Rancheria be involved in any future fieldwork. Ms. Kremer noted that the Wilton Rancheria is very familiar with the area, with highly sensitive resources in proximity to the APE. Ms. Kremer also stated that Wilton Rancheria strongly recommends Tribal monitoring for all ground disturbing activities related to the project, that a data recovery plan be developed, and to check for all future maintenance activities.

Another meeting took place between Wilton Rancheria and the District on December 16, 2024. In the meeting, specific components of the project were discussed and their potential impacts on cultural resources within the project site. Also discussed were avoidance of resources as well as specific mitigation measures; the mitigation measures discussed have been taken into consideration and incorporated.

An additional meeting took place between Wilton Rancheria and the District on February 18, 2025 to further discuss specific components and mitigation measures. Measures were agreed upon and consultation concluded via email on October 10, 2025.

Discussion

a, b) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resource Code Section 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 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)?

Consultation with Native American Tribes has resulted in the identification of three TCRs: P-07-002933 (CA-CCO-000797) and P-07-002936 (CA-CCO-000800). Both resources are buried and project components will likely not impact these resources, but their full extent is not known. The third TCR is P-07-000037 (CA-CCO-000018) which is not plotted within the project site but is in close proximity and may extend into the project area. In addition, the project site (especially along the length of Marsh Creek) is highly sensitive for buried cultural resources. Therefore, the project could have a **potentially significant** impact on TCRs.

Mitigation Measures

The following mitigation measures have been identified to address this impact.

Mitigation Measure TCR-1: Heavy Equipment.

The movement of heavy equipment across the basin floor (between the reservoir wet pool and sediment drying area) will be limited to designated haul routes, subject to the following conditions to minimize impacts. The width of the haul routes shall not exceed 32 feet. Equipment with rubber tires will be required, or surfacing such as mats or aggregate base shall be placed on the haul routes within the basin to distribute weight and reduce impacts. The routes are shown schematically and may be adjusted in the field by the contractor.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Mitigation Measure CUL-1: Environmentally Sensitive Area.

Please see Mitigation Measure CUL-1 in Section 2.5, “Cultural Resources,” for the full text of this mitigation measure.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Mitigation Measure CUL-2: Archaeological and Native American Monitoring.

Please see Mitigation Measure CUL-2 in Section 2.5, “Cultural Resources,” for the full text of this mitigation measure.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Mitigation Measure CUL-3: Inadvertent Discovery Procedures.

Please see Mitigation Measure CUL-3 in Section 2.5, "Cultural Resources," for the full text of this mitigation measure.

Timing: Before and during construction

Responsibility: District and its contractor(s)

Mitigation Measure CUL-4: Cultural Awareness Training.

Please see Mitigation Measure CUL-4 in Section 2.5, "Cultural Resources," for the full text of this mitigation measure.

Timing: Before and during construction

Responsibility: District and its contractor(s)

The implementation of **Mitigation Measures TCR-1**, and CUL-1 through CUL-4 would lessen impacts on TCRs and other cultural resources by limiting heavy equipment use, establishing an ESA, conducting monitoring during ground disturbing activities, providing cultural awareness training to all on-site project personnel, and applying specific procedures to follow if in inadvertent discovery of resource(s) were to occur. All on-site project personnel would be aware of what may be found during construction activities and halt work to coordinate with the appropriate Tribal monitor and/or project professional for investigation and treatment of the resource, if needed. Therefore, this impact would be **less-than-significant with mitigation incorporated**.

2.19 Utilities and Service Systems

#19. UTILITIES AND SERVICE SYSTEMS

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#19 -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?	No	No	**Yes**	No	No
#19 -b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	No	No	**Yes**	No	No
#19 -c. Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	No	No	No	**Yes**	No
#19 -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?	No	No	**Yes**	No	No
#19 -e. Comply with Federal, State, and local management and reduction statutes and regulations related to solid waste?	No	No	No	**Yes**	No

Environmental Setting

Water

The primary source of water within Contra Costa County is surface water from the Sacramento-San Joaquin Delta and the Mokelumne River Watershed. There are 14 water service districts that provide water to residents and businesses within the unincorporated areas of the county (Contra Costa County 2024). Some rural areas of the county rely on groundwater extracted from private wells as the primary source of drinking water (Contra Costa County 2024). There are no water purveyors serving the project site.

Stormwater Drainage

The District manages most of the storm drainage facilities in the county, which includes channels, creeks, detention basins, dams, and other drainages (Contra Costa County 2024). The District's drainage facilities at the project site include Marsh Creek and the Reservoir, the Dam and its structural components, as well as the levee along Marsh Creek Road.

Wastewater

Wastewater services in Contra Costa County are provided by 20 agencies: 7 cities and 13 sanitary districts (Contra Costa County 2024). The project site is not located in one of the sanitary districts. Generally, rural portions of the county rely on private septic systems (Contra Costa County 2024). There are no wastewater services provided at the project site.

Electrical and Natural Gas Service

PG&E provides electrical and natural gas services to the project site (Contra Costa County 2024). There are two 230-kilovolt (kV) power lines owned by PG&E that traverse through the project site (CEC 2024). One of these power lines travels west-northwest to east-southeast alongside the northern border of the Reservoir, and the other power line crosses Marsh Creek near the southern border of the project site (CEC 2024).

Solid Waste

In Contra Costa County, franchises approved by the County are mainly responsible for solid waste collection and disposal. Mount Diablo Resource Recovery serves most of the eastern portion of the county, including the project site (Contra Costa County 2024). There are six transfer stations and two landfills in Contra Costa County (Contra Costa County 2024).

The Brentwood Transfer Station is nearest the project site, located approximately 5.2 miles northeast. Brentwood Transfer Station is a permitted large volume transfer/processing facility with maximum capacity of 400 tons per day (CalRecycle 2019a).

Additionally, the Keller Canyon Landfill, managed by Republic Services, is located approximately 14 miles northwest of the project site, in the City of Pittsburg. The Keller Canyon Landfill is a permitted class II landfill with a maximum permit capacity of 75,018,280 CY, remaining capacity of 63,408,410 cy, and cease operation date of December 31, 2050 (CalRecycle 2019b). The Keller Canyon Landfill is permitted to accept the following waste types: industrial, other designated, sludge biosolids, agricultural, construction/demolition, mixed municipal (CalRecycle 2019b).

Discussion

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?

Implementation of the project would not require significant amounts of new electric power or natural gas (see Section 2.6, “Energy,” above for more details) and would not require the use of any telecommunications facilities. Additionally, the project would not include wastewater facilities or require the construction or expansion of wastewater treatment facilities.

The project may require limited use of water during construction activities for dust suppression purposes. It is possible that some water from dewatering activities could be diverted from dewatering sumps to an elevated tank for use for dust control. It is unlikely significant amounts of water would need to be trucked into the site for dust suppression or other construction activities. After construction, water for irrigation would be required for new planting along the Reservoir. Irrigation water is anticipated to be supplied from the Reservoir on-site and would not require new or expanded water facilities. No water facilities would be installed as part of the project. Refer to Section 2.10, "Hydrology and Water Quality," for a discussion and analysis of potential environmental effects associated with erosion and siltation or degradation of water.

As discussed in Section 1.1, "Description of Project", the identification of existing underground utilities within the project site may be required. Any potential coordination with the utility owners/providers would be required in advance of construction to identify infrastructure locations and appropriate protection measures. Any potential utility modifications would occur within the project site and would be conducted either in advance or concurrent with project construction activities.

This impact would be **less than significant**.

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

The project consists of removing and drying contaminated sediments and debris from the Reservoir and stockpiling the material onsite for potential reuse, creating a high flow diversion, restoring habitat, cleaning and maintaining the existing outfall, and installing wildlife-friendly fencing for cattle exclusion. Water use for the project would primarily involve irrigation of new plantings associated with habitat restoration. This irrigation demand would be met using water sourced directly from the Reservoir, ensuring no reliance on municipal or regional water supplies. Furthermore, the project does not include any elements requiring a permanent water supply. Given the self-contained water source and the temporary, limited nature of water use, the project would not impact the availability of water supplies during normal, dry, or multiple dry years. Therefore, this impact would be **less than significant**.

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

The project would result in the generation of wastewater associated with temporary use of portable toilets. During project implementation, the District or its contractor may have portable toilet facilities available onsite temporarily for use by construction workers. Given the small construction workforce of a maximum of 12 workers onsite daily for the construction period, this amount of waste would be minimal. Since the project does not require any connection to or service from an existing wastewater treatment provider, there would be no demand placed on local wastewater treatment infrastructure. Once construction is concluded, portable facilities

would be removed, and the wastewater would be properly handled and disposed of in accordance with all applicable laws and regulations. There would be **no impact**.

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?

Implementation of the project would result in the generation of solid waste in the form of trash and construction-related materials. All soil excavated would be dried and stockpiled onsite within a 25-acre area east of Marsh Creek Road (Figure 1-3), so no sediment is anticipated to be disposed of at a landfill. General construction waste, including packaging, equipment maintenance by-products, and temporary field office materials, would be collected and disposed of at a local facility with adequate capacity. Both the Brentwood Transfer Station and Keller Canyon Landfill have sufficient capacity to accommodate the limited solid waste generated by the project. Contractors would adhere to waste management practices consistent with State and local regulations, including recycling where feasible.

The project does not include activities that would produce a substantial amount of solid waste during operations. Regular maintenance activities, such as vegetation management and minor sediment removal from the primary outfall every 5 to 7 years, are expected to generate minimal waste. These maintenance tasks primarily involve organic material, which may be composted or otherwise managed in accordance with local solid waste guidelines. The project incorporates measures to minimize waste generation, such as reusing sediment onsite, implementing BMPs for construction waste, and following integrated vegetation management practices to reduce green waste during operations. The project is not expected to generate solid waste in excess of State or local standards or the capacity of local infrastructure. Furthermore, the project's design and management practices are consistent with waste reduction goals. Therefore, impacts related to solid waste generation would be **less than significant**.

e) Comply with Federal, State, and local management and reduction statutes and regulations related to solid waste?

As stated above in Impact 2.19(d) above, implementation of the project would result in nominal solid waste. Statewide policies regarding solid waste have become progressively more stringent, reflecting Assembly Bill 939, which requires local government to develop waste reduction and recycling policies and meet mandated solid waste reduction targets (CalRecycle 2024). For the minor amount of solid waste anticipated to be produced by the project, the District would be required to comply with all laws and regulations related to the disposal and recycling of waste. There would be **no impact**.

2.20 Wildfire

#20. WILDFIRE. If located in or near State Responsibility Areas or lands classified as very high fire hazard severity zones:

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#20 -a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	No	No	**Yes**	No	No
#20 -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?	No	**Yes**	No	No	No
#20 -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?	No	No	**Yes**	No	No
#20 -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?	No	No	**Yes**	No	No

Environmental Setting

Fire protection services in Contra Costa County are provided by six fire protection districts and three city fire departments. The project site is within the Contra Costa Fire Protection District (Contra Costa County 2024).

The project site is located within a SRA with a fire hazard severity classification of high (CALFIRE 2007). Additionally, the project site is located approximately 1-mile from a very high fire hazard severity zone in SRA (CALFIRE 2023). According to data available from the CALFIRE's Incident Maps, there have been 44 wildfires within Contra Costa County since 2013 (CALFIRE 2024). Of these fires, there are 9 that occurred in the vicinity of the project site, as detailed in **Table 2.20-1**.

Table 2.20-1 Local Fire History

Name	Acres	Date Created	Date Extinguished
Concord Fire	274	7/1/2013	7/1/2013
Deer Complex	231	7/8/2017	1/9/2018
Marsh Fire	247	7/25/2018	1/4/2019
Marsh Complex	340	8/3/2019	8/6/2019
Sellers Fire	58	8/7/2019	No Information*

Name	Acres	Date Created	Date Extinguished
Creek Fire	60	5/30/2020	No Information*
Holland Fire	75	7/20/2020	7/20/2020
Marsh Fire	159	6/9/2022	No Information*
Empire	250	6/26/2024	No Information*

Source: CAL FIRE 2024
*: No information was listed from CAL Fire.

Discussion

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

As described in Impact 2.9(f) in Section 2.9, "Hazards and Hazardous Materials," implementation of the project is not anticipated to substantially impair an adopted emergency response plan or evacuation plan because the District would comply with all measures and actions regarding emergency response and evacuation consistent with the general plan policies and actions, relevant State and local regulations, and the 2024 Hazard Mitigation Plan. Further, the project would not affect emergency response or evacuation activities as emergency access would be established at all times. Traffic control would be provided during construction activities. Implementation of the project would not require any road closures, and therefore, the project would not interfere with traffic routes or response vehicle transport.

O&M activities for the project would be substantially similar to current conditions, respective to emergency response and evacuation in the event of a wildfire. No operation-related activities would occur within surrounding rights-of-ways that could impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. As a result, a **less-than-significant** 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?

The project site is vegetated and flammable depending on temperature, wind, and humidity conditions in the area. The project site is located near residential and commercial uses north of the project site, as well as agricultural land. There are no residences located within the immediate project site, however, the people that live north of the site could be exposed to smoke of PM from fire, if one were to occur within the project site.

During construction, equipment and on-site diesel fuel could pose a risk to wildfire with possible ignition sources such as internal combustion engines, gasoline-powered tools, and equipment that could produce a spark, fire, or flame. The use of spark-producing construction machinery within fire risk areas such as the project site could expose temporary project workers and contractors to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire.

Additionally, the project design includes controlled burns for yellow star-thistle, which could exacerbate wildfire conditions.

However, contractors would have to comply with PRC Sections 4427, 4428, 4431, and 4442. During construction, strict adherence to these PRC sections would require that contractors implement all monitoring and safety measures to avoid the risk of exacerbating wildfire. Furthermore, prior to conducting the prescribed burn, the District would prepare and submit a Smoke Management Plan to the BAAQMD to manage smoke (pollutant) concentrations in the area. Potential feasible methods to reduce risks of smoke to sensitive receptors or construction workers during prescribed burns include but are not limited to: reducing the total area burned by isolating and leaving large fuels such as logs, unburned; implement mosaic burning; burn when fuels have a higher fuel moisture content; reduce fuel loading by removing fuels before ignition; and schedule burns before new fuels appear (National Wildfire Coordinating Group 2020). Nonetheless, given the recent history of wildfires in the project area, impacts related to the exposure of workers to pollutant concentration from wildfire would be **potentially significant.**

Mitigation Measures

The following mitigation measures have been identified to address this impact.

> **Mitigation Measure HAZ-1: Prepare and Implement BMPs for Wildland Fire Prevention.**
>
> Please refer to Mitigation Measure HAZ-1 in Section 2.9, "Hazards and Hazardous Materials," for the full text of this mitigation measure.
>
> **Timing:** Before and during construction
>
> **Responsibility:** District and its contractor(s)
>
> **Mitigation Measure HAZ-2: Prepare and Implement Fire Safety Plan.**
>
> Please refer to Mitigation Measure HAZ-2 in Section 2.9, "Hazards and Hazardous Materials," for the full text of this mitigation measure.
>
> **Timing:** Before and during construction
>
> **Responsibility:** District and its contractor(s)

Implementation of Mitigation Measures HAZ-1 and HAZ-2, along with compliance with PRC sections, would reduce significant impacts associated with wildfire ignition and spread by requiring the implementation of fire-related BMPs and preparing a Fire Safety Plan. The District would coordinate with the construction contractor to make sure that the requirements outlined in these mitigation measures are implemented during construction activities. Impacts would be **less-than-significant with mitigation incorporated**.

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?

Refer to Impact 2.20(b). Implementation of the project would not require the installation or maintenance of infrastructure that would exacerbate fire risk. As discussed above, prior to conducting the prescribed burn, the District would prepare and submit a Smoke Management Plan to the BAAQMD to manage smoke concentrations (GHG emissions) in the area. The District would implement methods into the project design that would reduce the risks of smoke in the area due to prescribed burns. Some of these methods may or may not include techniques to sequester carbon, which would be beneficial to the surrounding environment. An example method to sequester carbon is "conservation burning", a technique for burning woody material that reduces the production of smoke particulates and carbon released into the atmosphere and generates biochar ((National Wildfire Coordinating Group 2020). Similar to the project's potential use of biochar described in Section 1.1, "Description of Project," for mercury sequestration, biochar can be spread on areas to increase soil organic matter and soil carbon sequestration.

All project activities must comply with fire protection and prevention requirements specified by the CCR and Cal/OSHA. This includes various measures such as easy accessibility of firefighting equipment, proper storage of combustible liquids, no smoking in service and refueling areas, and worker training for firefighter extinguisher use. With adherence to applicable laws and regulations, impacts from the project would be **less than significant**, and incorporation of controlled burn methods could have a beneficial impact on the environment by reducing GHG emissions.

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?

Refer to Impacts 2.7(a.iv) and (c) in Section 2.7, "Geology and Soils," and Impacts 2.10(c.i) and (c.ii) in Section 2.10, "Hydrology and Water Quality." The project does not include any structures. Sediment would be dredged/removed during construction. Site alteration through movement of substantial quantities of soil and earth materials could cause landslides as a result of runoff or drainage changes during construction. If a wildland fire is followed by a rain event, it could result in downstream flooding or landslides as a result of post-fire runoff.

However, during construction BMPs identified in the project's SWPPP would be implemented to reduce erosion or sedimentation during activities, thereby reducing potential risks to construction workers on-site.

Sediment within the Reservoir and would be stabilized with natural materials, plantings, and restoration techniques to increase flood capacity within the Reservoir. Further, soils within proposed stockpile and disposal areas would be stockpiled temporarily, and then capped, compacted well and covered with native soil material (with limited organic materials). After

construction, the project site would either be returned to preexisting conditions or restored ecologically. Therefore, soils within the project site should be stabilized in a way that if a fire were to occur, the risk of downstream flooding or landslides, as well as runoff would be reduced to a **less-than-significant** level.

2.21 Mandatory Findings of Significance

#21. MANDATORY FINDINGS OF SIGNIFICANCE.

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
#21 -a. Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?	No	**Yes**	No	No	No
#21 -b. 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)?	No	**Yes**	No	No	No
#21 -c. Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	No	**Yes**	No	No	No

Discussion

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

As discussed in Section 2.4, "Biological Resources," project activities could impact sensitive biological resources, or more specifically, Crotch's bumblebee, monarch, California tiger salamander, California red-legged frog, northwestern pond turtle, burrowing owl, Swainson's hawk, golden eagle, tricolored blackbird, other special-status species not covered by the HCP/NCCP, common birds, special-status bats, the American badger, and the San Joaquin kit fox. Implementation of Mitigation Measures BIO-1 through BIO-16 would reduce impacts on these species during construction activities. Therefore, project impacts as they are related to biological resources would be l**ess-than-significant with mitigation incorporated**.

Furthermore, as discussed in Section 2.5, "Cultural Resources," and Section 2.8, "Tribal Cultural Resources," construction of the project could potentially encounter unknown archaeological

resources or human remains. Implementation of Mitigation Measures CUL-1 through CUL-4 would reduce potential impacts related to the discovery of unknown archaeological resources and human remains. Therefore, project impacts as they are related to cultural resources would be **less-than-significant with mitigation incorporated**.

Once constructed, operation of the project would have no long-term permanent impacts to biological or cultural resources. The project would benefit biological resources, overall.

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.)

A cumulative impact could occur if the project would result in an incrementally considerable contribution to a significant cumulative impact in consideration of past, present, and reasonably foreseeable future projects for each resource area. No direct significant impacts were identified for the project that could not be mitigated to a less-than-significant level. However, when combined with other projects within the vicinity, the project may result in contribution to a potentially significant cumulative impact.

The project would result in no potential impacts to agricultural and forestry resources, mineral resources, population and housing, public services, and recreation. Additionally, impacts would be less than significant for aesthetics, air quality, energy, GHG emissions, land use and planning, noise, and transportation.

Potential impacts to biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, tribal cultural resources, utilities and service systems, and wildfire would only occur during construction of the project. These potential construction impacts would be short term and occur over the approximate 15-month construction period. The construction impacts for the project are limited in nature and scope to the project area in and around the area around the Reservoir. The project work itself would occur within the construction work area footprint and would be contained such that off-site impacts do not occur. As a result, the impacts of the project would not combine together with other related projects in the vicinity to produce a significant environmental impact. Furthermore, O&M of the Reservoir would not result in any potential impacts to resources. Therefore, operation of the project would not contribute to long-term cumulative impacts and their contribution to impacts would be less than cumulatively considerable.

Implementation of mitigation measures listed within Section 2.4, "Biological Resources," Section 2.5, "Cultural Resources," Section 2.7, Geology and Soils," Section 2.9, "Hazards and Hazardous Materials," Section 2.10, "Hydrology and Water Quality," Section 2.18, "Tribal Cultural Resources," Section 19, "Utilities and Service Systems," and Section 3.20, "Wildfire," would aim to reduce project impacts to neighboring sensitive receptors and to sensitive natural resources. Impacts related to biological resources, cultural resources, paleontological resources,

hazards and hazardous materials, tribal cultural resources, utilities, and wildfire risks would be less than cumulatively considerable with the implementation of mitigation measures. Therefore, the project would not result in any impacts that would be cumulatively considerable resulting from the project. Cumulative impacts would be considered **less-than-significant with mitigation incorporated**.

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

The project would not result in substantial adverse effects, either direct or indirect, on human beings after mitigation is incorporated. As described in Section 2.3, "Air Quality," and Section 2.8, "Greenhouse Gas Emissions," air emissions associated with the project would not result in adverse health effects to sensitive receptors, and greenhouse gas emissions would be reduced with implementation of Mitigation Measure GHG-1. Additionally, although not required by CEQA, the District would implement Mitigation Measure AQ-1, which would reduce construction-related emissions by implementing BMPs to control fugitive dust emissions during construction. Furthermore, as described in Section 2.13, "Noise," construction noise would not result in adverse effects to sensitive receptors. Impacts to human beings would be **less-than-significant with mitigation incorporated**

3. References Cited

Project Description

Cain, John R., James D. Robins, and Sarah S. Beamish, 2003. *The Past and Present Condition of the Marsh Creek Watershed, Prepared by the Natural Heritage Institute and the Delta Science Center at Big Break, Third Edition*. November 2003.

Contra Costa County Flood Control and Water Conservation District, 2017. *Abridged Proposal Application, Fiscal Year 2017-18, Proposition 1, Delta Conservancy Ecosystem Restoration and Water Quality Grant Program*. 2017.

County of Contra Costa, 2024a. DoItGIS, CCMap. Use this link to view the web app viewer, accessed April 2024.

County of Contra Costa, 2024b. Flood Control District. Use this link to visit the Flood Control district, accessed April 2024.

GEI Consultants, Inc. (GEI), 2019. *Marsh Creek Reservoir Emergency Spillway, Condition Assessment Report.* March 2019.

Organization for Economic Cooperation and Development (OECD), 1984. *OECD Guideline for Testing of Chemicals, "Earthwork, Acute Toxicity Tests"*. Adopted April 4, 1984.

United States Environmental Protection Agency (EPA), 2002. *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, fifth Edition*. October 2002.

Environmental Checklist

Aesthetics

Contra Costa County, 2024. Contra Costa County Updated 2045 General Plan, Conservation Element. Use this link to view the 2045 General Plan. Accessed November 29, 2024.

Agriculture and Forestry Resources

California Department of Conservation (DOC), Division of Land Resource Protection, 2004. A Guide to the Farmland Mapping and Monitoring Program, 2004 Edition. Use this link to view the guide. Accessed November 25, 2024.

_____. 2022. California Important Farmland Finder. Use this link to view the finder. Accessed November 25, 2024.

_____. 2023. Williamson Act Contracts. Use this link to view the contracts. Accessed November 25, 2024.

Contra Costa County, 2024. Contra Costa County Updated 2045 General Plan, Land Use Element. Use this link to view the General Plan. Accessed November 25, 2024.

Air Quality

Bay Area Air Quality Management District (BAAQMD), 2022. CEQA Air Quality Guidelines. Use this link to view the Guidelines. Accessed November 19, 2024.

California Air Resource Board (CARB), 2023. Maps of State and Federal Area Designations. Use this link to view the maps. Accessed November 19, 2024.

Biological Resources

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken (eds.), 2012. *The Jepson Manual: Vascular Plants of California, Second Edition. Berkeley: University of California Press*. 2012.

California Department of Conservation (DOC), 2024. Maps Data Viewer: Geologic Map of California. Use this link to view the data viewer maps. Accessed: November 2024.

California Department of Fish and Wildlife (CDFW), 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. 2018.

_____. 2023. Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species. Use this link to view the CESA Protocols. Accessed November 2024.

_____. 2024a. California Natural Diversity Database (CNDDB) QuickView Tool and BIOS 6 Viewer. California Natural Diversity Database, Wildlife and Habitat Data Analysis Branch. Sacramento, CA. Use this link to view the QuickView tool. Accessed November 2024.

_____. 2024b. List of California Sensitive Natural Communities. Sacramento, CA. Use this link to view the list of communities. Accessed November 2024.

California Department of Parks and Recreation & City of Brentwood, 2012. *Marsh Creek State Park General Plan and Program Environmental Impact Report*. January 2012.

California Native Plant Society (CNPS), 2024. Rare Plant Inventory. Online edition, v9.5. Sacramento, CA. Use this link to view the Rare Plant Inventory. Accessed: November 2024.

Cold Regions Research and Engineering Laboratory, 2022. *National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams*, *Interim Version. Technical Report ERDC/CRREL TR-22-26. U.S. Army Corps of Engineers, Wetlands Regulatory Assistance Program. Vicksburg, MS*. 2022.

Contra Costa Public Works Department, 2020. *Marsh Creek Road Bridge Replacement 143 and 145 Project Initial Study/Mitigated Negative Declaration*.

Contra Costa County, 2024. *Contra Costa County 2045 General Plan*. Adopted November 5, 2024.

Environmental Laboratory, 1987. Corps of Engineers Wetland Delineation Manual. Technical Report Y-87-1. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS. January 1987 – Final Report.
Use this link to view the 1987 Wetland Delineation Manual.

_____. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Technical Report ERDC/EL TR-08-28. U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory. Hanover, NH. September 2008. Use this link to view the 2008 Wetland Delineation Manua;.

Esri, 2024. *Aerial imagery available through ArcGIS Online mapping software*.

GoogleEarth, 2024. *Imagery date range 1985–2024*.

H. T. Harvey & Associates, 2020. *East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Pan: Appendix B. November 2020 CEQA Species Assessment Update*.

_____. 2021. Final Caltrans Bat Mitigation: A Guide to Developing Feasible and Effective Solutions. Prepared for California Department of Transportation in collaboration with HDR, Inc., Table 7-1.

Jones & Stokes, 2006. East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan, Vols 1 & 2. October 2006.

LSA Associates, Inc., 2021. Marsh Creek Regional Trail Project, Brentwood to Round Valley Regional Preserve, Initial Study/Mitigated Negative Declaration.

Natural Heritage Institute and the Delta Science Center at Big Break, 2003. The Past and Present Condition of the Marsh Creek Watershed. Third Edition. November 2003

NOAA Fisheries, 2024a. Species and Habitat App. West Coast Region.
Use this link to view the NOAA Species Habitat Map for the West Coast Region .
Accessed November 2024.

_____. 2024b. National ESA Critical Habitat Mapper.
Use this link to view the NOAA critical habitat mapper. Accessed November 2024.

_____. 2024c. Essential Fish Habitat Mapper. West Coast Region.
Use this link to view the NOAA fish habitat mapper. Accessed November 2024.

Sawyer, J.O., T. Keeler Wolf, and J.M. Evens, 2009. A Manual of California Vegetation. Second edition. California Native Plant Society Press, Sacramento.

Slotton, D, S. Ayers and J. Reuter, 1996. Marsh Creek Watershed: 1995 Mercury Assessment Project. Final Report, March 1996 for Contra Costa County, California.

United States Fish and Wildlife Service (USFWS), 1999. U.S. Fish and Wildlife Service San Joaquin Kit Fox Survey Protocol for the Northern Range. Prepared by Sacramento Fish and Wildlife Office. June 1999.

_____. 2023. Western Monarch Butterfly Conservation Recommendations.

_____. 2024a. Information for Planning and Consultation System.
Use this link to view the USFWS Ipac website. Accessed November 2024.

_____. 2024b. Critical Habitat for Threatened and Endangered Species Web Portal.
Use this link to view the USFWS web portal. Accessed November 2024.

_____. 2024c. National Wetlands Inventory Mapper [web application]. Available at: https://www.fws.gov/wetlands/data/mapper.html. Accessed November 2024.

U.S. Department of Agriculture (USDA), 2024. Natural Resources Conservation Service Web Soil Survey 3.4. Use this link to view the USDA web soil survey. Accessed: November 2024.

USGS (U.S. Geological Survey), 2024. National Hydrography Dataset. The National Map.
Use this link to view the USGS national hydrography dataset map. Accessed November 2024.

The Xerces Society, Wildlife Preservation Canada, York University, University of Ottawa, The Montreal Insectarium, The London Natural History Museum, BeeSpotter (Xerces Society et al.), 2024. Data accessed from Bumble Bee Watch, a collaborative website to track and conserve North America's bumble bees.
Available at: Use this link to view the Bumble Bee site.

Cultural Resources

Bennyhoff, James A., and Richard E. Hughes, 1987. Shell Beads and Ornament Exchange Networks between California and the Great Basin. In The Archaeology of Monitor

Valley, 5: Regional Synthesis and Implications, by David H. Thomas. Anthropological Papers of the American Museum of Natural History. New York, NY .

Chartkoff, J. L., and K. K. Chartkoff, 1984. The Archaeology of California. Stanford University Press, Stanford, CA.

City of Brentwood, 2013. "History of Timeline." Use this link to view the City of Brentwood History of Timeline. Accessed August 2024.

Contra Costa County Assessor, 2005. Department of Conservation and Development. 2005. "Contra Costa County General Plan: 2005-2020." January 18, 2005.

Contra Costa Times, 1960. *"Pride and Problems."* November 27, 1960.

_____. 1968. "Walnut Creek's Future Lies In Business, Culture." November 15, 1968.

Historic Resource Associates, 2017. "Contra Cost-Moraga/Pittsburg-Tesla PG&E Electrical Transmission Lines," DPR 523 Form, P-07-002956, December 2017.

JRP Historical Consulting, LLC, 2007. "Marsh Creek Dam," Department of Parks and Recreation 523 Form, P-07-002991, October 19, 2007.

Jones, T. L., N. E. Stevens, D. A. Jones, R. T. Fitzgerald, and M. G. Hylkema, 2007. The Central Coast: A Midlatitute Millieu.In California Prehistory: Colonization, Culture, and Complexity." edited by T. L. Jones and K. A. Klar, pp. 125–146. Alta Mira Press, Plymouth, United Kingdom.

Martinez Daily Gazette, 1912. *"Brentwood To Have Bank And Hotel."* September 20, 1912.

_____. 1913. "Ground Broken For Marsh Grant Irrigation System." January 24, 1913.

Milliken, P., R. T. Fitzgerald, M. G. Hylkema, R. Groza, T. Origer, D. G. Bieling, A. Leventhal, R. S. Wiberg, A. Gottfield, D. Gillette, V. Bellifemine, E. Strother, R. Cartier, and D. A. Frederickson, 2007. *"Punctuated Culture Change in the San Francisco Bay Area." In California Prehistory: Colonization, Culture, and Complexity, edited by T. L. Jones and K. A. Klar. Alta Mira Press, Plymouth, United Kingdom*.

Meyer, Jack, and Jeffrey Rosenthal, 2007. Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4. Prepared for Caltrans District 4, 2007.Oakland Tribune, 2000. "Antioch: The history behind the city." July 16, 2000.

_____. 2009. *"More than just bedroom communities."* May 30, 2009.

Richmond Daily Independent, 1912. *"Los Meganos Ranch Divided."* January 12, 1912.

Rosenthal, J.S., and J. Meyer, 2004. Landscape Evolution and the Archaeological Record: A Geoarchaeological Study of the Southern Santa Clara Valley and Surrounding Region. Center for Archaeological Research at Davis Publication 14, University of California, Davis.

Rosenthal, J., and J. Meyer, 2009. TEA Geoarchaeological Study–the Potential for Buried Archaeological Sites in Central California Proceedings of the California Society for California Archaeology 22.

Energy

California Energy Commission (CEC), 2022. Electricity Consumption by County. Use this link to view the CEC electricity consumption by county Accessed November 19, 2024.

Contra Costa County, 2024. Climate Action and Adaptation Plan 2024 Update. Use this link to view the climate action plan. Accessed November 19, 2024.

Geology and Soils

Bryant, W.A. and Cluette, S.E, 2002. Fault Number 53b, Greenville Fault Zone, Marsh Creek-Greenville section, in Quaternary Fault and Fold Database of the United States. Use this link to view the USGS Greenville Fault Zone map. Accessed November 25, 2024.

California Geological Survey (CGS), 2018. Earthquake Zones of Required Investigation Brentwood Quadrangle. Use this link to view the 2018 earthquake zone document. Accessed November 25, 2024.

_____. 2022. California Geomorphic Provinces. Use this link to view the 2022 report. Accessed November 25, 2024.

_____. 2024. Alquist-Priolo Site Investigation Reports. Use this link to view the 2024 site investigation report. Accessed November 25, 2024.

City of Brentwood, 2014. Public Draft Environmental Impact Report for the 2014 Brentwood General Plan Update. Use this link to view the 2014 City of Brentwood public draft EIR. Accessed March 6, 2025.

Contra Costa County, 2024. 2045 General Plan and Climate Action Environmental Impact Report. Available at: Use this link to view the 2045 General Plan & Climate Action EIR. Accessed November 25, 2024.

Natural Resource Conservation Service (NRCS), 2021. Web Soil Survey. Use this link to view the NRCS 2021 web soil survey . Accessed November 25, 2024.

Society of Vertebrate Paleontology(SVP). 2010. *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*. 2010.

United States Geological Survey (USGS), 2024. Areas of Subsidence in California. Use this link to view the USGS Areas of Subsidence in California. Accessed November 25, 2024.

Greenhouse Gas Emissions

California Air Resource Board (CARB), 2022. 2022 Scoping Plan for Achieving Carbon Neutrality. Available at: Use this link to view the 2022 scoping plan Accessed November 19, 2024.

Contra Costa County, 2024. Climate Action and Adaptation Plan 2024 Update. Use this link to view the Climate Action & Adaptation Plan 2024 Update Accessed November 19, 2024.

State of California, 2018. *Executive Order B-55-18 To Achieve Carbon Neutrality*.

Sacramento Metropolitan Air Quality Management District (SMAQMD), 2020. *Thresholds of Significance Table*.

Hazards and Hazardous Materials

CalEPA, 2020. Sites Identified with Waste Constituents Above Hazardous Waste Levels Outside the Waste Management Unit. Available at: Use this link to view the CalEPA website uploads/sites/6/2016/10/SiteCleanup-CorteseList-CurrentList.pdf. Accessed January 20, 2025.

California Department of Forestry and Fire Protection (CAL FIRE), 2019. *Wildland Urban Interface (WUI).*

_____. 2023. *State Responsibility Area Fire Hazard Severity Zones*. June 15, 2023.

California Department of Toxic Substances Control (DTSC), 2022. Defining Hazardous Waste. Use this link to view the DTSC 2022 Defining Hazardous Waste web page. Accessed March 12, 2025.

_____. 2025. DTSC Information Advisory Clean Imported Fill Material Fact Sheet. Use this link to view the DTSC fact sheet . Accessed Marsh 12, 2025.

_____, 2025a. Envirostor Hazardous Waste and Substances Site List (Cortese). Use this link to view the DTSC site list. Accessed January 20, 2025

_____. 2025b. Cortese List: Section 65962.5(a). Use this link to view the DTSC Cortese List. Accessed January 20, 2025.

Contra Costa County, 2000. Airport Land Use Compatibility Plan, Chapter 4 "Byron Airport Policies." Use this link to view the Airport Land Use Compatibility Plan Accessed January 20, 2025.

_____. 2024a. *2024 Hazard Mitigation Plan*. September 23, 2024.

_____. 2024b. *Conta Costa County General Plan, Chapter 9 "Health and Safety Element."* November 5, 2024.

Contra Costa County Flood Control and Water Conservation District, 2025. *Marsh Creek Reservoir Restoration and total Mercury Reduction Project (DWDW#5B07CR00264). Pre-Dredge Sediment Evaluation Report*. July 17, 2025.

SWRCB, 2025a. GeoTracker Database. Use this link to view GeoTracker. Accessed January 20, 2025.

_____. 2025b. CDO-CAO List. Use this link to review the Cortese List. Accessed January 20, 2025.

Hydrology and Water Quality

California Department of Water Resources (DWR), 2018. SGMA Data Viewer: Bulletin 118 Groundwater Basins. Use this link to view the SGMA data viewer Bulletin 118. Accessed January 22, 2025.

_____. 2022. SGMA Data Viewer: Critically Overdrafted Basins and Groundwater Basins Prioritization. Use this link to view SGMA data viewer critically overdrafted basins. Accessed January 22, 2025.

_____. 2024. SGMA Data Viewer: DWR Groundwater Measurements. Use this link to view SGMA data viewer groundwater measurements. Accessed January 22, 2025.

California Division of Dam Safety (DSOD), 2021. Dam Breach Inundation Web Map. Use this link to view the DSOD dam breach inundation web map. Accessed January 22, 2025.

California Geological Survey (CGS), 2022. Tsunami Hazard Map. Use this link to view the CGS tsunami hazard map. Accessed January 22, 2025.

California Regional Water Quality Control Board - Central Valley Region, 2010c. *Order No. R5-2010-102. East Contra Costa County Municipal NPDES Permit*.

_____. Central Valley Region, 2021. *Delta Mercury Control Program and Total Maximum Daily Load Review*. February 24.

Contra Costa County Community Development Department (CCCDD), 2003. Contra Costa County Watershed Atlas. Prepared in cooperation with the Contra Costa County Public Works Department under the direction of the Contra Costa County Board of Supervisors. Contra Costa County, California.

Contra Costa County, 2024. Contra Costa County 2045 General Plan – Conservation, Open Space, and Working Lands Element.
Use this link to view the Contra Costa County 2045 General Plan. Accessed January 22, 2025.

_____. 2025. Flood Control Zones.
Use this link to view the Contra Costa County flood control zones. Accessed January 22, 2025.

Contra Costa County Flood Control and Water Conservation District, 2025. *Marsh Creek Reservoir Restoration and total Mercury Reduction Project (DWDW#5B07CR00264). Pre-Dredge Sediment Evaluation Report*. July 17, 2025.

RWQCB. *See* California Regional Water Quality Control Board.

DSOD. *See* California Division of Dam Safety.

DWR. *See* California Department of Water Resources.

East County Water Management Association (ECWMA), 2019. East Contra Costa County Integrated Water Management Plan.
Use this link to view the ECWMA Integrated Water Management Plan. Accessed January 22, 2025.

GEI Consultants Inc, 2019. *Marsh Creek Reservoir Emergency Spillway Condition Assessment Report. March 2019 for Contra Costa County Flood Control and Water Conservation District, California*.

McNulty, M.E. and M. Wickland, 2003. *Redesigning Marsh Creek Dam to allow Chinook salmon passage, flood protection, and mercury sedimentation*.

Natural Resources Conservation Service (NRCS), 2021. Web Soil Survey.
Use this link to view the NCRS soil survey. Accessed October 30, 2021.

San Francisco Estuary Institute (SFEI), 2011. *East Contra Costa Historical Ecology Study. Prepared for Contra Costa County*. November 2011.

Slotton, D, S. Ayers and J. Reuter, 1996. *Marsh Creek Watershed: 1995 Mercury Assessment Project. Final Report, March 1996 for Contra Costa County, California*.

Land Use and Planning

California State Parks, 2024. California State Parks Online Map.
Use this link to view the online map. Accessed November 19, 2024.

Contra Costa County. 2024a. 2045 General Plan, Chapter 4: Land Use Element.
Use this link to view the chapter 4 of the 2045 General Plan. Accessed November 19, 2024.

_____. 2024b. Municode Article 84-42.402. Use this link to view Article 84-42.402. Accessed November 19, 2024.

_____. 2024c. Municode Article 84-40.402. Use this link to view Article 84-40.402. Accessed November 19, 2024.

_____. 2024d. CCMap. Use this link to view the web app viewer. Accessed November 19, 2024.

Mineral Resources

Contra Costa County, 2024. *2045 General Plan and Climate Action Plan Draft Environmental Impact Report.*
Use this link to view the 2045 General Plan & Climate Action Plan Draft EIR. Accessed November 21, 2024.

_____. 2024b. Contra Costa County Updated 2045 General Plan, Conservation Element.
Use this link to view the Updated 2045 General Plan. Accessed November 26, 2024.

Department of Conservation (DOC), 2022. Mineral Land Classification Maps SMARA Study Area. Use this link to view the mineral land classification maps. Accessed November 21, 2024.

Stinson, et al., 1982. *Mineral Land Classification Map Aggregate Resources Only Contra Costa County: Brentwood Quadrangle*.

United States Geological Survey (USGS), 2024. Mineral Resources Online Map.
Use this link to view the USGS online map. Accessed November 21, 2024.

Noise

California State Parks. 2024. Marsh Creek State Park.
Use this link to view the Marhs Creek State Parks website. Accessed November 29, 2024.

Contra Costa County. 2024a. CC Map. Use this link to view the CC Map. Accessed November 29, 2024.

_____. 2024b. *2045 General Plan Chapter 9: Health and Safety*. Use this link to view the Chapter 9 of the 2045 General Plan. Accessed November 29, 2024.

Federal Transit Administration (FTA), 2018. *Transit Noise and Vibration Impact Assessment Manual*. Use this link to view the FTA 2018 Manual. Accessed March 12, 2025.

Population and Housing

United States Census Bureau. 2024. Contra Costa County Quick Facts. Use this link to view the Census Bureau's quick facts. Accessed November 26, 2024

Public Services

Contra Costa County, 2024. *Contra Costa County Updated 2045 General Plan, Public Facilities and Service Element*. Use this link to view the 2045 General Plan Public Facilities & Service Element. Accessed November 26, 2024.

Recreation

East Bay Regional Park District. 2024. Marsh Creek Regional Trail. Use this link to view the trail map. Accessed November 27, 2024.

Contra Costa County. 2024. Contra Costa County Updated 2045 General Plan, Public Facilities and Service Element. Use this link to view the 2045 General Plan, Public Facilities & Services Element

. Accessed November 26, 2024.

Transportation

Contra Costa County. 2024. *2045 General Plan, Chapter 5: Transportation Element*. Use this link to view Chapter 5 of the 2045 General Plan. Accessed November 22, 2024.

_____. 2020. *Contra Costa County Transportation Analysis Guidelines*. Use this link to view the guidelines. Accessed November 22, 2024.

Contra Costa Transit Authority (CCTA). 2024a. Contra Costa Transit Map. Use this link to view the transit map. Accessed November 22, 2024.

_____. 2024b. Bike Mapper. Use this link to view the bike mapper. Accessed November 22, 2024.

_____. 2023. *East County Action Plan*, Figure 6-1. Use this link to view the East County Action Plan, Figure 6-1. Accessed November 22, 2024.

Tribal Cultural Resources

Bennyhoff, J. A., 1977. *Ethnogeography of the Plains Miwok. Center for Archaeological Research at Davis Publication 5. Davis, CA*: University of California, Davis.

Cook, E., 1955. *"The Aboriginal Population of San Joaquin Valley, California." Anthropological Papers 16 (2)*. University of California Press, Berkeley and Los Angeles, CA.

Gayton, A.H., 1948. "*Northern Foothill Yokuts and Western Mono." Anthropological Records 10(1)*.

Kroeber, A. L., 1978 (1932). *The Patwin and Their Neighbors. University of California Publications in Archaeology and Ethnography 29: 253-423*.

Levy, Richard, 1978. *Eastern Miwok. In Handbook of North American Indians, Vol. 8, 398-413*. Edited by Robert F. Heizer. Smithsonian Institution, Washington D.C.

Margolin, M., 1978. *The Ohlone Way: Indian Life in the San Francisco–Monterey Bay Area*. Heyday Books. Berkeley, CA.

Milliken, Randall, 2009. *Ohlone/Costanoan Indians of the San Francisco Peninsula and their Neighbors, Yesterday and Today*. Randall Milliken, Laurence H. Shoup, and Beverly R. Ortiz" (2017). Government Documents and Publications.

Native Land Digital, 2024. Territory Acknowledgment Map. Use this link to view the map. Accessed: February 5, 2025.

Wallace, W.J., 1978. *Northern Valley Yokuts. In Handbook of North American Indians, Vol. 8*. edited by Robert F. Heizer, 462-470. Washington, D.C.: Smithsonian Institution.

Utilities and Service Systems

CalRecycle, 2024. *Enforcement*. Use this link to view the CalRecycle website. Accessed December 4, 2024.

_____. 2019a. *SWIS Facility/Site Activity Details Brentwood Transfer Station (07-AA-0068)*. Use this link to view the Facility/Site Activity Details for Brentwood Transfer Station. Accessed December 4, 2024.

_____. 2019b. SWIS Facility/Site Activity Details Keller Canyon Landfill (07-AA-0032). Use this link to view the Facility/Site Activity Details for Keller Canyon. Accessed December 4, 2024.

Contra Costa County, 2024. 2045 General Plan and Climate Action Plant Environmental Impact Report. Use this link to view the 2045 General Plan & Climate Action Draft EIR. Accessed December 4, 2024.

Wildfire

California Department of Forestry and Fire Protection (Cal Fire), *2007. Fire Hazard Severity Zones in LRA*. Use this link to view the Cal Fire 2007 Fire Hazard Severity Zone in LRA. Accessed November 29, 2024.

_____. 2024. *Incident Data*. Use this link to view the 2024 CalFire incident data. Accessed January 2024.

Contra Costa County, 2024. *Contra Costa County Updated 2045 General Plan*, Public Facilities and Service Element.
Use this link to view the 2045 General Plan, Public Facilities & Service Element. Accessed November 26, 2024.

National Wildlife Coordination Group, 2020. *NWCG Smoke Management Guide for Prescribed Fire*. November 2020.

Mandatory Findings of Significance

No references cited.

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Marsh Creek_12152025
Construction Start Date	7/1/2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.0
Precipitation (days)	0.80
Location	37.886261184364955, -121.72599783555653
County	Contra Costa
City	Unincorporated
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1365
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.35

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Recreational	1.00	User Defined Unit	330	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-5	Use Advanced Engine Tiers
Construction	C-10-A	Water Exposed Surfaces
Construction	C-10-C	Water Unpaved Construction Roads
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads
Construction	C-12	Sweep Paved Roads

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	11	9.2	81	84	0.26	3.1	949	952	2.9	105	108	—	35,127	35,127	2.4	4.5	58	36,470
Mit.	3.6	2.4	39	108	0.26	0.68	244	244	0.54	28	29	—	35,127	35,127	2.4	4.5	58	36,470
% Reduced	68%	74%	52%	-29%	—	78%	74%	74%	81%	73%	73%	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	12	9.5	86	85	0.20	3.4	949	953	3.1	105	108	—	22,090	22,090	1.3	0.64	0.15	22,313
Mit.	2.9	2.4	22	108	0.20	0.46	244	244	0.43	28	29	—	22,090	22,090	1.3	0.64	0.15	22,313
% Reduced	75%	75%	75%	-27%	—	86%	74%	74%	86%	73%	73%	—	—	—	—	—	—	—

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.0	4.0	38	38	0.10	1.5	283	285	1.3	33	35	—	11,359	11,359	0.64	0.61	2.9	11,559
Mit.	1.6	1.2	13	46	0.10	0.33	91	91	0.32	11	11	—	11,359	11,359	0.64	0.61	2.9	11,559
% Reduced	68%	70%	66%	-21%	—	78%	68%	68%	77%	67%	67%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.92	0.72	6.9	7.0	0.02	0.27	52	52	0.25	6.1	6.3	—	1,881	1,881	0.11	0.10	0.48	1,914
Mit.	0.29	0.22	2.3	8.5	0.02	0.06	17	17	0.06	2.0	2.1	—	1,881	1,881	0.11	0.10	0.48	1,914
% Reduced	68%	70%	66%	-21%	—	78%	68%	68%	77%	67%	67%	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	6.2	4.8	59	50	0.24	1.7	241	243	1.5	25	27	—	34,145	34,145	2.4	4.5	58	35,598
2027	11	9.2	81	84	0.26	3.1	949	952	2.9	105	108	—	35,127	35,127	2.3	4.1	51	36,470
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	12	9.5	86	85	0.20	3.4	949	953	3.1	105	108	—	22,090	22,090	1.3	0.64	0.15	22,313
2027	11	9.2	82	84	0.20	3.1	949	952	2.9	105	108	—	22,022	22,022	1.2	0.63	0.14	22,241
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	3.1	2.4	24	22	0.06	0.88	199	200	0.80	22	23	—	7,593	7,593	0.46	0.47	2.4	7,748
2027	5.0	4.0	38	38	0.10	1.5	283	285	1.3	33	35	—	11,359	11,359	0.64	0.61	2.9	11,559
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2026	0.57	0.44	4.4	4.1	0.01	0.16	36	37	0.15	4.1	4.2	—	1,257	1,257	0.08	0.08	0.40	1,283
2027	0.92	0.72	6.9	7.0	0.02	0.27	52	52	0.25	6.1	6.3	—	1,881	1,881	0.11	0.10	0.48	1,914

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	3.6	1.9	39	68	0.24	0.68	239	240	0.52	25	26	—	34,145	34,145	2.4	4.5	58	35,598
2027	3.6	2.4	38	108	0.26	0.54	244	244	0.54	28	29	—	35,127	35,127	2.3	4.1	51	36,470
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	2.9	2.4	22	108	0.20	0.44	244	244	0.43	28	29	—	22,090	22,090	1.3	0.64	0.15	22,313
2027	2.9	2.4	22	108	0.20	0.46	244	244	0.43	28	29	—	22,022	22,022	1.2	0.63	0.14	22,241
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.95	0.66	8.8	29	0.06	0.16	65	65	0.14	7.5	7.6	—	7,593	7,593	0.46	0.47	2.4	7,748
2027	1.6	1.2	13	46	0.10	0.33	91	91	0.32	11	11	—	11,359	11,359	0.64	0.61	2.9	11,559
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.17	0.12	1.6	5.2	0.01	0.03	12	12	0.03	1.4	1.4	—	1,257	1,257	0.08	0.08	0.40	1,283
2027	0.29	0.22	2.3	8.5	0.02	0.06	17	17	0.06	2.0	2.1	—	1,881	1,881	0.11	0.10	0.48	1,914

3. Construction Emissions Details

3.1. Mobilization (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.5	1.3	9.8	11	0.03	0.36	—	0.36	0.33	—	0.33	—	3,444	3,444	0.14	0.03	—	3,456
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.13	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	47	47	< 0.005	< 0.005	—	47
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.8	7.8	< 0.005	< 0.005	—	7.8
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.31	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	69	69	< 0.005	< 0.005	0.25	70
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.88	0.88	< 0.005	< 0.005	< 0.005	0.89
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.15	0.15	< 0.005	< 0.005	< 0.005	0.15
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.2. Mobilization (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.34	0.34	2.4	18	0.03	0.06	—	0.06	0.06	—	0.06	—	3,444	3,444	0.14	0.03	—	3,456
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.25	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	47	47	< 0.005	< 0.005	—	47
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.8	7.8	< 0.005	< 0.005	—	7.8
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.31	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	69	69	< 0.005	< 0.005	0.25	70
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.88	0.88	< 0.005	< 0.005	< 0.005	0.89
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.15	0.15	< 0.005	< 0.005	< 0.005	0.15
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Traffic Control (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	17	17	< 0.005	< 0.005	0.06	18
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16	16	< 0.005	< 0.005	< 0.005	16

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.7	6.7	< 0.005	< 0.005	0.01	6.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.1	1.1	< 0.005	< 0.005	< 0.005	1.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.4. Traffic Control (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	17	17	< 0.005	< 0.005	0.06	18
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16	16	< 0.005	< 0.005	< 0.005	16
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.7	6.7	< 0.005	< 0.005	0.01	6.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.1	1.1	< 0.005	< 0.005	< 0.005	1.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Traffic Control (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.06	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16	16	< 0.005	< 0.005	< 0.005	16
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.96	0.96	< 0.005	< 0.005	< 0.005	0.97
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.16	0.16	< 0.005	< 0.005	< 0.005	0.16
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.6. Traffic Control (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.06	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16	16	< 0.005	< 0.005	< 0.005	16
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.96	0.96	< 0.005	< 0.005	< 0.005	0.97
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.16	0.16	< 0.005	< 0.005	< 0.005	0.16
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Erosion Control and BMPs (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.57	0.48	4.7	6.8	0.01	0.20	—	0.20	0.18	—	0.18	—	1,011	1,011	0.04	0.01	—	1,015
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.02	0.01	0.13	0.19	< 0.005	0.01	—	0.01	0.01	—	0.01	—	28	28	< 0.005	< 0.005	—	28
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.6	4.6	< 0.005	< 0.005	—	4.6
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.31	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	69	69	< 0.005	< 0.005	0.25	70
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.22	0.11	< 0.005	< 0.005	1.5	1.5	< 0.005	0.16	0.16	—	175	175	0.01	0.03	0.37	185
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.8	1.8	< 0.005	< 0.005	< 0.005	1.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.04	0.04	< 0.005	< 0.005	< 0.005	—	4.8	4.8	< 0.005	< 0.005	< 0.005	5.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.29	0.29	< 0.005	< 0.005	< 0.005	0.29
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.80	0.80	< 0.005	< 0.005	< 0.005	0.84

3.8. Erosion Control and BMPs (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.11	1.2	7.1	0.01	0.02	—	0.02	0.02	—	0.02	—	1,011	1,011	0.04	0.01	—	1,015
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.19	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	28	28	< 0.005	< 0.005	—	28
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.6	4.6	< 0.005	< 0.005	—	4.6
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.31	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	69	69	< 0.005	< 0.005	0.25	70
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.22	0.11	< 0.005	< 0.005	1.5	1.5	< 0.005	0.16	0.16	—	175	175	0.01	0.03	0.37	185
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.8	1.8	< 0.005	< 0.005	< 0.005	1.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.04	0.04	< 0.005	< 0.005	< 0.005	—	4.8	4.8	< 0.005	< 0.005	< 0.005	5.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.29	0.29	< 0.005	< 0.005	< 0.005	0.29
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.80	0.80	< 0.005	< 0.005	< 0.005	0.84

3.9. Develop Entrance, Haul Routes, and Permanent Access (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.7	3.9	36	32	0.08	1.5	—	1.5	1.4	—	1.4	—	8,603	8,603	0.35	0.07	—	8,632
Dust From Material Movement	—	—	—	—	—	—	11	11	—	4.5	4.5	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.39	0.35	< 0.005	0.02	—	0.02	0.02	—	0.02	—	94	94	< 0.005	< 0.005	—	95
Dust From Material Movement	—	—	—	—	—	—	0.12	0.12	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.01	0.01	0.07	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	16	16	< 0.005	< 0.005	—	16
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.47	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	104	104	< 0.005	< 0.005	0.38	105
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.44	0.09	5.4	2.6	0.03	0.08	38	38	0.05	4.0	4.0	—	4,350	4,350	0.34	0.70	9.1	4,576
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.1	1.1	< 0.005	< 0.005	< 0.005	1.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.06	0.03	< 0.005	< 0.005	0.41	0.41	< 0.005	0.04	0.04	—	48	48	< 0.005	0.01	0.04	50
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.17	0.17	< 0.005	< 0.005	< 0.005	0.18
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	7.9	7.9	< 0.005	< 0.005	0.01	8.3

3.10. Develop Entrance, Haul Routes, and Permanent Access (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.0	1.00	6.8	44	0.08	0.27	—	0.27	0.26	—	0.26	—	8,603	8,603	0.35	0.07	—	8,632
Dust From Material Movement	—	—	—	—	—	—	4.3	4.3	—	1.8	1.8	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.48	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	94	94	< 0.005	< 0.005	—	95
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	16	16	< 0.005	< 0.005	—	16

Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.47	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	104	104	< 0.005	< 0.005	0.38	105
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.44	0.09	5.4	2.6	0.03	0.08	38	38	0.05	4.0	4.0	—	4,350	4,350	0.34	0.70	9.1	4,576
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.1	1.1	< 0.005	< 0.005	< 0.005	1.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.06	0.03	< 0.005	< 0.005	0.41	0.41	< 0.005	0.04	0.04	—	48	48	< 0.005	0.01	0.04	50
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.17	0.17	< 0.005	< 0.005	< 0.005	0.18
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	7.9	7.9	< 0.005	< 0.005	0.01	8.3

3.11. Water Diversion (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.0	1.7	15	14	0.02	0.67	—	0.67	0.62	—	0.62	—	2,505	2,505	0.10	0.02	—	2,514
Dust From Material Movement	—	—	—	—	—	—	8.2	8.2	—	4.2	4.2	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.21	0.19	< 0.005	0.01	—	0.01	0.01	—	0.01	—	34	34	< 0.005	< 0.005	—	34
Dust From Material Movement	—	—	—	—	—	—	0.11	0.11	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.7	5.7	< 0.005	< 0.005	—	5.7
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	0.01	0.01	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	52	52	< 0.005	< 0.005	0.19	53
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.26	0.13	< 0.005	< 0.005	1.8	1.8	< 0.005	0.19	0.19	—	210	210	0.02	0.03	0.44	221
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.66	0.66	< 0.005	< 0.005	< 0.005	0.67
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	2.9	2.9	< 0.005	< 0.005	< 0.005	3.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.11	0.11	< 0.005	< 0.005	< 0.005	0.11
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.48	0.48	< 0.005	< 0.005	< 0.005	0.50

3.12. Water Diversion (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.47	0.43	3.4	14	0.02	0.11	—	0.11	0.10	—	0.10	—	2,505	2,505	0.10	0.02	—	2,514
Dust From Material Movement	—	—	—	—	—	—	3.2	3.2	—	1.6	1.6	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.19	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	34	34	< 0.005	< 0.005	—	34
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.7	5.7	< 0.005	< 0.005	—	5.7
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	52	52	< 0.005	< 0.005	0.19	53
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.26	0.13	< 0.005	< 0.005	1.8	1.8	< 0.005	0.19	0.19	—	210	210	0.02	0.03	0.44	221
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.66	0.66	< 0.005	< 0.005	< 0.005	0.67
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	2.9	2.9	< 0.005	< 0.005	< 0.005	3.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.11	0.11	< 0.005	< 0.005	< 0.005	0.11
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.48	0.48	< 0.005	< 0.005	< 0.005	0.50

3.13. Clearing and Grubbing Reservoir Area (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.6	3.1	40	31	0.09	1.1	—	1.1	0.99	—	0.99	—	9,330	9,330	0.38	0.08	—	9,362

Dust From Material Movement	—	—	—	—	—	—	8.2	8.2	—	4.2	4.2	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.14	1.9	1.4	< 0.005	0.05	—	0.05	0.05	—	0.05	—	435	435	0.02	< 0.005	—	436
Dust From Material Movement	—	—	—	—	—	—	0.38	0.38	—	0.20	0.20	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.34	0.26	< 0.005	0.01	—	0.01	0.01	—	0.01	—	72	72	< 0.005	< 0.005	—	72
Dust From Material Movement	—	—	—	—	—	—	0.07	0.07	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.47	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	104	104	< 0.005	< 0.005	0.38	105

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.37	0.08	4.5	2.2	0.02	0.07	31	31	0.05	3.3	3.3	—	3,611	3,611	0.28	0.58	7.5	3,799
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.5	4.5	< 0.005	< 0.005	0.01	4.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.22	0.10	< 0.005	< 0.005	1.5	1.5	< 0.005	0.15	0.15	—	168	168	0.01	0.03	0.15	177
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.74	0.74	< 0.005	< 0.005	< 0.005	0.75
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.26	0.27	< 0.005	0.03	0.03	—	28	28	< 0.005	< 0.005	0.03	29

3.14. Clearing and Grubbing Reservoir Area (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.90	0.90	23	49	0.09	0.26	—	0.26	0.26	—	0.26	—	9,330	9,330	0.38	0.08	—	9,362
Dust From Material Movement	—	—	—	—	—	—	3.2	3.2	—	1.6	1.6	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	1.1	2.3	< 0.005	0.01	—	0.01	0.01	—	0.01	—	435	435	0.02	< 0.005	—	436
Dust From Material Movement	—	—	—	—	—	—	0.15	0.15	—	0.08	0.08	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.19	0.42	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	72	72	< 0.005	< 0.005	—	72
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.47	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	104	104	< 0.005	< 0.005	0.38	105
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.37	0.08	4.5	2.2	0.02	0.07	31	31	0.05	3.3	3.3	—	3,611	3,611	0.28	0.58	7.5	3,799
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.5	4.5	< 0.005	< 0.005	0.01	4.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.22	0.10	< 0.005	< 0.005	1.5	1.5	< 0.005	0.15	0.15	—	168	168	0.01	0.03	0.15	177
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.74	0.74	< 0.005	< 0.005	< 0.005	0.75
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.26	0.27	< 0.005	0.03	0.03	—	28	28	< 0.005	< 0.005	0.03	29

3.15. Stripping and Preparing Stockpile and Drying Areas (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.1	2.6	23	24	0.06	1.0	—	1.0	0.95	—	0.95	—	6,246	6,246	0.25	0.05	—	6,267
Dust From Material Movement	—	—	—	—	—	—	3.5	3.5	—	0.39	0.39	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.20	0.16	1.5	1.5	< 0.005	0.07	—	0.07	0.06	—	0.06	—	394	394	0.02	< 0.005	—	395
Dust From Material Movement	—	—	—	—	—	—	0.22	0.22	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.27	0.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	65	65	< 0.005	< 0.005	—	65
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.02	0.39	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	86	86	< 0.005	< 0.005	0.32	88
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	2.8	0.60	34	17	0.18	0.52	238	238	0.35	25	25	—	27,455	27,455	2.2	4.4	57	28,882
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.0	5.0	< 0.005	< 0.005	0.01	5.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.17	0.04	2.2	1.0	0.01	0.03	15	15	0.02	1.6	1.6	—	1,730	1,730	0.14	0.28	1.6	1,818
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.83	0.83	< 0.005	< 0.005	< 0.005	0.85
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.03	0.01	0.41	0.19	< 0.005	0.01	2.7	2.7	< 0.005	0.29	0.29	—	286	286	0.02	0.05	0.26	301

3.16. Stripping and Preparing Stockpile and Drying Areas (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	0.59	3.1	34	0.06	0.12	—	0.12	0.12	—	0.12	—	6,246	6,246	0.25	0.05	—	6,267
Dust From Material Movement	—	—	—	—	—	—	1.4	1.4	—	0.15	0.15	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.19	2.1	< 0.005	0.01	—	0.01	0.01	—	0.01	—	394	394	0.02	< 0.005	—	395
Dust From Material Movement	—	—	—	—	—	—	0.09	0.09	—	0.01	0.01	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.04	0.39	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	65	65	< 0.005	< 0.005	—	65
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.02	0.39	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	86	86	< 0.005	< 0.005	0.32	88
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	2.8	0.60	34	17	0.18	0.52	238	238	0.35	25	25	—	27,455	27,455	2.2	4.4	57	28,882
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.0	5.0	< 0.005	< 0.005	0.01	5.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.17	0.04	2.2	1.0	0.01	0.03	15	15	0.02	1.6	1.6	—	1,730	1,730	0.14	0.28	1.6	1,818
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.83	0.83	< 0.005	< 0.005	< 0.005	0.85
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.03	0.01	0.41	0.19	< 0.005	0.01	2.7	2.7	< 0.005	0.29	0.29	—	286	286	0.02	0.05	0.26	301

3.17. Dewatering System Set up (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.6	1.3	11	14	0.02	0.44	—	0.44	0.41	—	0.41	—	2,143	2,143	0.09	0.02	—	2,151
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.28	0.34	< 0.005	0.01	—	0.01	0.01	—	0.01	—	53	53	< 0.005	< 0.005	—	53
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.01	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.8	8.8	< 0.005	< 0.005	—	8.8
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.31	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	69	69	< 0.005	< 0.005	0.25	70
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.07	0.07	< 0.005	0.01	0.01	—	7.8	7.8	< 0.005	< 0.005	0.02	8.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.6	1.6	< 0.005	< 0.005	< 0.005	1.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.19	0.19	< 0.005	< 0.005	< 0.005	0.20
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.26	0.26	< 0.005	< 0.005	< 0.005	0.27
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.03	0.03	< 0.005	< 0.005	< 0.005	0.03

3.18. Dewatering System Set up (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.80	0.69	6.5	14	0.02	0.19	—	0.19	0.18	—	0.18	—	2,143	2,143	0.09	0.02	—	2,151
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.16	0.35	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	53	53	< 0.005	< 0.005	—	53
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.8	8.8	< 0.005	< 0.005	—	8.8

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.31	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	69	69	< 0.005	< 0.005	0.25	70
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.07	0.07	< 0.005	0.01	0.01	—	7.8	7.8	< 0.005	< 0.005	0.02	8.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.6	1.6	< 0.005	< 0.005	< 0.005	1.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.19	0.19	< 0.005	< 0.005	< 0.005	0.20
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.26	0.26	< 0.005	< 0.005	< 0.005	0.27
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.03	0.03	< 0.005	< 0.005	< 0.005	0.03

3.19. Dewatering System Operation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	0.24	2.0	1.9	< 0.005	0.07	—	0.07	0.06	—	0.06	—	307	307	0.01	< 0.005	—	308
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	0.24	2.0	1.9	< 0.005	0.07	—	0.07	0.06	—	0.06	—	307	307	0.01	< 0.005	—	308
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.08	0.66	0.63	< 0.005	0.02	—	0.02	0.02	—	0.02	—	100	100	< 0.005	< 0.005	—	101
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.12	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	17	17	< 0.005	< 0.005	—	17
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.16	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	35	35	< 0.005	< 0.005	0.13	35
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	32	32	< 0.005	< 0.005	< 0.005	32
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10	10	< 0.005	< 0.005	0.02	11
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.7	1.7	< 0.005	< 0.005	< 0.005	1.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.20. Dewatering System Operation (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.8	1.9	< 0.005	0.04	—	0.04	0.04	—	0.04	—	307	307	0.01	< 0.005	—	308
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.8	1.9	< 0.005	0.04	—	0.04	0.04	—	0.04	—	307	307	0.01	< 0.005	—	308
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.59	0.62	< 0.005	0.01	—	0.01	0.01	—	0.01	—	100	100	< 0.005	< 0.005	—	101

Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.11	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	17	17	< 0.005	< 0.005	—	17
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.16	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	35	35	< 0.005	< 0.005	0.13	35
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	32	32	< 0.005	< 0.005	< 0.005	32
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10	10	< 0.005	< 0.005	0.02	11
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.7	1.7	< 0.005	< 0.005	< 0.005	1.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.21. Dewatering System Operation (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.28	0.24	2.0	1.9	< 0.005	0.07	—	0.07	0.06	—	0.06	—	307	307	0.01	< 0.005	—	308
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.28	0.24	2.0	1.9	< 0.005	0.07	—	0.07	0.06	—	0.06	—	307	307	0.01	< 0.005	—	308
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	0.72	0.69	< 0.005	0.02	—	0.02	0.02	—	0.02	—	110	110	< 0.005	< 0.005	—	111
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.13	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18	18	< 0.005	< 0.005	—	18
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.15	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	34	34	< 0.005	< 0.005	0.12	34
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	31	31	< 0.005	< 0.005	< 0.005	31

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11	11	< 0.005	< 0.005	0.02	11
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.9	1.9	< 0.005	< 0.005	< 0.005	1.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.22. Dewatering System Operation (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.8	1.9	< 0.005	0.04	—	0.04	0.04	—	0.04	—	307	307	0.01	< 0.005	—	308
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.18	0.15	1.8	1.9	< 0.005	0.04	—	0.04	0.04	—	0.04	—	307	307	0.01	< 0.005	—	308
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	0.06	0.05	0.65	0.68	< 0.005	0.02	—	0.02	0.01	—	0.01	—	110	110	< 0.005	< 0.005	—	111
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	0.01	0.01	0.12	0.12	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18	18	< 0.005	< 0.005	—	18
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.15	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	34	34	< 0.005	< 0.005	0.12	34
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	31	31	< 0.005	< 0.005	< 0.005	31
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11	11	< 0.005	< 0.005	0.02	11
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.9	1.9	< 0.005	< 0.005	< 0.005	1.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.23. Temporary Access to Sediment (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.0	2.5	21	22	0.04	0.92	—	0.92	0.84	—	0.84	—	4,723	4,723	0.19	0.04	—	4,739

Dust From Material Movement	—	—	—	—	—	—	8.2	8.2	—	4.2	4.2	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.52	0.53	< 0.005	0.02	—	0.02	0.02	—	0.02	—	116	116	< 0.005	< 0.005	—	117
Dust From Material Movement	—	—	—	—	—	—	0.20	0.20	—	0.10	0.10	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.09	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	19	19	< 0.005	< 0.005	—	19
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.05	0.53	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	127	127	< 0.005	0.01	0.01	128

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.2	3.2	< 0.005	< 0.005	0.01	3.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.52	0.52	< 0.005	< 0.005	< 0.005	0.53
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.24. Temporary Access to Sediment (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48	0.48	4.5	26	0.04	0.09	—	0.09	0.09	—	0.09	—	4,723	4,723	0.19	0.04	—	4,739
Dust From Material Movement	—	—	—	—	—	—	3.2	3.2	—	1.6	1.6	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.11	0.64	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	116	116	< 0.005	< 0.005	—	117
Dust From Material Movement	—	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.12	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	19	19	< 0.005	< 0.005	—	19
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.05	0.53	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	127	127	< 0.005	0.01	0.01	128
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.2	3.2	< 0.005	< 0.005	0.01	3.2

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.52	0.52	< 0.005	< 0.005	< 0.005	0.53
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.25. Excavation of Reservoir Sediment to Drying Area (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.5	3.8	29	31	0.08	1.3	—	1.3	1.2	—	1.2	—	8,412	8,412	0.34	0.07	—	8,441
Dust From Material Movement	—	—	—	—	—	—	9.0	9.0	—	4.3	4.3	—	—	—	—	—	—	—
Onsite truck	0.43	0.16	5.1	3.2	0.01	0.02	552	552	0.02	55	55	—	1,700	1,700	0.26	0.27	0.07	1,788
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.85	0.72	5.4	5.9	0.01	0.24	—	0.24	0.22	—	0.22	—	1,600	1,600	0.06	0.01	—	1,606

Dust From Material Movement	—	—	—	—	—	—	1.7	1.7	—	0.82	0.82	—	—	—	—	—	—	—
Onsite truck	0.08	0.03	0.95	0.61	< 0.005	< 0.005	105	105	< 0.005	10	10	—	323	323	0.05	0.05	0.22	340
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	0.99	1.1	< 0.005	0.04	—	0.04	0.04	—	0.04	—	265	265	0.01	< 0.005	—	266
Dust From Material Movement	—	—	—	—	—	—	0.31	0.31	—	0.15	0.15	—	—	—	—	—	—	—
Onsite truck	0.02	0.01	0.17	0.11	< 0.005	< 0.005	19	19	< 0.005	1.9	1.9	—	53	53	0.01	0.01	0.04	56
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.04	0.46	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	111	111	< 0.005	< 0.005	0.01	112
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	21	21	< 0.005	< 0.005	0.04	22
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.5	3.5	< 0.005	< 0.005	0.01	3.6

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.26. Excavation of Reservoir Sediment to Drying Area (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.80	0.80	4.9	45	0.08	0.16	—	0.16	0.16	—	0.16	—	8,412	8,412	0.34	0.07	—	8,441
Dust From Material Movement	—	—	—	—	—	—	3.5	3.5	—	1.7	1.7	—	—	—	—	—	—	—
Onsite truck	0.43	0.16	5.1	3.2	0.01	0.02	139	139	0.02	14	14	—	1,700	1,700	0.26	0.27	0.07	1,788
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.15	0.93	8.5	0.01	0.03	—	0.03	0.03	—	0.03	—	1,600	1,600	0.06	0.01	—	1,606
Dust From Material Movement	—	—	—	—	—	—	0.67	0.67	—	0.32	0.32	—	—	—	—	—	—	—
Onsite truck	0.08	0.03	0.95	0.61	< 0.005	< 0.005	26	26	< 0.005	2.6	2.6	—	323	323	0.05	0.05	0.22	340

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.17	1.6	< 0.005	0.01	—	0.01	0.01	—	0.01	—	265	265	0.01	< 0.005	—	266
Dust From Material Movement	—	—	—	—	—	—	0.12	0.12	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	0.02	0.01	0.17	0.11	< 0.005	< 0.005	4.8	4.8	< 0.005	0.48	0.48	—	53	53	0.01	0.01	0.04	56
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.04	0.46	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	111	111	< 0.005	< 0.005	0.01	112
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	21	21	< 0.005	< 0.005	0.04	22
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.5	3.5	< 0.005	< 0.005	0.01	3.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.27. Excavation of Reservoir Sediment to Drying Area (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.4	3.7	27	31	0.08	1.2	—	1.2	1.1	—	1.1	—	8,411	8,411	0.34	0.07	—	8,440
Dust From Material Movement	—	—	—	—	—	—	9.0	9.0	—	4.3	4.3	—	—	—	—	—	—	—
Onsite truck	0.44	0.18	4.8	3.1	0.01	0.02	552	552	0.02	55	55	—	1,658	1,658	0.25	0.26	2.5	1,745
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.4	3.7	27	31	0.08	1.2	—	1.2	1.1	—	1.1	—	8,411	8,411	0.34	0.07	—	8,440
Dust From Material Movement	—	—	—	—	—	—	9.0	9.0	—	4.3	4.3	—	—	—	—	—	—	—
Onsite truck	0.42	0.16	5.0	3.2	0.01	0.02	552	552	0.02	55	55	—	1,665	1,665	0.25	0.26	0.07	1,750
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.1	0.96	7.0	8.0	0.02	0.30	—	0.30	0.28	—	0.28	—	2,193	2,193	0.09	0.02	—	2,200

Dust From Material Movement	—	—	—	—	—	—	2.3	2.3	—	1.1	1.1	—	—	—	—	—	—	—
Onsite truck	0.11	0.04	1.3	0.83	< 0.005	< 0.005	144	144	< 0.005	14	14	—	433	433	0.06	0.07	0.28	455
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	0.17	1.3	1.5	< 0.005	0.06	—	0.06	0.05	—	0.05	—	363	363	0.01	< 0.005	—	364
Dust From Material Movement	—	—	—	—	—	—	0.43	0.43	—	0.20	0.20	—	—	—	—	—	—	—
Onsite truck	0.02	0.01	0.23	0.15	< 0.005	< 0.005	26	26	< 0.005	2.6	2.6	—	72	72	0.01	0.01	0.05	75
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.03	0.51	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	119	119	< 0.005	< 0.005	0.40	121
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.44	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	109	109	< 0.005	< 0.005	0.01	110
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	29	29	< 0.005	< 0.005	0.05	29
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.7	4.7	< 0.005	< 0.005	0.01	4.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.28. Excavation of Reservoir Sediment to Drying Area (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.80	0.80	4.9	45	0.08	0.16	—	0.16	0.16	—	0.16	—	8,411	8,411	0.34	0.07	—	8,440
Dust From Material Movement	—	—	—	—	—	—	3.5	3.5	—	1.7	1.7	—	—	—	—	—	—	—
Onsite truck	0.44	0.18	4.8	3.1	0.01	0.02	139	139	0.02	14	14	—	1,658	1,658	0.25	0.26	2.5	1,745
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.80	0.80	4.9	45	0.08	0.16	—	0.16	0.16	—	0.16	—	8,411	8,411	0.34	0.07	—	8,440
Dust From Material Movement	—	—	—	—	—	—	3.5	3.5	—	1.7	1.7	—	—	—	—	—	—	—

Onsite truck	0.42	0.16	5.0	3.2	0.01	0.02	139	139	0.02	14	14	—	1,665	1,665	0.25	0.26	0.07	1,750
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	0.21	1.3	12	0.02	0.04	—	0.04	0.04	—	0.04	—	2,193	2,193	0.09	0.02	—	2,200
Dust From Material Movement	—	—	—	—	—	—	0.91	0.91	—	0.44	0.44	—	—	—	—	—	—	—
Onsite truck	0.11	0.04	1.3	0.83	< 0.005	< 0.005	36	36	< 0.005	3.6	3.6	—	433	433	0.06	0.07	0.28	455
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.23	2.1	< 0.005	0.01	—	0.01	0.01	—	0.01	—	363	363	0.01	< 0.005	—	364
Dust From Material Movement	—	—	—	—	—	—	0.17	0.17	—	0.08	0.08	—	—	—	—	—	—	—
Onsite truck	0.02	0.01	0.23	0.15	< 0.005	< 0.005	6.6	6.6	< 0.005	0.66	0.66	—	72	72	0.01	0.01	0.05	75
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.03	0.51	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	119	119	< 0.005	< 0.005	0.40	121
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.44	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	109	109	< 0.005	< 0.005	0.01	110

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	29	29	< 0.005	< 0.005	0.05	29
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.7	4.7	< 0.005	< 0.005	0.01	4.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.29. Sediment Drying (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.5	1.3	12	11	0.02	0.50	—	0.50	0.46	—	0.46	—	2,086	2,086	0.08	0.02	—	2,094
Dust From Material Movement	—	—	—	—	—	—	8.2	8.2	—	4.2	4.2	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	0.24	2.2	2.1	< 0.005	0.10	—	0.10	0.09	—	0.09	—	397	397	0.02	< 0.005	—	398
Dust From Material Movement	—	—	—	—	—	—	1.6	1.6	—	0.80	0.80	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.41	0.39	< 0.005	0.02	—	0.02	0.02	—	0.02	—	66	66	< 0.005	< 0.005	—	66
Dust From Material Movement	—	—	—	—	—	—	0.28	0.28	—	0.15	0.15	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	32	32	< 0.005	< 0.005	< 0.005	32
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.1	6.1	< 0.005	< 0.005	0.01	6.2

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.0	1.0	< 0.005	< 0.005	< 0.005	1.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.30. Sediment Drying (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	0.20	1.0	11	0.02	0.04	—	0.04	0.04	—	0.04	—	2,086	2,086	0.08	0.02	—	2,094
Dust From Material Movement	—	—	—	—	—	—	3.2	3.2	—	1.6	1.6	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.19	2.1	< 0.005	0.01	—	0.01	0.01	—	0.01	—	397	397	0.02	< 0.005	—	398

Dust From Material Movement	—	—	—	—	—	—	0.61	0.61	—	0.31	0.31	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.04	0.38	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	66	66	< 0.005	< 0.005	—	66
Dust From Material Movement	—	—	—	—	—	—	0.11	0.11	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	32	32	< 0.005	< 0.005	< 0.005	32
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.1	6.1	< 0.005	< 0.005	0.01	6.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.0	1.0	< 0.005	< 0.005	< 0.005	1.0

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.31. Sediment Drying (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.5	1.2	11	11	0.02	0.48	—	0.48	0.44	—	0.44	—	2,086	2,086	0.08	0.02	—	2,094
Dust From Material Movement	—	—	—	—	—	—	8.2	8.2	—	4.2	4.2	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.5	1.2	11	11	0.02	0.48	—	0.48	0.44	—	0.44	—	2,086	2,086	0.08	0.02	—	2,094
Dust From Material Movement	—	—	—	—	—	—	8.2	8.2	—	4.2	4.2	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.38	0.32	2.9	2.9	0.01	0.12	—	0.12	0.11	—	0.11	—	544	544	0.02	< 0.005	—	546
Dust From Material Movement	—	—	—	—	—	—	2.1	2.1	—	1.1	1.1	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	0.07	0.06	0.53	0.52	< 0.005	0.02	—	0.02	0.02	—	0.02	—	90	90	< 0.005	< 0.005	—	90
Dust From Material Movement	—	—	—	—	—	—	0.39	0.39	—	0.20	0.20	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.15	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	34	34	< 0.005	< 0.005	0.12	34
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	31	31	< 0.005	< 0.005	< 0.005	31
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.2	8.2	< 0.005	< 0.005	0.01	8.3

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.4	1.4	< 0.005	< 0.005	< 0.005	1.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.32. Sediment Drying (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	0.20	1.0	11	0.02	0.04	—	0.04	0.04	—	0.04	—	2,086	2,086	0.08	0.02	—	2,094
Dust From Material Movement	—	—	—	—	—	—	3.2	3.2	—	1.6	1.6	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	0.20	1.0	11	0.02	0.04	—	0.04	0.04	—	0.04	—	2,086	2,086	0.08	0.02	—	2,094

Dust From Material Movement	—	—	—	—	—	—	3.2	3.2	—	1.6	1.6	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.05	0.27	2.9	0.01	0.01	—	0.01	0.01	—	0.01	—	544	544	0.02	< 0.005	—	546
Dust From Material Movement	—	—	—	—	—	—	0.83	0.83	—	0.43	0.43	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.52	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	90	90	< 0.005	< 0.005	—	90
Dust From Material Movement	—	—	—	—	—	—	0.15	0.15	—	0.08	0.08	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.15	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	34	34	< 0.005	< 0.005	0.12	34
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	31	31	< 0.005	< 0.005	< 0.005	31
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.2	8.2	< 0.005	< 0.005	0.01	8.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.4	1.4	< 0.005	< 0.005	< 0.005	1.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.33. Loading, Hauling, and Placing Dry Material to Disposal Area (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.5	3.8	34	33	0.07	1.5	—	1.5	1.4	—	1.4	—	8,012	8,012	0.33	0.07	—	8,040

Dust From Material Movement	—	—	—	—	—	—	12	12	—	4.6	4.6	—	—	—	—	—	—	—
Onsite truck	0.40	0.15	4.6	3.0	0.01	0.02	368	368	0.01	37	37	—	1,271	1,271	0.23	0.20	0.05	1,338
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.86	0.72	6.4	6.2	0.01	0.29	—	0.29	0.26	—	0.26	—	1,524	1,524	0.06	0.01	—	1,529
Dust From Material Movement	—	—	—	—	—	—	2.2	2.2	—	0.87	0.87	—	—	—	—	—	—	—
Onsite truck	0.08	0.03	0.86	0.57	< 0.005	< 0.005	70	70	< 0.005	7.0	7.0	—	241	241	0.04	0.04	0.15	254
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.2	1.1	< 0.005	0.05	—	0.05	0.05	—	0.05	—	252	252	0.01	< 0.005	—	253
Dust From Material Movement	—	—	—	—	—	—	0.40	0.40	—	0.16	0.16	—	—	—	—	—	—	—
Onsite truck	0.01	0.01	0.16	0.10	< 0.005	< 0.005	13	13	< 0.005	1.3	1.3	—	40	40	0.01	0.01	0.02	42
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.04	0.46	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	111	111	< 0.005	< 0.005	0.01	112

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	21	21	< 0.005	< 0.005	0.04	22
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.5	3.5	< 0.005	< 0.005	0.01	3.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.34. Loading, Hauling, and Placing Dry Material to Disposal Area (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.80	0.79	4.2	43	0.07	0.16	—	0.16	0.16	—	0.16	—	8,012	8,012	0.33	0.07	—	8,040
Dust From Material Movement	—	—	—	—	—	—	4.5	4.5	—	1.8	1.8	—	—	—	—	—	—	—
Onsite truck	0.40	0.15	4.6	3.0	0.01	0.02	93	93	0.01	9.3	9.3	—	1,271	1,271	0.23	0.20	0.05	1,338

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.15	0.80	8.1	0.01	0.03	—	0.03	0.03	—	0.03	—	1,524	1,524	0.06	0.01	—	1,529
Dust From Material Movement	—	—	—	—	—	—	0.86	0.86	—	0.34	0.34	—	—	—	—	—	—	—
Onsite truck	0.08	0.03	0.86	0.57	< 0.005	< 0.005	18	18	< 0.005	1.8	1.8	—	241	241	0.04	0.04	0.15	254
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.15	1.5	< 0.005	0.01	—	0.01	0.01	—	0.01	—	252	252	0.01	< 0.005	—	253
Dust From Material Movement	—	—	—	—	—	—	0.16	0.16	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	0.01	0.01	0.16	0.10	< 0.005	< 0.005	3.2	3.2	< 0.005	0.32	0.32	—	40	40	0.01	0.01	0.02	42
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.04	0.46	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	111	111	< 0.005	< 0.005	0.01	112
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	21	21	< 0.005	< 0.005	0.04	22

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.5	3.5	< 0.005	< 0.005	0.01	3.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.35. Loading, Hauling, and Placing Dry Material to Disposal Area (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.3	3.6	32	32	0.07	1.4	—	1.4	1.3	—	1.3	—	8,012	8,012	0.32	0.06	—	8,039
Dust From Material Movement	—	—	—	—	—	—	12	12	—	4.6	4.6	—	—	—	—	—	—	—
Onsite truck	0.41	0.17	4.4	2.9	0.01	0.01	368	368	0.01	37	37	—	1,239	1,239	0.22	0.20	1.7	1,306
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.3	3.6	32	32	0.07	1.4	—	1.4	1.3	—	1.3	—	8,012	8,012	0.32	0.06	—	8,039

Dust From Material Movement	—	—	—	—	—	—	12	12	—	4.6	4.6	—	—	—	—	—	—	—
Onsite truck	0.39	0.15	4.6	3.0	0.01	0.01	368	368	0.01	37	37	—	1,246	1,246	0.22	0.20	0.04	1,311
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.1	0.95	8.2	8.4	0.02	0.36	—	0.36	0.33	—	0.33	—	2,088	2,088	0.08	0.02	—	2,096
Dust From Material Movement	—	—	—	—	—	—	3.0	3.0	—	1.2	1.2	—	—	—	—	—	—	—
Onsite truck	0.10	0.04	1.2	0.78	< 0.005	< 0.005	96	96	< 0.005	9.6	9.6	—	324	324	0.06	0.05	0.19	341
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	0.17	1.5	1.5	< 0.005	0.07	—	0.07	0.06	—	0.06	—	346	346	0.01	< 0.005	—	347
Dust From Material Movement	—	—	—	—	—	—	0.55	0.55	—	0.22	0.22	—	—	—	—	—	—	—
Onsite truck	0.02	0.01	0.21	0.14	< 0.005	< 0.005	17	17	< 0.005	1.7	1.7	—	54	54	0.01	0.01	0.03	56
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.03	0.51	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	119	119	< 0.005	< 0.005	0.40	121
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.44	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	109	109	< 0.005	< 0.005	0.01	110
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	29	29	< 0.005	< 0.005	0.05	29
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.7	4.7	< 0.005	< 0.005	0.01	4.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.36. Loading, Hauling, and Placing Dry Material to Disposal Area (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.80	0.79	4.2	43	0.07	0.16	—	0.16	0.16	—	0.16	—	8,012	8,012	0.32	0.06	—	8,039
Dust From Material Movement	—	—	—	—	—	—	4.5	4.5	—	1.8	1.8	—	—	—	—	—	—	—

Onsite truck	0.41	0.17	4.4	2.9	0.01	0.01	93	93	0.01	9.3	9.3	—	1,239	1,239	0.22	0.20	1.7	1,306
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.80	0.79	4.2	43	0.07	0.16	—	0.16	0.16	—	0.16	—	8,012	8,012	0.32	0.06	—	8,039
Dust From Material Movement	—	—	—	—	—	—	4.5	4.5	—	1.8	1.8	—	—	—	—	—	—	—
Onsite truck	0.39	0.15	4.6	3.0	0.01	0.01	93	93	0.01	9.3	9.3	—	1,246	1,246	0.22	0.20	0.04	1,311
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	0.21	1.1	11	0.02	0.04	—	0.04	0.04	—	0.04	—	2,088	2,088	0.08	0.02	—	2,096
Dust From Material Movement	—	—	—	—	—	—	1.2	1.2	—	0.47	0.47	—	—	—	—	—	—	—
Onsite truck	0.10	0.04	1.2	0.78	< 0.005	< 0.005	24	24	< 0.005	2.4	2.4	—	324	324	0.06	0.05	0.19	341
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.20	2.0	< 0.005	0.01	—	0.01	0.01	—	0.01	—	346	346	0.01	< 0.005	—	347
Dust From Material Movement	—	—	—	—	—	—	0.22	0.22	—	0.09	0.09	—	—	—	—	—	—	—
Onsite truck	0.02	0.01	0.21	0.14	< 0.005	< 0.005	4.4	4.4	< 0.005	0.44	0.44	—	54	54	0.01	0.01	0.03	56

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.03	0.51	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	119	119	< 0.005	< 0.005	0.40	121
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.44	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	109	109	< 0.005	< 0.005	0.01	110
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	29	29	< 0.005	< 0.005	0.05	29
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.7	4.7	< 0.005	< 0.005	0.01	4.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.37. Sand and Layer Placement (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	4.7	4.0	32	35	0.08	1.4	—	1.4	1.3	—	1.3	—	8,307	8,307	0.34	0.07	—	8,335
Dust From Material Movement	—	—	—	—	—	—	17	17	—	8.5	8.5	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30	0.25	2.0	2.2	< 0.005	0.09	—	0.09	0.08	—	0.08	—	523	523	0.02	< 0.005	—	525
Dust From Material Movement	—	—	—	—	—	—	1.0	1.0	—	0.53	0.53	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.05	0.37	0.40	< 0.005	0.02	—	0.02	0.01	—	0.01	—	87	87	< 0.005	< 0.005	—	87
Dust From Material Movement	—	—	—	—	—	—	0.19	0.19	—	0.10	0.10	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.37	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	85	85	< 0.005	< 0.005	0.29	86
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	1.3	0.30	17	8.2	0.09	0.17	120	120	0.17	13	13	—	13,565	13,565	1.0	2.1	26	14,256
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.9	4.9	< 0.005	< 0.005	0.01	5.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.08	0.02	1.1	0.52	0.01	0.01	7.5	7.6	0.01	0.79	0.80	—	855	855	0.06	0.14	0.72	898
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.82	0.82	< 0.005	< 0.005	< 0.005	0.83
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.20	0.09	< 0.005	< 0.005	1.4	1.4	< 0.005	0.14	0.15	—	142	142	0.01	0.02	0.12	149

3.38. Sand and Layer Placement (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.78	0.78	4.1	44	0.08	0.16	—	0.16	0.16	—	0.16	—	8,307	8,307	0.34	0.07	—	8,335

Dust From Material Movement	—	—	—	—	—	—	6.5	6.5	—	3.3	3.3	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.05	0.26	2.8	< 0.005	0.01	—	0.01	0.01	—	0.01	—	523	523	0.02	< 0.005	—	525
Dust From Material Movement	—	—	—	—	—	—	0.41	0.41	—	0.21	0.21	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.50	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	87	87	< 0.005	< 0.005	—	87
Dust From Material Movement	—	—	—	—	—	—	0.07	0.07	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.37	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	85	85	< 0.005	< 0.005	0.29	86

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	1.3	0.30	17	8.2	0.09	0.17	120	120	0.17	13	13	—	13,565	13,565	1.0	2.1	26	14,256
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.9	4.9	< 0.005	< 0.005	0.01	5.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.08	0.02	1.1	0.52	0.01	0.01	7.5	7.6	0.01	0.79	0.80	—	855	855	0.06	0.14	0.72	898
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.82	0.82	< 0.005	< 0.005	< 0.005	0.83
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.20	0.09	< 0.005	< 0.005	1.4	1.4	< 0.005	0.14	0.15	—	142	142	0.01	0.02	0.12	149

3.39. Cap Disposal Area (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.3	3.6	31	32	0.07	1.4	—	1.4	1.3	—	1.3	—	7,968	7,968	0.32	0.06	—	7,996
Dust From Material Movement	—	—	—	—	—	—	12	12	—	4.6	4.6	—	—	—	—	—	—	—
Onsite truck	0.61	0.26	6.5	4.4	0.02	0.02	552	552	0.02	55	55	—	1,859	1,859	0.33	0.30	2.5	1,958

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.43	0.44	< 0.005	0.02	—	0.02	0.02	—	0.02	—	109	109	< 0.005	< 0.005	—	110
Dust From Material Movement	—	—	—	—	—	—	0.16	0.16	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.09	0.06	< 0.005	< 0.005	7.5	7.5	< 0.005	0.75	0.75	—	26	26	< 0.005	< 0.005	0.01	27
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18	18	< 0.005	< 0.005	—	18
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.4	1.4	< 0.005	0.14	0.14	—	4.2	4.2	< 0.005	< 0.005	< 0.005	4.4
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.44	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	102	102	< 0.005	< 0.005	0.35	103
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.3	1.3	< 0.005	< 0.005	< 0.005	1.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.21	0.21	< 0.005	< 0.005	< 0.005	0.22
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.40. Cap Disposal Area (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.75	0.75	3.9	42	0.07	0.15	—	0.15	0.15	—	0.15	—	7,968	7,968	0.32	0.06	—	7,996
Dust From Material Movement	—	—	—	—	—	—	4.6	4.6	—	1.8	1.8	—	—	—	—	—	—	—
Onsite truck	0.61	0.26	6.5	4.4	0.02	0.02	139	139	0.02	14	14	—	1,859	1,859	0.33	0.30	2.5	1,958
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.01	0.01	0.05	0.58	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	109	109	< 0.005	< 0.005	—	110
Dust From Material Movement	—	—	—	—	—	—	0.06	0.06	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.09	0.06	< 0.005	< 0.005	1.9	1.9	< 0.005	0.19	0.19	—	26	26	< 0.005	< 0.005	0.01	27
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18	18	< 0.005	< 0.005	—	18
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.35	0.35	< 0.005	0.03	0.03	—	4.2	4.2	< 0.005	< 0.005	< 0.005	4.4
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.44	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	102	102	< 0.005	< 0.005	0.35	103
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.3	1.3	< 0.005	< 0.005	< 0.005	1.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.21	0.21	< 0.005	< 0.005	< 0.005	0.22
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.41. Final Grading of Reservoir (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.3	1.1	10	8.6	0.02	0.44	—	0.44	0.40	—	0.40	—	1,724	1,724	0.07	0.01	—	1,729
Dust From Material Movement	—	—	—	—	—	—	8.2	8.2	—	4.2	4.2	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.90	0.78	< 0.005	0.04	—	0.04	0.04	—	0.04	—	156	156	0.01	< 0.005	—	156
Dust From Material Movement	—	—	—	—	—	—	0.74	0.74	—	0.38	0.38	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.17	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	26	26	< 0.005	< 0.005	—	26
Dust From Material Movement	—	—	—	—	—	—	0.14	0.14	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	17	17	< 0.005	< 0.005	0.06	17
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.4	1.4	< 0.005	< 0.005	< 0.005	1.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.23	0.23	< 0.005	< 0.005	< 0.005	0.24
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.42. Final Grading of Reservoir (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.16	0.84	8.4	0.02	0.03	—	0.03	0.03	—	0.03	—	1,724	1,724	0.07	0.01	—	1,729
Dust From Material Movement	—	—	—	—	—	—	3.2	3.2	—	1.6	1.6	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.76	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	156	156	0.01	< 0.005	—	156
Dust From Material Movement	—	—	—	—	—	—	0.29	0.29	—	0.15	0.15	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	< 0.005	< 0.005	0.01	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	26	26	< 0.005	< 0.005	—	26
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	17	17	< 0.005	< 0.005	0.06	17
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.4	1.4	< 0.005	< 0.005	< 0.005	1.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.23	0.23	< 0.005	< 0.005	< 0.005	0.24
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.43. Restore Drying, Area and Stockpiling Area (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.8	3.2	28	28	0.07	1.2	—	1.2	1.1	—	1.1	—	7,258	7,258	0.29	0.06	—	7,283
Dust From Material Movement	—	—	—	—	—	—	11	11	—	4.5	4.5	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.25	0.21	1.9	1.8	< 0.005	0.08	—	0.08	0.07	—	0.07	—	477	477	0.02	< 0.005	—	479
Dust From Material Movement	—	—	—	—	—	—	0.73	0.73	—	0.30	0.30	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.34	0.33	< 0.005	0.01	—	0.01	0.01	—	0.01	—	79	79	< 0.005	< 0.005	—	79

Dust From Material Movement	—	—	—	—	—	—	0.13	0.13	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.02	0.29	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	68	68	< 0.005	< 0.005	0.23	69
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	2.5	0.57	32	16	0.17	0.33	228	228	0.33	24	24	—	25,720	25,720	1.9	4.1	50	27,030
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.1	4.1	< 0.005	< 0.005	0.01	4.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.16	0.04	2.2	1.0	0.01	0.02	15	15	0.02	1.6	1.6	—	1,691	1,691	0.13	0.27	1.4	1,776
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.68	0.68	< 0.005	< 0.005	< 0.005	0.69
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.03	0.01	0.39	0.19	< 0.005	< 0.005	2.7	2.7	< 0.005	0.29	0.29	—	280	280	0.02	0.04	0.24	294

3.44. Restore Drying, Area and Stockpiling Area (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.69	0.69	3.6	37	0.07	0.14	—	0.14	0.14	—	0.14	—	7,258	7,258	0.29	0.06	—	7,283
Dust From Material Movement	—	—	—	—	—	—	4.3	4.3	—	1.8	1.8	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.05	0.23	2.5	< 0.005	0.01	—	0.01	0.01	—	0.01	—	477	477	0.02	< 0.005	—	479
Dust From Material Movement	—	—	—	—	—	—	0.28	0.28	—	0.12	0.12	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.04	0.45	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	79	79	< 0.005	< 0.005	—	79
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.02	0.29	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	68	68	< 0.005	< 0.005	0.23	69
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	2.5	0.57	32	16	0.17	0.33	228	228	0.33	24	24	—	25,720	25,720	1.9	4.1	50	27,030
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.1	4.1	< 0.005	< 0.005	0.01	4.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.16	0.04	2.2	1.0	0.01	0.02	15	15	0.02	1.6	1.6	—	1,691	1,691	0.13	0.27	1.4	1,776
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.68	0.68	< 0.005	< 0.005	< 0.005	0.69
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.03	0.01	0.39	0.19	< 0.005	< 0.005	2.7	2.7	< 0.005	0.29	0.29	—	280	280	0.02	0.04	0.24	294

3.45. Site Restoration (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	4.2	3.5	31	32	0.07	1.3	—	1.3	1.2	—	1.2	—	8,002	8,002	0.32	0.06	—	8,029
Dust From Material Movement	—	—	—	—	—	—	12	12	—	4.6	4.6	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.42	0.44	< 0.005	0.02	—	0.02	0.02	—	0.02	—	110	110	< 0.005	< 0.005	—	110
Dust From Material Movement	—	—	—	—	—	—	0.16	0.16	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18	18	< 0.005	< 0.005	—	18
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.44	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	102	102	< 0.005	< 0.005	0.35	103
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.3	1.3	< 0.005	< 0.005	< 0.005	1.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.21	0.21	< 0.005	< 0.005	< 0.005	0.22
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.46. Site Restoration (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.76	0.76	3.9	42	0.07	0.15	—	0.15	0.15	—	0.15	—	8,002	8,002	0.32	0.06	—	8,029

Dust From Material Movement	—	—	—	—	—	—	4.5	4.5	—	1.8	1.8	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.58	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	110	110	< 0.005	< 0.005	—	110
Dust From Material Movement	—	—	—	—	—	—	0.06	0.06	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18	18	< 0.005	< 0.005	—	18
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.44	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	102	102	< 0.005	< 0.005	0.35	103

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.3	1.3	< 0.005	< 0.005	< 0.005	1.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.21	0.21	< 0.005	< 0.005	< 0.005	0.22
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.47. Habitat Restoration (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.8	2.4	23	27	0.04	1.1	—	1.1	0.99	—	0.99	—	4,489	4,489	0.18	0.04	—	4,505
Dust From Material Movement	—	—	—	—	—	—	8.2	8.2	—	4.2	4.2	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.8	2.4	23	27	0.04	1.1	—	1.1	0.99	—	0.99	—	4,489	4,489	0.18	0.04	—	4,505
Dust From Material Movement	—	—	—	—	—	—	8.2	8.2	—	4.2	4.2	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.93	0.78	7.4	8.8	0.01	0.35	—	0.35	0.33	—	0.33	—	1,476	1,476	0.06	0.01	—	1,481
Dust From Material Movement	—	—	—	—	—	—	2.7	2.7	—	1.4	1.4	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.14	1.4	1.6	< 0.005	0.06	—	0.06	0.06	—	0.06	—	244	244	0.01	< 0.005	—	245
Dust From Material Movement	—	—	—	—	—	—	0.49	0.49	—	0.25	0.25	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.03	0.59	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	136	136	< 0.005	0.01	0.46	138
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.13	0.07	< 0.005	< 0.005	1.4	1.4	< 0.005	0.15	0.15	—	107	107	0.01	0.02	0.21	113
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.04	0.50	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	124	124	< 0.005	0.01	0.01	126
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.14	0.07	< 0.005	< 0.005	1.4	1.4	< 0.005	0.15	0.15	—	107	107	0.01	0.02	0.01	113
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.01	0.01	0.16	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	41	41	< 0.005	< 0.005	0.07	42
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.46	0.46	< 0.005	0.05	0.05	—	35	35	< 0.005	0.01	0.03	37
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.8	6.8	< 0.005	< 0.005	0.01	6.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	5.8	5.8	< 0.005	< 0.005	< 0.005	6.1

3.48. Habitat Restoration (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	1.2	1.0	9.0	27	0.04	0.46	—	0.46	0.42	—	0.42	—	4,489	4,489	0.18	0.04	—	4,505
Dust From Material Movement	—	—	—	—	—	—	3.2	3.2	—	1.6	1.6	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.2	1.0	9.0	27	0.04	0.46	—	0.46	0.42	—	0.42	—	4,489	4,489	0.18	0.04	—	4,505
Dust From Material Movement	—	—	—	—	—	—	3.2	3.2	—	1.6	1.6	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.39	0.34	3.0	8.9	0.01	0.15	—	0.15	0.14	—	0.14	—	1,476	1,476	0.06	0.01	—	1,481
Dust From Material Movement	—	—	—	—	—	—	1.1	1.1	—	0.54	0.54	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.07	0.06	0.54	1.6	< 0.005	0.03	—	0.03	0.03	—	0.03	—	244	244	0.01	< 0.005	—	245
Dust From Material Movement	—	—	—	—	—	—	0.19	0.19	—	0.10	0.10	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.03	0.59	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	136	136	< 0.005	0.01	0.46	138
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.13	0.07	< 0.005	< 0.005	1.4	1.4	< 0.005	0.15	0.15	—	107	107	0.01	0.02	0.21	113
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.04	0.50	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	124	124	< 0.005	0.01	0.01	126
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.14	0.07	< 0.005	< 0.005	1.4	1.4	< 0.005	0.15	0.15	—	107	107	0.01	0.02	0.01	113
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.01	0.01	0.16	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	41	41	< 0.005	< 0.005	0.07	42
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.46	0.46	< 0.005	0.05	0.05	—	35	35	< 0.005	0.01	0.03	37
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.8	6.8	< 0.005	< 0.005	0.01	6.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	5.8	5.8	< 0.005	< 0.005	< 0.005	6.1

3.49. Demobilization (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	0.31	2.9	3.9	0.01	0.13	—	0.13	0.12	—	0.12	—	578	578	0.02	< 0.005	—	580
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.7	4.7	< 0.005	< 0.005	—	4.8
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.79	0.79	< 0.005	< 0.005	—	0.79
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	47	47	< 0.005	< 0.005	< 0.005	47
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.39	0.39	< 0.005	< 0.005	< 0.005	0.39
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.50. Demobilization (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.07	1.0	4.0	0.01	0.01	—	0.01	0.01	—	0.01	—	578	578	0.02	< 0.005	—	580
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.7	4.7	< 0.005	< 0.005	—	4.8
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.79	0.79	< 0.005	< 0.005	—	0.79

Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	47	47	< 0.005	< 0.005	< 0.005	47
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.39	0.39	< 0.005	< 0.005	< 0.005	0.39
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.51. Excavating Relief Trenches (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.12	1.0	1.3	< 0.005	0.03	—	0.03	0.03	—	0.03	—	177	177	0.01	< 0.005	—	178
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.3	7.3	< 0.005	< 0.005	—	7.3
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.2	1.2	< 0.005	< 0.005	—	1.2
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	17	17	< 0.005	< 0.005	0.06	18
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.40	0.08	4.9	2.4	0.03	0.07	34	34	0.05	3.6	3.6	—	3,920	3,920	0.31	0.63	8.2	4,124
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.66	0.66	< 0.005	< 0.005	< 0.005	0.67
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.21	0.10	< 0.005	< 0.005	1.4	1.4	< 0.005	0.15	0.15	—	161	161	0.01	0.03	0.14	169
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.11	0.11	< 0.005	< 0.005	< 0.005	0.11
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.25	0.25	< 0.005	0.03	0.03	—	27	27	< 0.005	< 0.005	0.02	28

3.52. Excavating Relief Trenches (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.03	0.03	0.83	1.2	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	177	177	0.01	< 0.005	—	178
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.3	7.3	< 0.005	< 0.005	—	7.3
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.2	1.2	< 0.005	< 0.005	—	1.2
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	17	17	< 0.005	< 0.005	0.06	18
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.40	0.08	4.9	2.4	0.03	0.07	34	34	0.05	3.6	3.6	—	3,920	3,920	0.31	0.63	8.2	4,124
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.66	0.66	< 0.005	< 0.005	< 0.005	0.67
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.21	0.10	< 0.005	< 0.005	1.4	1.4	< 0.005	0.15	0.15	—	161	161	0.01	0.03	0.14	169
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.11	0.11	< 0.005	< 0.005	< 0.005	0.11
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.25	0.25	< 0.005	0.03	0.03	—	27	27	< 0.005	< 0.005	0.02	28

3.53. Excavation of High Flow Diversion (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.2	2.7	21	23	0.06	0.88	—	0.88	0.81	—	0.81	—	6,034	6,034	0.24	0.05	—	6,055

Dust From Material Movement	—	—	—	—	—	—	8.2	8.2	—	4.2	4.2	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.11	0.12	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	33	33	< 0.005	< 0.005	—	33
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.5	5.5	< 0.005	< 0.005	—	5.5
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.37	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	85	85	< 0.005	< 0.005	0.29	86

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.68	0.16	8.7	4.3	0.05	0.09	62	62	0.09	6.5	6.6	—	7,030	7,030	0.52	1.1	14	7,388
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.43	0.43	< 0.005	< 0.005	< 0.005	0.44
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.34	0.34	< 0.005	0.04	0.04	—	39	39	< 0.005	0.01	0.03	40
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.07	0.07	< 0.005	< 0.005	< 0.005	0.07
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	6.4	6.4	< 0.005	< 0.005	0.01	6.7

3.54. Excavation of High Flow Diversion (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	0.58	3.7	32	0.06	0.11	—	0.11	0.11	—	0.11	—	6,034	6,034	0.24	0.05	—	6,055
Dust From Material Movement	—	—	—	—	—	—	3.2	3.2	—	1.6	1.6	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.17	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	33	33	< 0.005	< 0.005	—	33
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.5	5.5	< 0.005	< 0.005	—	5.5
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.37	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	85	85	< 0.005	< 0.005	0.29	86
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.68	0.16	8.7	4.3	0.05	0.09	62	62	0.09	6.5	6.6	—	7,030	7,030	0.52	1.1	14	7,388
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.43	0.43	< 0.005	< 0.005	< 0.005	0.44
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.34	0.34	< 0.005	0.04	0.04	—	39	39	< 0.005	0.01	0.03	40
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.07	0.07	< 0.005	< 0.005	< 0.005	0.07
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	6.4	6.4	< 0.005	< 0.005	0.01	6.7

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Mobilization	Site Preparation	7/1/2026	7/6/2026	6.0	5.0	—
Traffic Control	Site Preparation	7/7/2026	1/26/2027	6.0	175	—
Erosion Control and BMPs	Site Preparation	7/7/2026	7/17/2026	6.0	10.0	—
Develop Entrance, Haul Routes, and Permanent Access	Site Preparation	7/18/2026	7/22/2026	6.0	4.0	—
Water Diversion	Site Preparation	7/23/2026	7/28/2026	6.0	5.0	—
Clearing and Grubbing Reservoir Area	Site Preparation	8/15/2026	9/3/2026	6.0	17	—
Stripping and Preparing Stockpile and Drying Areas	Site Preparation	9/4/2026	9/30/2026	6.0	23	—
Dewatering System Set up	Grading	8/15/2026	8/25/2026	6.0	9.0	—
Dewatering System Operation	Grading	8/15/2026	6/2/2027	6.0	250	—
Temporary Access to Sediment	Grading	10/1/2026	10/10/2026	6.0	9.0	—
Excavation of Reservoir Sediment to Drying Area	Grading	10/12/2026	4/21/2027	6.0	165	—
Sediment Drying	Grading	10/12/2026	4/21/2027	6.0	165	—
Loading, Hauling, and Placing Dry Material to Disposal Area	Grading	10/12/2026	4/21/2027	6.0	165	—
Sand and Layer Placement	Grading	4/22/2027	5/18/2027	6.0	23	—
Cap Disposal Area	Grading	5/19/2027	5/24/2027	6.0	5.0	—
Final Grading of Reservoir	Grading	5/27/2027	7/3/2027	6.0	33	—
Restore Drying, Area and Stockpiling Area	Grading	5/27/2027	6/23/2027	6.0	24	—
Site Restoration	Grading	6/24/2027	6/29/2027	6.0	5.0	—

Habitat Restoration	Grading	6/30/2027	11/16/2027	6.0	120	—
Demobilization	Grading	11/17/2027	11/19/2027	6.0	3.0	—
Excavating Relief Trenches	Trenching	7/29/2026	8/14/2026	6.0	15	—
Excavation of High Flow Diversion	Trenching	5/25/2027	5/26/2027	6.0	2.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Mobilization	Off-Highway Trucks	Diesel	Average	1.00	10.0	376	0.38
Mobilization	Excavators	Diesel	Average	1.00	10.0	36	0.38
Mobilization	Tractors/Loaders/Backhoes	Diesel	Average	1.00	10.0	84	0.37
Mobilization	Cranes	Diesel	Average	1.00	10.0	367	0.29
Erosion Control and BMPs	Other Construction Equipment	Diesel	Average	1.00	10.0	82	0.42
Erosion Control and BMPs	Excavators	Diesel	Average	1.00	10.0	36	0.38
Erosion Control and BMPs	Other Material Handling Equipment	Diesel	Average	1.00	10.0	93	0.40
Develop Entrance, Haul Routes, and Permanent Access	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42
Develop Entrance, Haul Routes, and Permanent Access	Rubber Tired Dozers	Diesel	Average	1.00	10.0	367	0.40
Develop Entrance, Haul Routes, and Permanent Access	Other Construction Equipment	Diesel	Average	1.00	10.0	238	0.42

Develop Entrance, Haul Routes, and Permanent Access	Rollers	Diesel	Average	1.00	10.0	36	0.38
Develop Entrance, Haul Routes, and Permanent Access	Scrapers	Diesel	Average	2.0	10.0	423	0.48
Water Diversion	Other Construction Equipment	Diesel	Average	1.00	10.0	82	0.42
Water Diversion	Excavators	Diesel	Average	1.00	10.0	36	0.38
Water Diversion	Rubber Tired Dozers	Diesel	Average	1.00	10.0	367	0.40
Water Diversion	Pumps	Diesel	Average	2.0	10.0	11	0.74
Clearing and Grubbing Reservoir Area	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42
Clearing and Grubbing Reservoir Area	Rubber Tired Dozers	Diesel	Average	1.00	10.0	367	0.40
Clearing and Grubbing Reservoir Area	Excavators	Diesel	Average	2.0	10.0	36	0.38
Clearing and Grubbing Reservoir Area	Tractors/Loaders/Backhoes	Diesel	Average	1.00	10.0	84	0.37
Clearing and Grubbing Reservoir Area	Off-Highway Trucks	Diesel	Average	1.00	10.0	376	0.38
Clearing and Grubbing Reservoir Area	Other Material Handling Equipment	Diesel	Average	1.00	10.0	950	0.40
Stripping and Preparing Stockpile and Drying Areas	Scrapers	Diesel	Average	2.0	10.0	423	0.48
Stripping and Preparing Stockpile and Drying Areas	Graders	Diesel	Average	1.00	10.0	148	0.41
Stripping and Preparing Stockpile and Drying Areas	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42
Dewatering System Set up	Other Construction Equipment	Diesel	Average	1.00	10.0	82	0.42

Dewatering System Set up	Other Material Handling Equipment	Diesel	Average	1.00	10.0	93	0.40
Dewatering System Set up	Excavators	Diesel	Average	1.00	10.0	36	0.38
Dewatering System Set up	Tractors/Loaders/Backhoes	Diesel	Average	1.00	10.0	84	0.37
Dewatering System Set up	Pumps	Diesel	Average	5.0	10.0	11	0.74
Dewatering System Set up	Welders	Diesel	Average	1.00	10.0	46	0.45
Dewatering System Operation	Generator Sets	Diesel	Average	1.00	10.0	14	0.74
Dewatering System Operation	Excavators	Diesel	Average	1.00	10.0	36	0.38
Temporary Access to Sediment	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42
Temporary Access to Sediment	Excavators	Diesel	Average	2.0	10.0	36	0.38
Temporary Access to Sediment	Rubber Tired Dozers	Diesel	Average	1.00	10.0	367	0.40
Temporary Access to Sediment	Off-Highway Trucks	Diesel	Average	1.00	10.0	376	0.38
Temporary Access to Sediment	Rollers	Diesel	Average	1.00	10.0	36	0.38
Excavation of Reservoir Sediment to Drying Area	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42
Excavation of Reservoir Sediment to Drying Area	Excavators	Diesel	Average	1.00	10.0	36	0.38
Excavation of Reservoir Sediment to Drying Area	Off-Highway Trucks	Diesel	Average	3.0	10.0	376	0.38
Excavation of Reservoir Sediment to Drying Area	Rubber Tired Dozers	Diesel	Average	1.00	10.0	367	0.40

Excavation of Reservoir Sediment to Drying Area	Graders	Diesel	Average	1.00	10.0	148	0.41
Sediment Drying	Tractors/Loaders/Backhoes	Diesel	Average	1.00	10.0	84	0.37
Sediment Drying	Rubber Tired Dozers	Diesel	Average	1.00	10.0	367	0.40
Loading, Hauling, and Placing Dry Material to Disposal Area	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42
Loading, Hauling, and Placing Dry Material to Disposal Area	Scrapers	Diesel	Average	2.0	10.0	423	0.48
Loading, Hauling, and Placing Dry Material to Disposal Area	Rubber Tired Dozers	Diesel	Average	1.00	10.0	367	0.40
Loading, Hauling, and Placing Dry Material to Disposal Area	Plate Compactors	Diesel	Average	1.00	10.0	8.0	0.43
Loading, Hauling, and Placing Dry Material to Disposal Area	Graders	Diesel	Average	1.00	10.0	148	0.41
Sand and Layer Placement	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42
Sand and Layer Placement	Off-Highway Trucks	Diesel	Average	2.0	10.0	376	0.38
Sand and Layer Placement	Tractors/Loaders/Backhoes	Diesel	Average	2.0	10.0	84	0.37
Sand and Layer Placement	Rubber Tired Dozers	Diesel	Average	2.0	10.0	367	0.40
Cap Disposal Area	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42
Cap Disposal Area	Scrapers	Diesel	Average	2.0	10.0	423	0.48
Cap Disposal Area	Rubber Tired Dozers	Diesel	Average	1.00	10.0	367	0.40
Cap Disposal Area	Graders	Diesel	Average	1.00	10.0	148	0.41

Final Grading of Reservoir	Rubber Tired Dozers	Diesel	Average	1.00	10.0	367	0.40
Restore Drying, Area and Stockpiling Area	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42
Restore Drying, Area and Stockpiling Area	Scrapers	Diesel	Average	2.0	10.0	423	0.48
Restore Drying, Area and Stockpiling Area	Rubber Tired Dozers	Diesel	Average	1.00	10.0	367	0.40
Site Restoration	Other Construction Equipment	Diesel	Average	1.00	10.0	82	0.42
Site Restoration	Rubber Tired Dozers	Diesel	Average	1.00	10.0	367	0.40
Site Restoration	Graders	Diesel	Average	1.00	10.0	148	0.41
Site Restoration	Scrapers	Diesel	Average	2.0	10.0	423	0.48
Site Restoration	Other Material Handling Equipment	Diesel	Average	1.00	10.0	93	0.40
Habitat Restoration	Rubber Tired Dozers	Diesel	Average	1.00	10.0	367	0.40
Habitat Restoration	Other Construction Equipment	Diesel	Average	5.0	10.0	82	0.42
Habitat Restoration	Other Construction Equipment	Diesel	Average	1.00	10.0	82	0.42
Habitat Restoration	Tractors/Loaders/Backhoes	Diesel	Average	1.00	10.0	84	0.37
Demobilization	Other Construction Equipment	Diesel	Average	1.00	10.0	82	0.42
Demobilization	Excavators	Diesel	Average	1.00	10.0	36	0.38
Excavating Relief Trenches	Excavators	Diesel	Average	1.00	10.0	36	0.38
Excavation of High Flow Diversion	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42
Excavation of High Flow Diversion	Excavators	Diesel	Average	1.00	10.0	36	0.38
Excavation of High Flow Diversion	Off-Highway Trucks	Diesel	Average	2.0	10.0	376	0.38

Excavation of High Flow Diversion	Rubber Tired Dozers	Diesel	Average	1.00	10.0	367	0.40

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Mobilization	Off-Highway Trucks	Diesel	Tier 4 Final	1.00	10.0	376	0.38
Mobilization	Excavators	Diesel	Tier 4 Final	1.00	10.0	36	0.38
Mobilization	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.00	10.0	84	0.37
Mobilization	Cranes	Diesel	Tier 4 Final	1.00	10.0	367	0.29
Erosion Control and BMPs	Other Construction Equipment	Diesel	Tier 4 Final	1.00	10.0	82	0.42
Erosion Control and BMPs	Excavators	Diesel	Tier 4 Final	1.00	10.0	36	0.38
Erosion Control and BMPs	Other Material Handling Equipment	Diesel	Tier 4 Final	1.00	10.0	93	0.40
Develop Entrance, Haul Routes, and Permanent Access	Other Construction Equipment	Diesel	Average	1.00	10.0	82	0.42
Develop Entrance, Haul Routes, and Permanent Access	Other Construction Equipment	Diesel	Tier 4 Final	1.00	10.0	82	0.42
Develop Entrance, Haul Routes, and Permanent Access	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	10.0	367	0.40
Develop Entrance, Haul Routes, and Permanent Access	Other Construction Equipment	Diesel	Tier 4 Final	1.00	10.0	238	0.42
Develop Entrance, Haul Routes, and Permanent Access	Rollers	Diesel	Tier 4 Final	1.00	10.0	36	0.38
Develop Entrance, Haul Routes, and Permanent Access	Scrapers	Diesel	Tier 4 Final	2.0	10.0	423	0.48

Water Diversion	Other Construction Equipment	Diesel	Tier 4 Final	1.00	10.0	82	0.42
Water Diversion	Excavators	Diesel	Tier 4 Final	1.00	10.0	36	0.38
Water Diversion	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	10.0	367	0.40
Water Diversion	Pumps	Diesel	Average	2.0	10.0	11	0.74
Clearing and Grubbing Reservoir Area	Other Construction Equipment	Diesel	Tier 4 Final	2.0	10.0	82	0.42
Clearing and Grubbing Reservoir Area	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	10.0	367	0.40
Clearing and Grubbing Reservoir Area	Excavators	Diesel	Tier 4 Final	2.0	10.0	36	0.38
Clearing and Grubbing Reservoir Area	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.00	10.0	84	0.37
Clearing and Grubbing Reservoir Area	Off-Highway Trucks	Diesel	Tier 4 Final	1.00	10.0	376	0.38
Clearing and Grubbing Reservoir Area	Other Material Handling Equipment	Diesel	Tier 4 Final	1.00	10.0	950	0.40
Stripping and Preparing Stockpile and Drying Areas	Scrapers	Diesel	Tier 4 Final	2.0	10.0	423	0.48
Stripping and Preparing Stockpile and Drying Areas	Graders	Diesel	Tier 4 Final	1.00	10.0	148	0.41
Stripping and Preparing Stockpile and Drying Areas	Other Construction Equipment	Diesel	Tier 4 Final	2.0	10.0	82	0.42
Dewatering System Set up	Other Construction Equipment	Diesel	Tier 4 Final	1.00	10.0	82	0.42
Dewatering System Set up	Other Material Handling Equipment	Diesel	Tier 4 Final	1.00	10.0	93	0.40
Dewatering System Set up	Excavators	Diesel	Tier 4 Final	1.00	10.0	36	0.38
Dewatering System Set up	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.00	10.0	84	0.37

Dewatering System Set up	Pumps	Diesel	Average	5.0	10.0	11	0.74
Dewatering System Set up	Welders	Diesel	Tier 4 Final	1.00	10.0	46	0.45
Dewatering System Operation	Generator Sets	Diesel	Average	1.00	10.0	14	0.74
Dewatering System Operation	Excavators	Diesel	Tier 4 Final	1.00	10.0	36	0.38
Temporary Access to Sediment	Other Construction Equipment	Diesel	Tier 4 Final	2.0	10.0	82	0.42
Temporary Access to Sediment	Excavators	Diesel	Tier 4 Final	2.0	10.0	36	0.38
Temporary Access to Sediment	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	10.0	367	0.40
Temporary Access to Sediment	Off-Highway Trucks	Diesel	Tier 4 Final	1.00	10.0	376	0.38
Temporary Access to Sediment	Rollers	Diesel	Tier 4 Final	1.00	10.0	36	0.38
Excavation of Reservoir Sediment to Drying Area	Other Construction Equipment	Diesel	Tier 4 Final	2.0	10.0	82	0.42
Excavation of Reservoir Sediment to Drying Area	Excavators	Diesel	Tier 4 Final	1.00	10.0	36	0.38
Excavation of Reservoir Sediment to Drying Area	Off-Highway Trucks	Diesel	Tier 4 Final	3.0	10.0	376	0.38
Excavation of Reservoir Sediment to Drying Area	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	10.0	367	0.40
Excavation of Reservoir Sediment to Drying Area	Graders	Diesel	Tier 4 Final	1.00	10.0	148	0.41
Sediment Drying	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.00	10.0	84	0.37
Sediment Drying	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	10.0	367	0.40

Loading, Hauling, and Placing Dry Material to Disposal Area	Other Construction Equipment	Diesel	Tier 4 Final	2.0	10.0	82	0.42
Loading, Hauling, and Placing Dry Material to Disposal Area	Scrapers	Diesel	Tier 4 Final	2.0	10.0	423	0.48
Loading, Hauling, and Placing Dry Material to Disposal Area	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	10.0	367	0.40
Loading, Hauling, and Placing Dry Material to Disposal Area	Plate Compactors	Diesel	Average	1.00	10.0	8.0	0.43
Loading, Hauling, and Placing Dry Material to Disposal Area	Graders	Diesel	Tier 4 Final	1.00	10.0	148	0.41
Sand and Layer Placement	Other Construction Equipment	Diesel	Tier 4 Final	2.0	10.0	82	0.42
Sand and Layer Placement	Off-Highway Trucks	Diesel	Tier 4 Final	2.0	10.0	376	0.38
Sand and Layer Placement	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	2.0	10.0	84	0.37
Sand and Layer Placement	Rubber Tired Dozers	Diesel	Tier 4 Final	2.0	10.0	367	0.40
Cap Disposal Area	Other Construction Equipment	Diesel	Tier 4 Final	2.0	10.0	82	0.42
Cap Disposal Area	Scrapers	Diesel	Tier 4 Final	2.0	10.0	423	0.48
Cap Disposal Area	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	10.0	367	0.40
Cap Disposal Area	Graders	Diesel	Tier 4 Final	1.00	10.0	148	0.41
Final Grading of Reservoir	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	10.0	367	0.40
Restore Drying, Area and Stockpiling Area	Other Construction Equipment	Diesel	Tier 4 Final	2.0	10.0	82	0.42
Restore Drying, Area and Stockpiling Area	Scrapers	Diesel	Tier 4 Final	2.0	10.0	423	0.48

Restore Drying, Area and Stockpiling Area	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	10.0	367	0.40
Site Restoration	Other Construction Equipment	Diesel	Tier 4 Final	1.00	10.0	82	0.42
Site Restoration	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	10.0	367	0.40
Site Restoration	Graders	Diesel	Tier 4 Final	1.00	10.0	148	0.41
Site Restoration	Scrapers	Diesel	Tier 4 Final	2.0	10.0	423	0.48
Site Restoration	Other Material Handling Equipment	Diesel	Tier 4 Final	1.00	10.0	93	0.40
Habitat Restoration	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	10.0	367	0.40
Habitat Restoration	Other Construction Equipment	Diesel	Average	4.0	10.0	82	0.42
Habitat Restoration	Other Construction Equipment	Diesel	Tier 4 Final	1.00	10.0	82	0.42
Habitat Restoration	Other Construction Equipment	Diesel	Tier 4 Final	1.00	10.0	82	0.42
Habitat Restoration	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.00	10.0	84	0.37
Demobilization	Other Construction Equipment	Diesel	Tier 4 Final	1.00	10.0	82	0.42
Demobilization	Excavators	Diesel	Tier 4 Final	1.00	10.0	36	0.38
Excavating Relief Trenches	Excavators	Diesel	Tier 4 Final	1.00	10.0	36	0.38
Excavation of High Flow Diversion	Other Construction Equipment	Diesel	Tier 4 Final	2.0	10.0	82	0.42
Excavation of High Flow Diversion	Excavators	Diesel	Tier 4 Final	1.00	10.0	36	0.38
Excavation of High Flow Diversion	Off-Highway Trucks	Diesel	Tier 4 Final	2.0	10.0	376	0.38
Excavation of High Flow Diversion	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	10.0	367	0.40

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Mobilization	Worker	8.0	12	LDA,LDT1,LDT2
Mobilization	Vendor	—	8.4	HHDT,MHDT
Mobilization	Hauling	0.00	20	HHDT
Mobilization	Onsite truck	—	—	HHDT
Traffic Control	Worker	2.0	12	LDA,LDT1,LDT2
Traffic Control	Vendor	—	8.4	HHDT,MHDT
Traffic Control	Hauling	0.00	20	HHDT
Traffic Control	Onsite truck	—	—	HHDT
Erosion Control and BMPs	Worker	8.0	12	LDA,LDT1,LDT2
Erosion Control and BMPs	Vendor	—	8.4	HHDT,MHDT
Erosion Control and BMPs	Hauling	2.5	20	HHDT
Erosion Control and BMPs	Onsite truck	—	—	HHDT
Develop Entrance, Haul Routes, and Permanent Access	Worker	12	12	LDA,LDT1,LDT2
Develop Entrance, Haul Routes, and Permanent Access	Vendor	—	8.4	HHDT,MHDT
Develop Entrance, Haul Routes, and Permanent Access	Hauling	62	20	HHDT
Develop Entrance, Haul Routes, and Permanent Access	Onsite truck	—	—	HHDT
Water Diversion	Worker	6.0	12	LDA,LDT1,LDT2
Water Diversion	Vendor	—	8.4	HHDT,MHDT
Water Diversion	Hauling	3.0	20	HHDT
Water Diversion	Onsite truck	—	—	HHDT
Clearing and Grubbing Reservoir Area	Worker	12	12	LDA,LDT1,LDT2
Clearing and Grubbing Reservoir Area	Vendor	—	8.4	HHDT,MHDT

Clearing and Grubbing Reservoir Area	Hauling	51	20	HHDT
Clearing and Grubbing Reservoir Area	Onsite truck	—	—	HHDT
Stripping and Preparing Stockpile and Drying Areas	Worker	10.0	12	LDA,LDT1,LDT2
Stripping and Preparing Stockpile and Drying Areas	Vendor	—	8.4	HHDT,MHDT
Stripping and Preparing Stockpile and Drying Areas	Hauling	391	20	HHDT
Stripping and Preparing Stockpile and Drying Areas	Onsite truck	—	—	HHDT
Dewatering System Set up	Worker	8.0	12	LDA,LDT1,LDT2
Dewatering System Set up	Vendor	—	8.4	HHDT,MHDT
Dewatering System Set up	Hauling	0.11	20	HHDT
Dewatering System Set up	Onsite truck	—	—	HHDT
Dewatering System Operation	Worker	4.0	12	LDA,LDT1,LDT2
Dewatering System Operation	Vendor	—	8.4	HHDT,MHDT
Dewatering System Operation	Hauling	0.00	20	HHDT
Dewatering System Operation	Onsite truck	—	—	HHDT
Temporary Access to Sediment	Worker	16	12	LDA,LDT1,LDT2
Temporary Access to Sediment	Vendor	—	8.4	HHDT,MHDT
Temporary Access to Sediment	Hauling	0.00	20	HHDT
Temporary Access to Sediment	Onsite truck	—	—	HHDT
Excavation of Reservoir Sediment to Drying Area	Worker	14	12	LDA,LDT1,LDT2
Excavation of Reservoir Sediment to Drying Area	Vendor	—	8.4	HHDT,MHDT
Excavation of Reservoir Sediment to Drying Area	Hauling	0.00	20	HHDT
Excavation of Reservoir Sediment to Drying Area	Onsite truck	250	1.5	HHDT

Sediment Drying	Worker	4.0	12	LDA,LDT1,LDT2
Sediment Drying	Vendor	—	8.4	HHDT,MHDT
Sediment Drying	Hauling	0.00	20	HHDT
Sediment Drying	Onsite truck	—	—	HHDT
Loading, Hauling, and Placing Dry Material to Disposal Area	Worker	14	12	LDA,LDT1,LDT2
Loading, Hauling, and Placing Dry Material to Disposal Area	Vendor	—	8.4	HHDT,MHDT
Loading, Hauling, and Placing Dry Material to Disposal Area	Hauling	0.00	20	HHDT
Loading, Hauling, and Placing Dry Material to Disposal Area	Onsite truck	250	1.00	HHDT
Sand and Layer Placement	Worker	10.0	12	LDA,LDT1,LDT2
Sand and Layer Placement	Vendor	—	8.4	HHDT,MHDT
Sand and Layer Placement	Hauling	198	20	HHDT
Sand and Layer Placement	Onsite truck	—	—	HHDT
Cap Disposal Area	Worker	12	12	LDA,LDT1,LDT2
Cap Disposal Area	Vendor	—	8.4	HHDT,MHDT
Cap Disposal Area	Hauling	0.00	20	HHDT
Cap Disposal Area	Onsite truck	375	1.00	HHDT
Final Grading of Reservoir	Worker	2.0	12	LDA,LDT1,LDT2
Final Grading of Reservoir	Vendor	—	8.4	HHDT,MHDT
Final Grading of Reservoir	Hauling	0.00	20	HHDT
Final Grading of Reservoir	Onsite truck	—	—	HHDT
Restore Drying, Area and Stockpiling Area	Worker	8.0	12	LDA,LDT1,LDT2
Restore Drying, Area and Stockpiling Area	Vendor	—	8.4	HHDT,MHDT
Restore Drying, Area and Stockpiling Area	Hauling	375	20	HHDT

Restore Drying, Area and Stockpiling Area	Onsite truck	—	—	HHDT
Site Restoration	Worker	12	12	LDA,LDT1,LDT2
Site Restoration	Vendor	—	8.4	HHDT,MHDT
Site Restoration	Hauling	0.00	20	HHDT
Site Restoration	Onsite truck	—	—	HHDT
Habitat Restoration	Worker	16	12	LDA,LDT1,LDT2
Habitat Restoration	Vendor	—	8.4	HHDT,MHDT
Habitat Restoration	Hauling	1.6	20	HHDT
Habitat Restoration	Onsite truck	—	—	HHDT
Demobilization	Worker	6.0	12	LDA,LDT1,LDT2
Demobilization	Vendor	—	8.4	HHDT,MHDT
Demobilization	Hauling	0.00	20	HHDT
Demobilization	Onsite truck	—	—	HHDT
Excavating Relief Trenches	Worker	2.0	12	LDA,LDT1,LDT2
Excavating Relief Trenches	Vendor	—	8.4	HHDT,MHDT
Excavating Relief Trenches	Hauling	56	20	HHDT
Excavating Relief Trenches	Onsite truck	—	—	HHDT
Excavation of High Flow Diversion	Worker	10.0	12	LDA,LDT1,LDT2
Excavation of High Flow Diversion	Vendor	—	8.4	HHDT,MHDT
Excavation of High Flow Diversion	Hauling	103	20	HHDT
Excavation of High Flow Diversion	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Mobilization	Worker	8.0	12	LDA,LDT1,LDT2
Mobilization	Vendor	—	8.4	HHDT,MHDT
Mobilization	Hauling	0.00	20	HHDT

Mobilization	Onsite truck	—	—	HHDT
Traffic Control	Worker	2.0	12	LDA,LDT1,LDT2
Traffic Control	Vendor	—	8.4	HHDT,MHDT
Traffic Control	Hauling	0.00	20	HHDT
Traffic Control	Onsite truck	—	—	HHDT
Erosion Control and BMPs	Worker	8.0	12	LDA,LDT1,LDT2
Erosion Control and BMPs	Vendor	—	8.4	HHDT,MHDT
Erosion Control and BMPs	Hauling	2.5	20	HHDT
Erosion Control and BMPs	Onsite truck	—	—	HHDT
Develop Entrance, Haul Routes, and Permanent Access	Worker	12	12	LDA,LDT1,LDT2
Develop Entrance, Haul Routes, and Permanent Access	Vendor	—	8.4	HHDT,MHDT
Develop Entrance, Haul Routes, and Permanent Access	Hauling	62	20	HHDT
Develop Entrance, Haul Routes, and Permanent Access	Onsite truck	—	—	HHDT
Water Diversion	Worker	6.0	12	LDA,LDT1,LDT2
Water Diversion	Vendor	—	8.4	HHDT,MHDT
Water Diversion	Hauling	3.0	20	HHDT
Water Diversion	Onsite truck	—	—	HHDT
Clearing and Grubbing Reservoir Area	Worker	12	12	LDA,LDT1,LDT2
Clearing and Grubbing Reservoir Area	Vendor	—	8.4	HHDT,MHDT
Clearing and Grubbing Reservoir Area	Hauling	51	20	HHDT
Clearing and Grubbing Reservoir Area	Onsite truck	—	—	HHDT
Stripping and Preparing Stockpile and Drying Areas	Worker	10.0	12	LDA,LDT1,LDT2

Stripping and Preparing Stockpile and Drying Areas	Vendor	—	8.4	HHDT,MHDT
Stripping and Preparing Stockpile and Drying Areas	Hauling	391	20	HHDT
Stripping and Preparing Stockpile and Drying Areas	Onsite truck	—	—	HHDT
Dewatering System Set up	Worker	8.0	12	LDA,LDT1,LDT2
Dewatering System Set up	Vendor	—	8.4	HHDT,MHDT
Dewatering System Set up	Hauling	0.11	20	HHDT
Dewatering System Set up	Onsite truck	—	—	HHDT
Dewatering System Operation	Worker	4.0	12	LDA,LDT1,LDT2
Dewatering System Operation	Vendor	—	8.4	HHDT,MHDT
Dewatering System Operation	Hauling	0.00	20	HHDT
Dewatering System Operation	Onsite truck	—	—	HHDT
Temporary Access to Sediment	Worker	16	12	LDA,LDT1,LDT2
Temporary Access to Sediment	Vendor	—	8.4	HHDT,MHDT
Temporary Access to Sediment	Hauling	0.00	20	HHDT
Temporary Access to Sediment	Onsite truck	—	—	HHDT
Excavation of Reservoir Sediment to Drying Area	Worker	14	12	LDA,LDT1,LDT2
Excavation of Reservoir Sediment to Drying Area	Vendor	—	8.4	HHDT,MHDT
Excavation of Reservoir Sediment to Drying Area	Hauling	0.00	20	HHDT
Excavation of Reservoir Sediment to Drying Area	Onsite truck	250	1.5	HHDT
Sediment Drying	Worker	4.0	12	LDA,LDT1,LDT2
Sediment Drying	Vendor	—	8.4	HHDT,MHDT
Sediment Drying	Hauling	0.00	20	HHDT
Sediment Drying	Onsite truck	—	—	HHDT

Loading, Hauling, and Placing Dry Material to Disposal Area	Worker	14	12	LDA,LDT1,LDT2
Loading, Hauling, and Placing Dry Material to Disposal Area	Vendor	—	8.4	HHDT,MHDT
Loading, Hauling, and Placing Dry Material to Disposal Area	Hauling	0.00	20	HHDT
Loading, Hauling, and Placing Dry Material to Disposal Area	Onsite truck	250	1.00	HHDT
Sand and Layer Placement	Worker	10.0	12	LDA,LDT1,LDT2
Sand and Layer Placement	Vendor	—	8.4	HHDT,MHDT
Sand and Layer Placement	Hauling	198	20	HHDT
Sand and Layer Placement	Onsite truck	—	—	HHDT
Cap Disposal Area	Worker	12	12	LDA,LDT1,LDT2
Cap Disposal Area	Vendor	—	8.4	HHDT,MHDT
Cap Disposal Area	Hauling	0.00	20	HHDT
Cap Disposal Area	Onsite truck	375	1.00	HHDT
Final Grading of Reservoir	Worker	2.0	12	LDA,LDT1,LDT2
Final Grading of Reservoir	Vendor	—	8.4	HHDT,MHDT
Final Grading of Reservoir	Hauling	0.00	20	HHDT
Final Grading of Reservoir	Onsite truck	—	—	HHDT
Restore Drying, Area and Stockpiling Area	Worker	8.0	12	LDA,LDT1,LDT2
Restore Drying, Area and Stockpiling Area	Vendor	—	8.4	HHDT,MHDT
Restore Drying, Area and Stockpiling Area	Hauling	375	20	HHDT
Restore Drying, Area and Stockpiling Area	Onsite truck	—	—	HHDT
Site Restoration	Worker	12	12	LDA,LDT1,LDT2
Site Restoration	Vendor	—	8.4	HHDT,MHDT
Site Restoration	Hauling	0.00	20	HHDT

Site Restoration	Onsite truck	—	—	HHDT
Habitat Restoration	Worker	16	12	LDA,LDT1,LDT2
Habitat Restoration	Vendor	—	8.4	HHDT,MHDT
Habitat Restoration	Hauling	1.6	20	HHDT
Habitat Restoration	Onsite truck	—	—	HHDT
Demobilization	Worker	6.0	12	LDA,LDT1,LDT2
Demobilization	Vendor	—	8.4	HHDT,MHDT
Demobilization	Hauling	0.00	20	HHDT
Demobilization	Onsite truck	—	—	HHDT
Excavating Relief Trenches	Worker	2.0	12	LDA,LDT1,LDT2
Excavating Relief Trenches	Vendor	—	8.4	HHDT,MHDT
Excavating Relief Trenches	Hauling	56	20	HHDT
Excavating Relief Trenches	Onsite truck	—	—	HHDT
Excavation of High Flow Diversion	Worker	10.0	12	LDA,LDT1,LDT2
Excavation of High Flow Diversion	Vendor	—	8.4	HHDT,MHDT
Excavation of High Flow Diversion	Hauling	103	20	HHDT
Excavation of High Flow Diversion	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)

Mobilization	0.00	0.00	0.00	0.00	0.00
Traffic Control	0.00	0.00	0.00	0.00	0.00
Erosion Control and BMPs	250	0.00	0.00	0.00	0.00
Develop Entrance, Haul Routes, and Permanent Access	2,500	0.00	13	0.00	0.00
Water Diversion	150	0.00	3.1	0.00	0.00
Clearing and Grubbing Reservoir Area	0.00	7,000	11	0.00	0.00
Stripping and Preparing Stockpile and Drying Areas	0.00	72,000	72	0.00	0.00
Dewatering System Set up	5.0	0.00	0.00	0.00	0.00
Dewatering System Operation	0.00	0.00	0.00	0.00	0.00
Temporary Access to Sediment	0.00	0.00	5.6	0.00	0.00
Excavation of Reservoir Sediment to Drying Area	0.00	330,000	206	0.00	0.00
Sediment Drying	0.00	0.00	103	0.00	0.00
Loading, Hauling, and Placing Dry Material to Disposal Area	0.00	330,000	619	0.00	0.00
Sand and Layer Placement	46,000	0.00	29	0.00	0.00
Cap Disposal Area	15,000	0.00	19	0.00	0.00
Final Grading of Reservoir	0.00	0.00	21	0.00	0.00
Restore Drying, Area and Stockpiling Area	0.00	72,000	75	0.00	0.00
Site Restoration	0.00	0.00	19	0.00	0.00
Habitat Restoration	1,500	0.00	75	0.00	0.00
Demobilization	0.00	0.00	0.00	0.00	0.00
Excavating Relief Trenches	0.00	6,700	40	0.00	0.00
Excavation of High Flow Diversion	0.00	1,640	1.3	0.00	0.00

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	20	annual days of extreme heat
Extreme Precipitation	2.0	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	24	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	1	0	0	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	1	1	1	2
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	43
AQ-PM	22
AQ-DPM	8.7
Drinking Water	58
Lead Risk Housing	6.9
Pesticides	74
Toxic Releases	36
Traffic	18
Effect Indicators	—
CleanUp Sites	50
Groundwater	60
Haz Waste Facilities/Generators	28
Impaired Water Bodies	51
Solid Waste	80
Sensitive Population	—
Asthma	66
Cardio-vascular	69
Low Birth Weights	46
Socioeconomic Factor Indicators	—

Education	4.7
Housing	29
Linguistic	16
Poverty	8.7
Unemployment	46

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	77.53111767
Employed	89.43924034
Median HI	90.18349801
Education	—
Bachelor's or higher	67.07301424
High school enrollment	100
Preschool enrollment	88.70781471
Transportation	—
Auto Access	47.37585012
Active commuting	44.24483511
Social	—
2-parent households	53.49672783
Voting	78.81432054
Neighborhood	—
Alcohol availability	87.01398691
Park access	33.46593096
Retail density	11.45900167
Supermarket access	7.570896959

Tree canopy	56.35827024
Housing	—
Homeownership	75.52932119
Housing habitability	29.24419351
Low-inc homeowner severe housing cost burden	12.47273194
Low-inc renter severe housing cost burden	7.211600154
Uncrowded housing	82.07365584
Health Outcomes	—
Insured adults	92.01847812
Arthritis	0.0
Asthma ER Admissions	24.8
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	37.2
Cognitively Disabled	43.0
Physically Disabled	80.2
Heart Attack ER Admissions	6.6
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	64.6
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—

Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	86.0
Elderly	52.4
English Speaking	88.6
Foreign-born	16.3
Outdoor Workers	66.6
Climate Change Adaptive Capacity	—
Impervious Surface Cover	85.0
Traffic Density	12.9
Traffic Access	23.0
Other Indices	—
Hardship	27.8
Other Decision Support	—
2016 Voting	68.2

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	39
Healthy Places Index Score for Project Location (b)	85
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

Appendix B. Biological Resources Database Information

Appendix B.1 Database Queries

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Contra Costa County, California



Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
San Joaquin Kit Fox *Vulpes macrotis mutica* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	Endangered

Birds

NAME	STATUS
California Condor *Gymnogyps californianus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8193	Endangered

Reptiles

NAME	STATUS

NOT FOR CONSULTATION

NAME	STATUS
Alameda Whipsnake (=striped Racer) Masticophis lateralis euryxanthus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5524	Threatened
Northwestern Pond Turtle Actinemys marmorata Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened
Foothill Yellow-legged Frog Rana boylii No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5133	Threatened
Western Spadefoot Spea hammondii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5425	Proposed Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8246	Endangered

NOT FOR CONSULTATION

Vernal Pool Fairy Shrimp Branchinecta lynchi — Threatened
Wherever found
There is **final** critical habitat for this species. Your location overlaps the critical habitat.
https://ecos.fws.gov/ecp/species/498

Vernal Pool Tadpole Shrimp Lepidurus packardi — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/2246

Flowering Plants

NAME	STATUS
Contra Costa Goldfields Lasthenia conjugens Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7058	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Vernal Pool Fairy Shrimp Branchinecta lynchi https://ecos.fws.gov/ecp/species/498#crithab	Final

NOT FOR CONSULTATION

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON

Bald Eagle *Haliaeetus leucocephalus* — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Golden Eagle *Aquila chrysaetos* — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

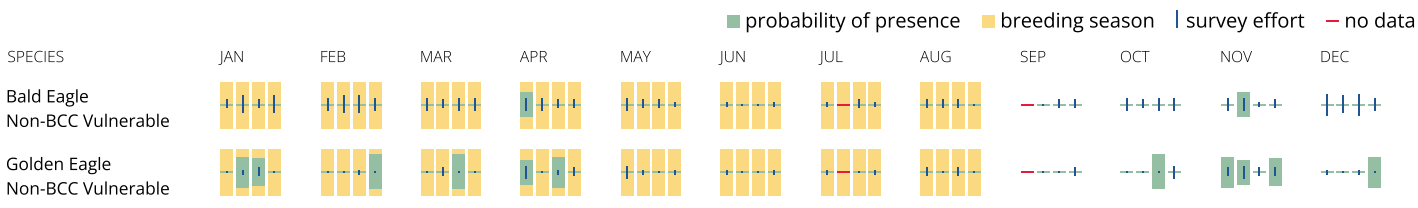
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



NOT FOR CONSULTATION

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/ documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON

NOT FOR CONSULTATION

Bald Eagle Haliaeetus leucocephalus — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Belding's Savannah Sparrow Passerculus sandwichensis beldingi — Breeds Apr 1 to Aug 15
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/8

Bullock's Oriole Icterus bullockii — Breeds Mar 21 to Jul 25
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

California Gull Larus californicus — Breeds Mar 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Spinus lawrencei — Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Northern Harrier Circus hudsonius — Breeds Apr 1 to Sep 15
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/8350

Nuttall's Woodpecker Dryobates nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Santa Barbara Song Sparrow Melospiza melodia graminea — Breeds Mar 1 to Sep 5
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/5513

NOT FOR CONSULTATION

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Grebe aechmophorus occidentalis — Breeds Jun 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/6743

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (▪)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

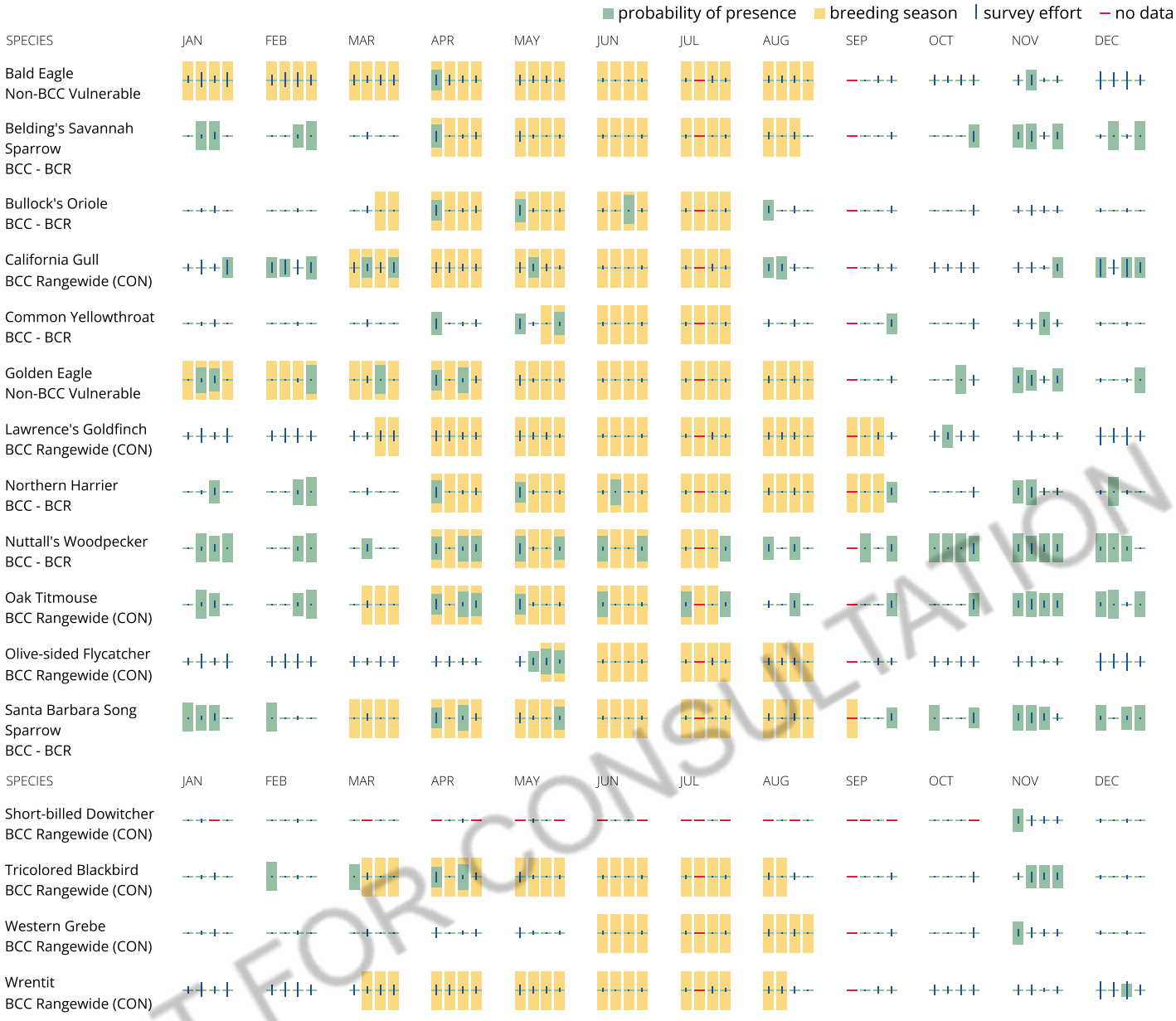
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

NOT FOR CONSULTATION



NOT FOR CONSULTATION

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

NOT FOR CONSULTATION

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND
- PEM1A
- PEM1C
- PEM1Fh
- PEM1Ch
- PEM1Cx

FRESHWATER FORESTED/SHRUB WETLAND
- PSSCh

FRESHWATER POND
- PUSCh
- PUBFh

LAKE
- L1UBHh

RIVERINE
- R4SBC
- R5UBF

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

NOT FOR CONSULTATION

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Spatial Query Report: ESA and MSA

Area of Interest (AOI) Information

Area : 1.27 km²

Nov 14 2024 11:30:37 Pacific Standard Time



Summary

Name	Count	Area(km²)	Length(km)
ESA Species Ranges	0	0	not applicable
ESA Critical Habitat - polygon	0	0	not applicable
ESA Critical Habitat - line	0	not applicable	0
MSA Habitat Areas of Particular Concern	0	0	not applicable
MSA Essential Fish Habitat - Areas Protected from Fishing	0	0	not applicable
MSA Essential Fish Habitat - HMS, CPS, Groundfish	0	0	not applicable
MSA Essential Fish Habitat - Salmon	1	1.27	not applicable

MSA Essential Fish Habitat - Salmon

#	HUC_8_Name	HUC_8	ChinookEFH	Coho_EFH	Pink_EFH	Area(km²)
1	San Joaquin Delta	18040003	Yes	*no data*	*no data*	1.27

The West Coast Region (WCR) Species and Habitat App displays spatial data for marine and anadromous species listed under the Endangered Species Act (ESA) and habitat areas protected under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The core datasets, managed by the WCR, are ESA-listed species ranges, critical habitat designations, and essential fish habitat (EFH). These datasets are intended to assist the public and our partners with visually interpreting federal regulations. However, these data do not constitute legal definitions. Please refer to NOAA Fisheries' Federal Register rules and the Code of Federal Regulations for legal definitions of threatened or endangered species, critical habitat designations, or essential fish habitat. Detailed information for EFH on the West Coast, including text descriptions, which are ultimately determinative of the limits of EFH, is contained in fishery management plans available on the Pacific Fishery Management Council website (pcouncil.org).

Not all ESA-listed species ranges, critical habitat designations, and essential fish habitat under the jurisdiction of NOAA Fisheries are displayed in this app. Only those within the West Coast Region that have available data are displayed. NOAA Fisheries' West Coast Region includes Idaho, Oregon, Washington, California, and U.S. marine waters adjacent to those states.

This tool ran the AOI query on spatial features that were diced to increase performance. The diced features should not be used for any purpose beyond the production of this summary report. Additionally, the tool utilized the Web Mercator (WKID 3857) projection to produce area and distance estimates for this report. The Web Mercator projection causes area and distance distortions at high latitudes. For equal area calculations or additional analysis needs, please download the source GIS data:
ESA Critical Habitat https://www.fisheries.noaa.gov/resource/map/critical-habitat-maps-and-gis-data-west-coast-region
ESA Ranges https://www.fisheries.noaa.gov/resource/map/species-ranges-salmon-and-steelhead-west-coast-region
MSA Essential Fish Habitat, EFH Areas Protected from Fishing, Habitat Areas of Particular Concern https://www.habitat.noaa.gov/application/efhinventory/index.html

IMPORTANT DATA CAVEAT The following ESA-listed species, within the West Coast Region, were not analyzed (i.e., they do not have range spatial data available): Abalone, black; Abalone, white; Sturgeon, green (Southern DPS); Eulachon (Southern DPS); Bocaccio (Puget Sound/Georgia Basin DPS); Rockfish, yelloweye (Puget Sound/Georgia Basin DPS); Salmon, Chinook (California Coastal ESU); Salmon, Chinook (Central Valley spring-run ESU); Salmon, Chinook (Sacramento River winter-run ESU); Salmon, coho (Southern Oregon/Northern California Coast ESU); Salmon, coho (Central California Coast ESU); Steelhead (Northern California DPS); Steelhead (Central California Coast DPS); Steelhead (California Central Valley DPS); Steelhead (South-Central California DPS); Steelhead (Southern California DPS); Sea turtle, green (East Pacific DPS); Sea turtle, loggerhead (North Pacific Ocean DPS); Sea turtle, leatherback; Sea turtle, olive ridley; Seal, Guadalupe fur; Whale, humpback (Central America DPS); Whale, humpback (Mexico DPS); Whale, killer (Southern Resident DPS); Whale, sei; Whale, sperm; Whale, blue; Whale, fin; Shark, oceanic whitetip.

IMPORTANT DATA CAVEAT The following ESA critical habitat designation, within the West Coast Region, was not analyzed (i.e., the designation does not have spatial data available): Salmon, coho (Southern Oregon/Northern California Coast ESU).

For more information on consultations visit:
ESA https://www.fisheries.noaa.gov/west-coast/consultations/esa-section-7-consultations-west-coast
MSA https://www.fisheries.noaa.gov/west-coast/habitat-conservation/essential-fish-habitat-west-coast
GIS point of contact: shanna.dunn@noaa.gov

Element_Type	Scientific_Name	Common_Name	Element_Code	Federal_Status	State_Status	CDFW_Status	CA_Rare_Plant_Rank	Quad_Code	Quad_Name	Data_Status	Taxonomic_Sort
Animals - Amphibians	Ambystoma californiense pop. 1	California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	WL	-	3812117	ANTIOCH NORTH	Mapped	Animals - Amphibians - Ambystomatidae - Ambystoma californiense pop. 1
Animals - Amphibians	Ambystoma californiense pop. 1	California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	WL	-	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Animals - Amphibians - Ambystomatidae - Ambystoma californiense pop. 1
Animals - Amphibians	Ambystoma californiense pop. 1	California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	WL	-	3712186	BRENTWOOD	Mapped and Unprocessed	Animals - Amphibians - Ambystomatidae - Ambystoma californiense pop. 1
Animals - Amphibians	Ambystoma californiense pop. 1	California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	WL	-	3712177	TASSAJARA	Mapped and Unprocessed	Animals - Amphibians - Ambystomatidae - Ambystoma californiense pop. 1
Animals - Amphibians	Ambystoma californiense pop. 1	California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	WL	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Amphibians - Ambystomatidae - Ambystoma californiense pop. 1
Animals - Amphibians	Ambystoma californiense pop. 1	California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	WL	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Amphibians - Ambystomatidae - Ambystoma californiense pop. 1
Animals - Amphibians	Rana boylii pop. 4	foothill yellow-legged frog - central coast DPS	AAABH01054	Threatened	Endangered	-	-	3712177	TASSAJARA	Mapped	Animals - Amphibians - Ranidae - Rana boylii pop. 4
Animals - Amphibians	Rana boylii pop. 4	foothill yellow-legged frog - central coast DPS	AAABH01054	Threatened	Endangered	-	-	3712187	ANTIOCH SOUTH	Mapped	Animals - Amphibians - Ranidae - Rana boylii pop. 4
Animals - Amphibians	Rana draytonii	California red-legged frog	AAABH01022	Threatened	None	SSC	-	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Animals - Amphibians - Ranidae - Rana draytonii
Animals - Amphibians	Rana draytonii	California red-legged frog	AAABH01022	Threatened	None	SSC	-	3712186	BRENTWOOD	Unprocessed	Animals - Amphibians - Ranidae - Rana draytonii
Animals - Amphibians	Rana draytonii	California red-legged frog	AAABH01022	Threatened	None	SSC	-	3712177	TASSAJARA	Mapped and Unprocessed	Animals - Amphibians - Ranidae - Rana draytonii
Animals - Amphibians	Rana draytonii	California red-legged frog	AAABH01022	Threatened	None	SSC	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Amphibians - Ranidae - Rana draytonii
Animals - Amphibians	Rana draytonii	California red-legged frog	AAABH01022	Threatened	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Amphibians - Ranidae - Rana draytonii
Animals - Amphibians	Spea hammondii	western spadefoot	AAABF02020	Proposed Threatened	None	SSC	-	3712187	ANTIOCH SOUTH	Unprocessed	Animals - Amphibians - Scaphiopodidae - Spea hammondii
Animals - Birds	Accipiter cooperii	Coopers hawk	ABNKC12040	None	None	WL	-	3712187	ANTIOCH SOUTH	Unprocessed	Animals - Birds - Accipitridae - Accipiter cooperii
Animals - Birds	Accipiter cooperii	Coopers hawk	ABNKC12040	None	None	WL	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Accipitridae - Accipiter cooperii
Animals - Birds	Accipiter cooperii	Coopers hawk	ABNKC12040	None	None	WL	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Birds - Accipitridae - Accipiter cooperii
Animals - Birds	Aquila chrysaetos	golden eagle	ABNKC22010	None	None	FP | WL	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Birds - Accipitridae - Aquila chrysaetos
Animals - Birds	Aquila chrysaetos	golden eagle	ABNKC22010	None	None	FP | WL	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Birds - Accipitridae - Aquila chrysaetos
Animals - Birds	Aquila chrysaetos	golden eagle	ABNKC22010	None	None	FP | WL	-	3712177	TASSAJARA	Mapped and Unprocessed	Animals - Birds - Accipitridae - Aquila chrysaetos
Animals - Birds	Aquila chrysaetos	golden eagle	ABNKC22010	None	None	FP | WL	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Birds - Accipitridae - Aquila chrysaetos
Animals - Birds	Aquila chrysaetos	golden eagle	ABNKC22010	None	None	FP | WL	-	3712186	BRENTWOOD	Unprocessed	Animals - Birds - Accipitridae - Aquila chrysaetos
Animals - Birds	Aquila chrysaetos	golden eagle	ABNKC22010	None	None	FP | WL	-	3712187	ANTIOCH SOUTH	Unprocessed	Animals - Birds - Accipitridae - Aquila chrysaetos
Animals - Birds	Buteo regalis	ferruginous hawk	ABNKC19120	None	None	WL	-	3712187	ANTIOCH SOUTH	Unprocessed	Animals - Birds - Accipitridae - Buteo regalis
Animals - Birds	Buteo regalis	ferruginous hawk	ABNKC19120	None	None	WL	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Accipitridae - Buteo regalis
Animals - Birds	Buteo regalis	ferruginous hawk	ABNKC19120	None	None	WL	-	3712177	TASSAJARA	Mapped	Animals - Birds - Accipitridae - Buteo regalis
Animals - Birds	Buteo regalis	ferruginous hawk	ABNKC19120	None	None	WL	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Birds - Accipitridae - Buteo regalis

Animals - Birds	Buteo regalis	ferruginous hawk	ABNKC19120	None	None	WL	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo regalis
Animals - Birds	Buteo swainsoni	Swainsons hawk	ABNKC19070	None	Threatened	-	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainsons hawk	ABNKC19070	None	Threatened	-	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainsons hawk	ABNKC19070	None	Threatened	-	-	3712185	WOODWARD ISLAND	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainsons hawk	ABNKC19070	None	Threatened	-	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainsons hawk	ABNKC19070	None	Threatened	-	-	3812116	JERSEY ISLAND	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainsons hawk	ABNKC19070	None	Threatened	-	-	3712186	BRENTWOOD	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainsons hawk	ABNKC19070	None	Threatened	-	-	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainsons hawk	ABNKC19070	None	Threatened	-	-	3812115	BOULDIN ISLAND	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Circus hudsonius	northern harrier	ABNKC11011	None	None	SSC	-	3712187	ANTIOCH SOUTH	Unprocessed	Animals - Birds - Accipitridae - Circus hudsonius
Animals - Birds	Circus hudsonius	northern harrier	ABNKC11011	None	None	SSC	-	3812116	JERSEY ISLAND	Mapped and Unprocessed	Animals - Birds - Accipitridae - Circus hudsonius
Animals - Birds	Circus hudsonius	northern harrier	ABNKC11011	None	None	SSC	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Birds - Accipitridae - Circus hudsonius
Animals - Birds	Circus hudsonius	northern harrier	ABNKC11011	None	None	SSC	-	3712185	WOODWARD ISLAND	Unprocessed	Animals - Birds - Accipitridae - Circus hudsonius
Animals - Birds	Circus hudsonius	northern harrier	ABNKC11011	None	None	SSC	-	3712177	TASSAJARA	Mapped	Animals - Birds - Accipitridae - Circus hudsonius
Animals - Birds	Circus hudsonius	northern harrier	ABNKC11011	None	None	SSC	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Birds - Accipitridae - Circus hudsonius
Animals - Birds	Circus hudsonius	northern harrier	ABNKC11011	None	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Birds - Accipitridae - Circus hudsonius
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3712177	TASSAJARA	Mapped	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812116	JERSEY ISLAND	Mapped and Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3712186	BRENTWOOD	Mapped and Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3712187	ANTIOCH SOUTH	Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Haliaeetus leucocephalus	bald eagle	ABNKC10010	Delisted	Endangered	FP	-	3712187	ANTIOCH SOUTH	Unprocessed	Animals - Birds - Accipitridae - Haliaeetus leucocephalus
Animals - Birds	Haliaeetus leucocephalus	bald eagle	ABNKC10010	Delisted	Endangered	FP	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Accipitridae - Haliaeetus leucocephalus
Animals - Birds	Haliaeetus leucocephalus	bald eagle	ABNKC10010	Delisted	Endangered	FP	-	3712177	TASSAJARA	Unprocessed	Animals - Birds - Accipitridae - Haliaeetus leucocephalus
Animals - Birds	Haliaeetus leucocephalus	bald eagle	ABNKC10010	Delisted	Endangered	FP	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Birds - Accipitridae - Haliaeetus leucocephalus
Animals - Birds	Eremophila alpestris actia	California horned lark	ABPAT02011	None	None	WL	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Birds - Alaudidae - Eremophila alpestris actia
Animals - Birds	Eremophila alpestris actia	California horned lark	ABPAT02011	None	None	WL	-	3712177	TASSAJARA	Mapped	Animals - Birds - Alaudidae - Eremophila alpestris actia
Animals - Birds	Eremophila alpestris actia	California horned lark	ABPAT02011	None	None	WL	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Birds - Alaudidae - Eremophila alpestris actia
Animals - Birds	Eremophila alpestris actia	California horned lark	ABPAT02011	None	None	WL	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Alaudidae - Eremophila alpestris actia

Animals - Birds	Chaetura vauxi	Vauxs swift	ABNUA03020	None	None	SSC	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Birds - Apodidae - Chaetura vauxi
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812115	BOULDIN ISLAND	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812116	JERSEY ISLAND	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3712185	WOODWARD ISLAND	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Botaurus lentiginosus	American bittern	ABNGA01020	None	None	-	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Ardeidae - Botaurus lentiginosus
Animals - Birds	Botaurus lentiginosus	American bittern	ABNGA01020	None	None	-	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Birds - Ardeidae - Botaurus lentiginosus
Animals - Birds	Botaurus lentiginosus	American bittern	ABNGA01020	None	None	-	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Birds - Ardeidae - Botaurus lentiginosus
Animals - Birds	Egretta thula	snowy egret	ABNGA06030	None	None	-	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Ardeidae - Egretta thula
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	ABNGA11010	None	None	-	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Ardeidae - Nycticorax nycticorax
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	ABNGA11010	None	None	-	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Birds - Ardeidae - Nycticorax nycticorax
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	ABNGA11010	None	None	-	-	3712186	BRENTWOOD	Unprocessed	Animals - Birds - Ardeidae - Nycticorax nycticorax
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	ABNGA11010	None	None	-	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Birds - Ardeidae - Nycticorax nycticorax
Animals - Birds	Charadrius montanus	mountain plover	ABNNB03100	None	None	SSC	-	3712185	WOODWARD ISLAND	Unprocessed	Animals - Birds - Charadriidae - Charadrius montanus
Animals - Birds	Charadrius montanus	mountain plover	ABNNB03100	None	None	SSC	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Birds - Charadriidae - Charadrius montanus
Animals - Birds	Charadrius nivosus nivosus	western snowy plover	ABNNB03031	Threatened	None	SSC	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Birds - Charadriidae - Charadrius nivosus nivosus
Animals - Birds	Falco columbarius	merlin	ABNKD06030	None	None	WL	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Falconidae - Falco columbarius
Animals - Birds	Falco columbarius	merlin	ABNKD06030	None	None	WL	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Birds - Falconidae - Falco columbarius
Animals - Birds	Falco mexicanus	prairie falcon	ABNKD06090	None	None	WL	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Birds - Falconidae - Falco mexicanus
Animals - Birds	Falco mexicanus	prairie falcon	ABNKD06090	None	None	WL	-	3712177	TASSAJARA	Mapped and Unprocessed	Animals - Birds - Falconidae - Falco mexicanus
Animals - Birds	Falco mexicanus	prairie falcon	ABNKD06090	None	None	WL	-	3712186	BRENTWOOD	Unprocessed	Animals - Birds - Falconidae - Falco mexicanus
Animals - Birds	Falco mexicanus	prairie falcon	ABNKD06090	None	None	WL	-	3712187	ANTIOCH SOUTH	Unprocessed	Animals - Birds - Falconidae - Falco mexicanus
Animals - Birds	Falco peregrinus anatum	American peregrine falcon	ABNKD06071	Delisted	Delisted	-	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Birds - Falconidae - Falco peregrinus anatum
Animals - Birds	Falco peregrinus anatum	American peregrine falcon	ABNKD06071	Delisted	Delisted	-	-	3812116	JERSEY ISLAND	Mapped and Unprocessed	Animals - Birds - Falconidae - Falco peregrinus anatum
Animals - Birds	Falco peregrinus anatum	American peregrine falcon	ABNKD06071	Delisted	Delisted	-	-	3712177	TASSAJARA	Mapped	Animals - Birds - Falconidae - Falco peregrinus anatum
Animals - Birds	Falco peregrinus anatum	American peregrine falcon	ABNKD06071	Delisted	Delisted	-	-	3712175	CLIFTON COURT	Unprocessed	Animals - Birds - Falconidae - Falco

									FOREBAY		peregrinus anatum
Animals - Birds	Antigone canadensis canadensis	lesser sandhill crane	ABNMK01011	None	None	SSC	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Birds - Gruidae - Antigone canadensis canadensis
Animals - Birds	Antigone canadensis tabida	greater sandhill crane	ABNMK01014	None	Threatened	FP	-	3712185	WOODWARD ISLAND	Unprocessed	Animals - Birds - Gruidae - Antigone canadensis tabida
Animals - Birds	Riparia riparia	bank swallow	ABPAU08010	None	Threatened	-	-	3812116	JERSEY ISLAND	Mapped	Animals - Birds - Hirundinidae - Riparia riparia
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3712186	BRENTWOOD	Mapped	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3712185	WOODWARD ISLAND	Unprocessed	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3712177	TASSAJARA	Mapped	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Xanthocephalus xanthocephalus	yellow-headed blackbird	ABPBXB3010	None	None	SSC	-	3712185	WOODWARD ISLAND	Unprocessed	Animals - Birds - Icteridae - Xanthocephalus xanthocephalus
Animals - Birds	Xanthocephalus xanthocephalus	yellow-headed blackbird	ABPBXB3010	None	None	SSC	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Birds - Icteridae - Xanthocephalus xanthocephalus
Animals - Birds	Xanthocephalus xanthocephalus	yellow-headed blackbird	ABPBXB3010	None	None	SSC	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Icteridae - Xanthocephalus xanthocephalus
Animals - Birds	Icteria virens	yellow-breasted chat	ABPBX24010	None	None	SSC	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Icteriidae - Icteria virens
Animals - Birds	Icteria virens	yellow-breasted chat	ABPBX24010	None	None	SSC	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Birds - Icteriidae - Icteria virens
Animals - Birds	Lanius ludovicianus	loggerhead shrike	ABPBR01030	None	None	SSC	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Birds - Laniidae - Lanius ludovicianus
Animals - Birds	Lanius ludovicianus	loggerhead shrike	ABPBR01030	None	None	SSC	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Laniidae - Lanius ludovicianus
Animals - Birds	Lanius ludovicianus	loggerhead shrike	ABPBR01030	None	None	SSC	-	3712186	BRENTWOOD	Mapped and Unprocessed	Animals - Birds - Laniidae - Lanius ludovicianus
Animals - Birds	Lanius ludovicianus	loggerhead shrike	ABPBR01030	None	None	SSC	-	3712187	ANTIOCH SOUTH	Unprocessed	Animals - Birds - Laniidae - Lanius ludovicianus
Animals - Birds	Lanius ludovicianus	loggerhead shrike	ABPBR01030	None	None	SSC	-	3712185	WOODWARD ISLAND	Unprocessed	Animals - Birds - Laniidae - Lanius ludovicianus
Animals - Birds	Lanius ludovicianus	loggerhead shrike	ABPBR01030	None	None	SSC	-	3712177	TASSAJARA	Unprocessed	Animals - Birds - Laniidae - Lanius ludovicianus
Animals - Birds	Lanius ludovicianus	loggerhead shrike	ABPBR01030	None	None	SSC	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Birds - Laniidae - Lanius ludovicianus
Animals - Birds	Lanius ludovicianus	loggerhead shrike	ABPBR01030	None	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Birds - Laniidae - Lanius ludovicianus
Animals - Birds	Sternula antillarum browni	California least tern	ABNNM08103	Endangered	Endangered	FP	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Birds - Laridae - Sternula antillarum browni
Animals - Birds	Pandion haliaetus	osprey	ABNKC01010	None	None	WL	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Pandionidae - Pandion haliaetus
Animals - Birds	Pandion haliaetus	osprey	ABNKC01010	None	None	WL	-	3712187	ANTIOCH SOUTH	Unprocessed	Animals - Birds - Pandionidae - Pandion haliaetus
Animals - Birds	Geothlypis trichas sinuosa	saltmarsh common yellowthroat	ABPBX1201A	None	None	SSC	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Birds - Parulidae - Geothlypis trichas sinuosa
Animals - Birds	Geothlypis trichas sinuosa	saltmarsh common yellowthroat	ABPBX1201A	None	None	SSC	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Birds - Parulidae - Geothlypis trichas sinuosa
Animals - Birds	Setophaga petechia	yellow warbler	ABPBX03010	None	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Birds - Parulidae - Setophaga petechia

Animals - Birds	Setophaga petechia	yellow warbler	ABPBX03010	None	None	SSC	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Birds - Parulidae - Setophaga petechia
Animals - Birds	Ammodramus savannarum	grasshopper sparrow	ABPBXA0020	None	None	SSC	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Birds - Passerellidae - Ammodramus savannarum
Animals - Birds	Ammodramus savannarum	grasshopper sparrow	ABPBXA0020	None	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Birds - Passerellidae - Ammodramus savannarum
Animals - Birds	Melospiza melodia maxillaris	Suisun song sparrow	ABPBXA301K	None	None	SSC	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Birds - Passerellidae - Melospiza melodia maxillaris
Animals - Birds	Melospiza melodia maxillaris	Suisun song sparrow	ABPBXA301K	None	None	SSC	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Birds - Passerellidae - Melospiza melodia maxillaris
Animals - Birds	Melospiza melodia pop. 1	song sparrow (Modesto population)	ABPBXA3013	None	None	SSC	-	3812115	BOULDIN ISLAND	Mapped	Animals - Birds - Passerellidae - Melospiza melodia pop. 1
Animals - Birds	Melospiza melodia pop. 1	song sparrow (Modesto population)	ABPBXA3013	None	None	SSC	-	3812117	ANTIOCH NORTH	Mapped	Animals - Birds - Passerellidae - Melospiza melodia pop. 1
Animals - Birds	Melospiza melodia pop. 1	song sparrow (Modesto population)	ABPBXA3013	None	None	SSC	-	3812116	JERSEY ISLAND	Mapped	Animals - Birds - Passerellidae - Melospiza melodia pop. 1
Animals - Birds	Melospiza melodia pop. 1	song sparrow (Modesto population)	ABPBXA3013	None	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Mapped	Animals - Birds - Passerellidae - Melospiza melodia pop. 1
Animals - Birds	Melospiza melodia pop. 1	song sparrow (Modesto population)	ABPBXA3013	None	None	SSC	-	3712185	WOODWARD ISLAND	Mapped	Animals - Birds - Passerellidae - Melospiza melodia pop. 1
Animals - Birds	Pelecanus erythrorhynchos	American white pelican	ABNFC01010	None	None	SSC	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Birds - Pelecanidae - Pelecanus erythrorhynchos
Animals - Birds	Nannopterum auritum	double-crested cormorant	ABNFD01020	None	None	WL	-	3812117	ANTIOCH NORTH	Mapped	Animals - Birds - Phalacrocoracidae - Nannopterum auritum
Animals - Birds	Nannopterum auritum	double-crested cormorant	ABNFD01020	None	None	WL	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Birds - Phalacrocoracidae - Nannopterum auritum
Animals - Birds	Nannopterum auritum	double-crested cormorant	ABNFD01020	None	None	WL	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Birds - Phalacrocoracidae - Nannopterum auritum
Animals - Birds	Nannopterum auritum	double-crested cormorant	ABNFD01020	None	None	WL	-	3712185	WOODWARD ISLAND	Unprocessed	Animals - Birds - Phalacrocoracidae - Nannopterum auritum
Animals - Birds	Nannopterum auritum	double-crested cormorant	ABNFD01020	None	None	WL	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Birds - Phalacrocoracidae - Nannopterum auritum
Animals - Birds	Melanerpes lewis	Lewis woodpecker	ABNYF04010	None	None	-	-	3712177	TASSAJARA	Unprocessed	Animals - Birds - Picidae - Melanerpes lewis
Animals - Birds	Melanerpes lewis	Lewis woodpecker	ABNYF04010	None	None	-	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Birds - Picidae - Melanerpes lewis
Animals - Birds	Laterallus jamaicensis coturniculus	California black rail	ABNME03041	None	Threatened	FP	-	3712185	WOODWARD ISLAND	Mapped and Unprocessed	Animals - Birds - Rallidae - Laterallus jamaicensis coturniculus
Animals - Birds	Laterallus jamaicensis coturniculus	California black rail	ABNME03041	None	Threatened	FP	-	3812115	BOULDIN ISLAND	Mapped	Animals - Birds - Rallidae - Laterallus jamaicensis coturniculus
Animals - Birds	Laterallus jamaicensis coturniculus	California black rail	ABNME03041	None	Threatened	FP	-	3712186	BRENTWOOD	Unprocessed	Animals - Birds - Rallidae - Laterallus jamaicensis coturniculus
Animals - Birds	Laterallus jamaicensis coturniculus	California black rail	ABNME03041	None	Threatened	FP	-	3812116	JERSEY ISLAND	Mapped and Unprocessed	Animals - Birds - Rallidae - Laterallus jamaicensis coturniculus
Animals - Birds	Laterallus jamaicensis coturniculus	California black rail	ABNME03041	None	Threatened	FP	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Birds - Rallidae - Laterallus jamaicensis coturniculus
Animals - Birds	Numenius americanus	long-billed curlew	ABNNF07070	None	None	WL	-	3712186	BRENTWOOD	Unprocessed	Animals - Birds - Scolopacidae - Numenius americanus
Animals - Birds	Numenius americanus	long-billed curlew	ABNNF07070	None	None	WL	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Birds - Scolopacidae - Numenius americanus

Animals - Birds	Numenius americanus	long-billed curlew	ABNNF07070	None	None	WL	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Birds - Scolopacidae - Numenius americanus
Animals - Birds	Asio flammeus	short-eared owl	ABNSB13040	None	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Birds - Strigidae - Asio flammeus
Animals - Birds	Asio otus	long-eared owl	ABNSB13010	None	None	SSC	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Birds - Strigidae - Asio otus
Animals - Birds	Asio otus	long-eared owl	ABNSB13010	None	None	SSC	-	3712177	TASSAJARA	Unprocessed	Animals - Birds - Strigidae - Asio otus
Animals - Birds	Asio otus	long-eared owl	ABNSB13010	None	None	SSC	-	3712187	ANTIOCH SOUTH	Unprocessed	Animals - Birds - Strigidae - Asio otus
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	Candidate Endangered	SSC	-	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	Candidate Endangered	SSC	-	3712186	BRENTWOOD	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	Candidate Endangered	SSC	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	Candidate Endangered	SSC	-	3812116	JERSEY ISLAND	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	Candidate Endangered	SSC	-	3712177	TASSAJARA	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	Candidate Endangered	SSC	-	3712185	WOODWARD ISLAND	Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	Candidate Endangered	SSC	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	Candidate Endangered	SSC	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Crustaceans	Branchinecta conservatio	Conservancy fairy shrimp	ICBRA03010	Endangered	None	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Crustaceans - Branchinectidae - Branchinecta conservatio
Animals - Crustaceans	Branchinecta longiantenna	longhorn fairy shrimp	ICBRA03020	Endangered	None	-	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta longiantenna
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3712186	BRENTWOOD	Mapped	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3712185	WOODWARD ISLAND	Mapped	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta mesovallensis	midvalley fairy shrimp	ICBRA03150	None	None	-	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta mesovallensis
Animals - Crustaceans	Branchinecta mesovallensis	midvalley fairy shrimp	ICBRA03150	None	None	-	-	3712186	BRENTWOOD	Mapped	Animals - Crustaceans - Branchinectidae - Branchinecta mesovallensis
Animals - Crustaceans	Branchinecta mesovallensis	midvalley fairy shrimp	ICBRA03150	None	None	-	-	3712176	BYRON HOT SPRINGS	Mapped	Animals - Crustaceans - Branchinectidae - Branchinecta mesovallensis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Crustaceans - Chirocephalidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3712186	BRENTWOOD	Mapped	Animals - Crustaceans - Chirocephalidae - Linderiella occidentalis

Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3712185	WOODWARD ISLAND	Mapped	Animals - Crustaceans - Chirocephalidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3712175	CLIFTON COURT FOREBAY	Mapped	Animals - Crustaceans - Chirocephalidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3712187	ANTIOCH SOUTH	Mapped	Animals - Crustaceans - Chirocephalidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Crustaceans - Chirocephalidae - Linderiella occidentalis
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3712187	ANTIOCH SOUTH	Mapped	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	AFCAA01031	Threatened	None	SSC	-	3812115	BOULDIN ISLAND	Mapped	Animals - Fish - Acipenseridae - Acipenser medirostris pop. 1
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	AFCAA01031	Threatened	None	SSC	-	3812117	ANTIOCH NORTH	Mapped	Animals - Fish - Acipenseridae - Acipenser medirostris pop. 1
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	AFCAA01031	Threatened	None	SSC	-	3812116	JERSEY ISLAND	Mapped	Animals - Fish - Acipenseridae - Acipenser medirostris pop. 1
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	AFCAA01031	Threatened	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Mapped	Animals - Fish - Acipenseridae - Acipenser medirostris pop. 1
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	AFCAA01031	Threatened	None	SSC	-	3712185	WOODWARD ISLAND	Mapped	Animals - Fish - Acipenseridae - Acipenser medirostris pop. 1
Animals - Fish	Acipenser transmontanus	white sturgeon	AFCAA01050	None	Candidate Threatened	SSC	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Fish - Acipenseridae - Acipenser transmontanus
Animals - Fish	Acipenser transmontanus	white sturgeon	AFCAA01050	None	Candidate Threatened	SSC	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Fish - Acipenseridae - Acipenser transmontanus
Animals - Fish	Acipenser transmontanus	white sturgeon	AFCAA01050	None	Candidate Threatened	SSC	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Fish - Acipenseridae - Acipenser transmontanus
Animals - Fish	Acipenser transmontanus	white sturgeon	AFCAA01050	None	Candidate Threatened	SSC	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Fish - Acipenseridae - Acipenser transmontanus
Animals - Fish	Archoplites interruptus	Sacramento perch	AFCQB07010	None	None	SSC	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Fish - Centrarchidae - Archoplites interruptus
Animals - Fish	Lavinia exilicauda exilicauda	Sacramento hitch	AFCJB19012	None	None	SSC	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Fish - Cyprinidae - Lavinia exilicauda exilicauda
Animals - Fish	Lavinia exilicauda exilicauda	Sacramento hitch	AFCJB19012	None	None	SSC	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Fish - Cyprinidae - Lavinia exilicauda exilicauda
Animals - Fish	Lavinia exilicauda exilicauda	Sacramento hitch	AFCJB19012	None	None	SSC	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Fish - Cyprinidae - Lavinia exilicauda exilicauda
Animals - Fish	Lavinia exilicauda exilicauda	Sacramento hitch	AFCJB19012	None	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Fish - Cyprinidae - Lavinia exilicauda exilicauda
Animals - Fish	Lavinia exilicauda exilicauda	Sacramento hitch	AFCJB19012	None	None	SSC	-	3712185	WOODWARD ISLAND	Unprocessed	Animals - Fish - Cyprinidae - Lavinia exilicauda exilicauda
Animals - Fish	Lavinia exilicauda exilicauda	Sacramento hitch	AFCJB19012	None	None	SSC	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Fish - Cyprinidae - Lavinia exilicauda exilicauda
Animals - Fish	Mylopharodon conocephalus	hardhead	AFCJB25010	None	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Fish - Cyprinidae - Mylopharodon conocephalus
Animals - Fish	Mylopharodon conocephalus	hardhead	AFCJB25010	None	None	SSC	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Fish - Cyprinidae - Mylopharodon conocephalus
Animals - Fish	Mylopharodon conocephalus	hardhead	AFCJB25010	None	None	SSC	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Fish - Cyprinidae - Mylopharodon conocephalus

Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3712185	WOODWARD ISLAND	Unprocessed	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	AFCQK02012	None	None	-	-	3712185	WOODWARD ISLAND	Unprocessed	Animals - Fish - Embiotocidae - Hysterocarpus traskii traskii
Animals - Fish	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	AFCQK02012	None	None	-	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Fish - Embiotocidae - Hysterocarpus traskii traskii
Animals - Fish	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	AFCQK02012	None	None	-	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Fish - Embiotocidae - Hysterocarpus traskii traskii
Animals - Fish	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	AFCQK02012	None	None	-	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Fish - Embiotocidae - Hysterocarpus traskii traskii
Animals - Fish	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	AFCQK02012	None	None	-	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Fish - Embiotocidae - Hysterocarpus traskii traskii
Animals - Fish	Hypomesus transpacificus	Delta smelt	AFCHB01040	Threatened	Endangered	-	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Fish - Osmeridae - Hypomesus transpacificus
Animals - Fish	Hypomesus transpacificus	Delta smelt	AFCHB01040	Threatened	Endangered	-	-	3812116	JERSEY ISLAND	Mapped and Unprocessed	Animals - Fish - Osmeridae - Hypomesus transpacificus
Animals - Fish	Hypomesus transpacificus	Delta smelt	AFCHB01040	Threatened	Endangered	-	-	3812115	BOULDIN ISLAND	Mapped and Unprocessed	Animals - Fish - Osmeridae - Hypomesus transpacificus
Animals - Fish	Hypomesus transpacificus	Delta smelt	AFCHB01040	Threatened	Endangered	-	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Fish - Osmeridae - Hypomesus transpacificus
Animals - Fish	Hypomesus transpacificus	Delta smelt	AFCHB01040	Threatened	Endangered	-	-	3712185	WOODWARD ISLAND	Mapped and Unprocessed	Animals - Fish - Osmeridae - Hypomesus transpacificus
Animals - Fish	Spirinchus thaleichthys	longfin smelt	AFCHB03010	None	Threatened	-	-	3712185	WOODWARD ISLAND	Unprocessed	Animals - Fish - Osmeridae - Spirinchus thaleichthys
Animals - Fish	Spirinchus thaleichthys	longfin smelt	AFCHB03010	None	Threatened	-	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Fish - Osmeridae - Spirinchus thaleichthys
Animals - Fish	Spirinchus thaleichthys	longfin smelt	AFCHB03010	None	Threatened	-	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Fish - Osmeridae - Spirinchus thaleichthys
Animals - Fish	Spirinchus thaleichthys	longfin smelt	AFCHB03010	None	Threatened	-	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Fish - Osmeridae - Spirinchus thaleichthys
Animals - Fish	Spirinchus thaleichthys	longfin smelt	AFCHB03010	None	Threatened	-	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Fish - Osmeridae - Spirinchus thaleichthys
Animals - Fish	Spirinchus thaleichthys pop. 2	longfin smelt - San Francisco Bay-Delta DPS	AFCHB03040	Endangered	Threatened	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Fish - Osmeridae - Spirinchus thaleichthys pop. 2
Animals - Fish	Spirinchus thaleichthys pop. 2	longfin smelt - San Francisco Bay-Delta DPS	AFCHB03040	Endangered	Threatened	-	-	3812116	JERSEY ISLAND	Mapped	Animals - Fish - Osmeridae - Spirinchus thaleichthys pop. 2
Animals - Fish	Spirinchus thaleichthys pop. 2	longfin smelt - San Francisco Bay-Delta DPS	AFCHB03040	Endangered	Threatened	-	-	3812115	BOULDIN ISLAND	Mapped	Animals - Fish - Osmeridae - Spirinchus thaleichthys pop. 2
Animals - Fish	Spirinchus thaleichthys pop. 2	longfin smelt - San Francisco Bay-Delta DPS	AFCHB03040	Endangered	Threatened	-	-	3712175	CLIFTON COURT FOREBAY	Mapped	Animals - Fish - Osmeridae - Spirinchus thaleichthys pop. 2
Animals - Fish	Spirinchus thaleichthys pop. 2	longfin smelt - San Francisco Bay-Delta DPS	AFCHB03040	Endangered	Threatened	-	-	3712185	WOODWARD ISLAND	Mapped	Animals - Fish - Osmeridae - Spirinchus thaleichthys pop. 2
Animals - Fish	Thaleichthys pacificus	eulachon	AFCHB04010	Threatened	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Mapped	Animals - Fish - Osmeridae - Thaleichthys pacificus

Animals - Fish	Entosphenus tridentatus	Pacific lamprey	AFBAA02100	None	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Fish - Petromyzontidae - Entosphenus tridentatus
Animals - Fish	Entosphenus tridentatus	Pacific lamprey	AFBAA02100	None	None	SSC	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Fish - Petromyzontidae - Entosphenus tridentatus
Animals - Fish	Entosphenus tridentatus	Pacific lamprey	AFBAA02100	None	None	SSC	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Fish - Petromyzontidae - Entosphenus tridentatus
Animals - Fish	Entosphenus tridentatus	Pacific lamprey	AFBAA02100	None	None	SSC	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Fish - Petromyzontidae - Entosphenus tridentatus
Animals - Fish	Lampetra ayresii	western river lamprey	AFBAA02030	None	None	SSC	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Fish - Petromyzontidae - Lampetra ayresii
Animals - Fish	Lampetra ayresii	western river lamprey	AFBAA02030	None	None	SSC	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Fish - Petromyzontidae - Lampetra ayresii
Animals - Fish	Lampetra ayresii	western river lamprey	AFBAA02030	None	None	SSC	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Fish - Petromyzontidae - Lampetra ayresii
Animals - Fish	Oncorhynchus kisutch pop. 4	coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	-	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus kisutch pop. 4
Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	SSC	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 11
Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	SSC	-	3812116	JERSEY ISLAND	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 11
Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	SSC	-	3812115	BOULDIN ISLAND	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 11
Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 11
Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	SSC	-	3712185	WOODWARD ISLAND	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 11
Animals - Fish	Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	AFCHA0209G	Threatened	None	SSC	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 8
Animals - Fish	Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	AFCHA0209G	Threatened	None	SSC	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 8
Animals - Fish	Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	AFCHA0209G	Threatened	None	SSC	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 8
Animals - Fish	Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	-	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	-	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	-	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	-	-	3712186	BRENTWOOD	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	-	-	3712185	WOODWARD ISLAND	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	-	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 13

Animals - Fish	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3712185	WOODWARD ISLAND	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 13
Animals - Fish	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3712186	BRENTWOOD	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 13
Animals - Fish	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 13
Animals - Fish	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 13
Animals - Fish	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 13
Animals - Fish	Oncorhynchus tshawytscha pop. 7	chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	-	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 7
Animals - Fish	Oncorhynchus tshawytscha pop. 7	chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	-	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 7
Animals - Fish	Oncorhynchus tshawytscha pop. 7	chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	-	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 7
Animals - Insects	Andrena blennospermatis	Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	-	-	3712187	ANTIOCH SOUTH	Mapped	Animals - Insects - Andrenidae - Andrena blennospermatis
Animals - Insects	Perdita hirticeps luteocincta	yellow-banded andrenid bee	IIHYM01021	None	None	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Insects - Andrenidae - Perdita hirticeps luteocincta
Animals - Insects	Perdita scitula antiochensis	Antioch andrenid bee	IIHYM01031	None	None	-	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Insects - Andrenidae - Perdita scitula antiochensis
Animals - Insects	Perdita scitula antiochensis	Antioch andrenid bee	IIHYM01031	None	None	-	-	3812116	JERSEY ISLAND	Mapped	Animals - Insects - Andrenidae - Perdita scitula antiochensis
Animals - Insects	Perdita scitula antiochensis	Antioch andrenid bee	IIHYM01031	None	None	-	-	3712186	BRENTWOOD	Mapped	Animals - Insects - Andrenidae - Perdita scitula antiochensis
Animals - Insects	Anthicus antiochensis	Antioch Dunes anthicid beetle	IICOL49020	None	None	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Insects - Anthicidae - Anthicus antiochensis
Animals - Insects	Bombus crotchii	Crotchs bumble bee	IIHYM24480	None	Candidate Endangered	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Insects - Apidae - Bombus crotchii
Animals - Insects	Bombus crotchii	Crotchs bumble bee	IIHYM24480	None	Candidate Endangered	-	-	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Animals - Insects - Apidae - Bombus crotchii
Animals - Insects	Bombus crotchii	Crotchs bumble bee	IIHYM24480	None	Candidate Endangered	-	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Insects - Apidae - Bombus crotchii
Animals - Insects	Bombus crotchii	Crotchs bumble bee	IIHYM24480	None	Candidate Endangered	-	-	3712177	TASSAJARA	Unprocessed	Animals - Insects - Apidae - Bombus crotchii
Animals - Insects	Bombus occidentalis	western bumble bee	IIHYM24252	None	Candidate Endangered	-	-	3712186	BRENTWOOD	Mapped and Unprocessed	Animals - Insects - Apidae - Bombus occidentalis
Animals - Insects	Bombus occidentalis	western bumble bee	IIHYM24252	None	Candidate Endangered	-	-	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Animals - Insects - Apidae - Bombus occidentalis
Animals - Insects	Bombus occidentalis	western bumble bee	IIHYM24252	None	Candidate Endangered	-	-	3812116	JERSEY ISLAND	Mapped	Animals - Insects - Apidae - Bombus occidentalis
Animals - Insects	Bombus occidentalis	western bumble bee	IIHYM24252	None	Candidate Endangered	-	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Insects - Apidae - Bombus occidentalis
Animals - Insects	Bombus pensylvanicus	American bumble bee	IIHYM24260	None	None	-	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Insects - Apidae - Bombus pensylvanicus
Animals - Insects	Bombus pensylvanicus	American bumble bee	IIHYM24260	None	None	-	-	3812116	JERSEY ISLAND	Mapped and Unprocessed	Animals - Insects - Apidae - Bombus pensylvanicus
Animals - Insects	Bombus pensylvanicus	American bumble bee	IIHYM24260	None	None	-	-	3812115	BOULDIN ISLAND	Mapped	Animals - Insects - Apidae - Bombus pensylvanicus
Animals - Insects	Bombus pensylvanicus	American bumble bee	IIHYM24260	None	None	-	-	3712187	ANTIOCH SOUTH	Unprocessed	Animals - Insects - Apidae - Bombus pensylvanicus
Animals - Insects	Cophura hurdi	Antioch cophuran robberfly	IIDIP06010	None	None	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Insects - Asilidae - Cophura hurdi
Animals - Insects	Efferia antiochi	Antioch efferian robberfly	IIDIP07010	None	None	-	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Insects - Asilidae - Efferia antiochi

Animals - Insects	Metapogon hurdi	Hurds metapogon robberfly	IIDIP08010	None	None	-	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Insects - Asilidae - Metapogon hurdi
Animals - Insects	Hygrotus curvipes	curved-foot hygrotus diving beetle	IICOL38030	None	None	-	-	3812116	JERSEY ISLAND	Mapped	Animals - Insects - Dytiscidae - Hygrotus curvipes
Animals - Insects	Hygrotus curvipes	curved-foot hygrotus diving beetle	IICOL38030	None	None	-	-	3712186	BRENTWOOD	Mapped	Animals - Insects - Dytiscidae - Hygrotus curvipes
Animals - Insects	Hygrotus curvipes	curved-foot hygrotus diving beetle	IICOL38030	None	None	-	-	3712176	BYRON HOT SPRINGS	Mapped	Animals - Insects - Dytiscidae - Hygrotus curvipes
Animals - Insects	Hygrotus curvipes	curved-foot hygrotus diving beetle	IICOL38030	None	None	-	-	3712175	CLIFTON COURT FOREBAY	Mapped	Animals - Insects - Dytiscidae - Hygrotus curvipes
Animals - Insects	Sphecodogastra antiochensis	Antioch Dunes halcitid bee	IIHYM78010	None	None	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Insects - Halictidae - Sphecodogastra antiochensis
Animals - Insects	Lytta molesta	molestan blister beetle	IICOL4C030	None	None	-	-	3712187	ANTIOCH SOUTH	Mapped	Animals - Insects - Meloidae - Lytta molesta
Animals - Insects	Lytta molesta	molestan blister beetle	IICOL4C030	None	None	-	-	3712186	BRENTWOOD	Mapped	Animals - Insects - Meloidae - Lytta molesta
Animals - Insects	Myrmosula pacifica	Antioch multilid wasp	IIHYM15010	None	None	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Insects - Mutillidae - Myrmosula pacifica
Animals - Insects	Rhaphiomidas trochilus	San Joaquin Valley giant flower-loving fly	IIDIP05010	None	None	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Insects - Mydidae - Rhaphiomidas trochilus
Animals - Insects	Apodemia mormo langei	Langes metalmark butterfly	IILEPH7012	Endangered	None	-	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Insects - Riodinidae - Apodemia mormo langei
Animals - Insects	Eucerceris ruficeps	redheaded sphecid wasp	IIHYM18010	None	None	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Insects - Sphecidae - Eucerceris ruficeps
Animals - Insects	Eucerceris ruficeps	redheaded sphecid wasp	IIHYM18010	None	None	-	-	3812116	JERSEY ISLAND	Mapped	Animals - Insects - Sphecidae - Eucerceris ruficeps
Animals - Insects	Eucerceris ruficeps	redheaded sphecid wasp	IIHYM18010	None	None	-	-	3812115	BOULDIN ISLAND	Mapped	Animals - Insects - Sphecidae - Eucerceris ruficeps
Animals - Insects	Philanthus nasalis	Antioch specid wasp	IIHYM20010	None	None	-	-	3712187	ANTIOCH SOUTH	Unprocessed	Animals - Insects - Sphecidae - Philanthus nasalis
Animals - Insects	Philanthus nasalis	Antioch specid wasp	IIHYM20010	None	None	-	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Insects - Sphecidae - Philanthus nasalis
Animals - Insects	Coelus gracilis	San Joaquin dune beetle	IICOL4A020	None	None	-	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Insects - Tenebrionidae - Coelus gracilis
Animals - Insects	Idiostatus middlekauffi	Middlekauffs shieldback katydid	IIORT31010	None	None	-	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Insects - Tettigoniidae - Idiostatus middlekauffi
Animals - Mammals	Vulpes macrotis mutica	San Joaquin kit fox	AMAJA03041	Endangered	Threatened	-	-	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Animals - Mammals - Canidae - Vulpes macrotis mutica
Animals - Mammals	Vulpes macrotis mutica	San Joaquin kit fox	AMAJA03041	Endangered	Threatened	-	-	3712186	BRENTWOOD	Mapped	Animals - Mammals - Canidae - Vulpes macrotis mutica
Animals - Mammals	Vulpes macrotis mutica	San Joaquin kit fox	AMAJA03041	Endangered	Threatened	-	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Mammals - Canidae - Vulpes macrotis mutica
Animals - Mammals	Vulpes macrotis mutica	San Joaquin kit fox	AMAJA03041	Endangered	Threatened	-	-	3712177	TASSAJARA	Mapped and Unprocessed	Animals - Mammals - Canidae - Vulpes macrotis mutica
Animals - Mammals	Vulpes macrotis mutica	San Joaquin kit fox	AMAJA03041	Endangered	Threatened	-	-	3712175	CLIFTON COURT FOREBAY	Mapped	Animals - Mammals - Canidae - Vulpes macrotis mutica
Animals - Mammals	Neotoma fuscipes annectens	San Francisco dusky-footed woodrat	AMAFF08082	None	None	SSC	-	3712177	TASSAJARA	Mapped and Unprocessed	Animals - Mammals - Cricetidae - Neotoma fuscipes annectens
Animals - Mammals	Reithrodontomys raviventris	salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	FP	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Mammals - Cricetidae - Reithrodontomys raviventris
Animals - Mammals	Perognathus inornatus	San Joaquin pocket mouse	AMAFD01060	None	None	-	-	3712187	ANTIOCH SOUTH	Mapped	Animals - Mammals - Heteromyidae - Perognathus inornatus
Animals - Mammals	Perognathus inornatus	San Joaquin pocket mouse	AMAFD01060	None	None	-	-	3712177	TASSAJARA	Unprocessed	Animals - Mammals - Heteromyidae - Perognathus inornatus
Animals - Mammals	Perognathus inornatus	San Joaquin pocket mouse	AMAFD01060	None	None	-	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Mammals - Heteromyidae - Perognathus inornatus

Animals - Mammals	Perognathus inornatus	San Joaquin pocket mouse	AMAFD01060	None	None	-	-	3712186	BRENTWOOD	Mapped	Animals - Mammals - Heteromyidae - Perognathus inornatus
Animals - Mammals	Perognathus inornatus	San Joaquin pocket mouse	AMAFD01060	None	None	-	-	3712175	CLIFTON COURT FOREBAY	Mapped	Animals - Mammals - Heteromyidae - Perognathus inornatus
Animals - Mammals	Taxidea taxus	American badger	AMAJF04010	None	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Mammals - Mustelidae - Taxidea taxus
Animals - Mammals	Taxidea taxus	American badger	AMAJF04010	None	None	SSC	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Mammals - Mustelidae - Taxidea taxus
Animals - Mammals	Taxidea taxus	American badger	AMAJF04010	None	None	SSC	-	3712177	TASSAJARA	Mapped and Unprocessed	Animals - Mammals - Mustelidae - Taxidea taxus
Animals - Mammals	Taxidea taxus	American badger	AMAJF04010	None	None	SSC	-	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Animals - Mammals - Mustelidae - Taxidea taxus
Animals - Mammals	Taxidea taxus	American badger	AMAJF04010	None	None	SSC	-	3712186	BRENTWOOD	Unprocessed	Animals - Mammals - Mustelidae - Taxidea taxus
Animals - Mammals	Taxidea taxus	American badger	AMAJF04010	None	None	SSC	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Mammals - Mustelidae - Taxidea taxus
Animals - Mammals	Antrozous pallidus	pallid bat	AMACC10010	None	None	SSC	-	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Animals - Mammals - Vespertilionidae - Antrozous pallidus
Animals - Mammals	Antrozous pallidus	pallid bat	AMACC10010	None	None	SSC	-	3712177	TASSAJARA	Unprocessed	Animals - Mammals - Vespertilionidae - Antrozous pallidus
Animals - Mammals	Lasionycteris noctivagans	silver-haired bat	AMACC02010	None	None	-	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Mammals - Vespertilionidae - Lasionycteris noctivagans
Animals - Mammals	Lasiurus cinereus	hoary bat	AMACC05032	None	None	-	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus cinereus
Animals - Mammals	Lasiurus cinereus	hoary bat	AMACC05032	None	None	-	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus cinereus
Animals - Mammals	Lasiurus cinereus	hoary bat	AMACC05032	None	None	-	-	3712186	BRENTWOOD	Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus cinereus
Animals - Mammals	Lasiurus cinereus	hoary bat	AMACC05032	None	None	-	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus cinereus
Animals - Mammals	Lasiurus cinereus	hoary bat	AMACC05032	None	None	-	-	3812116	JERSEY ISLAND	Mapped	Animals - Mammals - Vespertilionidae - Lasiurus cinereus
Animals - Mammals	Lasiurus cinereus	hoary bat	AMACC05032	None	None	-	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus cinereus
Animals - Mammals	Lasiurus frantzii	western red bat	AMACC05080	None	None	SSC	-	3812117	ANTIOCH NORTH	Mapped	Animals - Mammals - Vespertilionidae - Lasiurus frantzii
Animals - Mammals	Lasiurus frantzii	western red bat	AMACC05080	None	None	SSC	-	3812116	JERSEY ISLAND	Mapped	Animals - Mammals - Vespertilionidae - Lasiurus frantzii
Animals - Mammals	Lasiurus frantzii	western red bat	AMACC05080	None	None	SSC	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus frantzii
Animals - Mammals	Lasiurus frantzii	western red bat	AMACC05080	None	None	SSC	-	3712186	BRENTWOOD	Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus frantzii
Animals - Mammals	Lasiurus frantzii	western red bat	AMACC05080	None	None	SSC	-	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus frantzii
Animals - Mammals	Lasiurus frantzii	western red bat	AMACC05080	None	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus frantzii
Animals - Mammals	Lasiurus frantzii	western red bat	AMACC05080	None	None	SSC	-	3712176	BYRON HOT SPRINGS	Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus frantzii
Animals - Mammals	Lasiurus frantzii	western red bat	AMACC05080	None	None	SSC	-	3712177	TASSAJARA	Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus frantzii

Animals - Mammals	Myotis ciliolabrum	western small-footed myotis	AMACC01230	None	None	-	-	3712186	BRENTWOOD	Unprocessed	Animals - Mammals - Vespertilionidae - Myotis ciliolabrum
Animals - Mammals	Myotis ciliolabrum	western small-footed myotis	AMACC01230	None	None	-	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Mammals - Vespertilionidae - Myotis ciliolabrum
Animals - Mammals	Myotis yumanensis	Yuma myotis	AMACC01020	None	None	-	-	3812115	BOULDIN ISLAND	Unprocessed	Animals - Mammals - Vespertilionidae - Myotis yumanensis
Animals - Mammals	Myotis yumanensis	Yuma myotis	AMACC01020	None	None	-	-	3712186	BRENTWOOD	Unprocessed	Animals - Mammals - Vespertilionidae - Myotis yumanensis
Animals - Mammals	Myotis yumanensis	Yuma myotis	AMACC01020	None	None	-	-	3812116	JERSEY ISLAND	Unprocessed	Animals - Mammals - Vespertilionidae - Myotis yumanensis
Animals - Mammals	Myotis yumanensis	Yuma myotis	AMACC01020	None	None	-	-	3712175	CLIFTON COURT FOREBAY	Unprocessed	Animals - Mammals - Vespertilionidae - Myotis yumanensis
Animals - Mollusks	Helminthoglypta nickliniana bridgesi	Bridges coast range shoulderband	IMGASC2362	None	None	-	-	3712187	ANTIOCH SOUTH	Mapped	Animals - Mollusks - Helminthoglyptidae - Helminthoglypta nickliniana bridgesi
Animals - Mollusks	Gonidea angulata	western ridged mussel	IMBIV19010	None	None	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Mollusks - Unionidae - Gonidea angulata
Animals - Mollusks	Gonidea angulata	western ridged mussel	IMBIV19010	None	None	-	-	3712175	CLIFTON COURT FOREBAY	Mapped	Animals - Mollusks - Unionidae - Gonidea angulata
Animals - Mollusks	Gonidea angulata	western ridged mussel	IMBIV19010	None	None	-	-	3712185	WOODWARD ISLAND	Mapped	Animals - Mollusks - Unionidae - Gonidea angulata
Animals - Reptiles	Anniella pulchra	Northern California legless lizard	ARACC01020	None	None	SSC	-	3712186	BRENTWOOD	Mapped	Animals - Reptiles - Anniellidae - Anniella pulchra
Animals - Reptiles	Anniella pulchra	Northern California legless lizard	ARACC01020	None	None	SSC	-	3812117	ANTIOCH NORTH	Mapped	Animals - Reptiles - Anniellidae - Anniella pulchra
Animals - Reptiles	Anniella pulchra	Northern California legless lizard	ARACC01020	None	None	SSC	-	3712187	ANTIOCH SOUTH	Mapped	Animals - Reptiles - Anniellidae - Anniella pulchra
Animals - Reptiles	Anniella pulchra	Northern California legless lizard	ARACC01020	None	None	SSC	-	3812116	JERSEY ISLAND	Mapped and Unprocessed	Animals - Reptiles - Anniellidae - Anniella pulchra
Animals - Reptiles	Arizona elegans occidentalis	California glossy snake	ARADB01017	None	None	SSC	-	3812117	ANTIOCH NORTH	Mapped	Animals - Reptiles - Colubridae - Arizona elegans occidentalis
Animals - Reptiles	Masticophis flagellum ruddocki	San Joaquin coachwhip	ARADB21021	None	None	SSC	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Reptiles - Colubridae - Masticophis flagellum ruddocki
Animals - Reptiles	Masticophis lateralis euryxanthus	Alameda whipsnake	ARADB21031	Threatened	Threatened	-	-	3712176	BYRON HOT SPRINGS	Mapped	Animals - Reptiles - Colubridae - Masticophis lateralis euryxanthus
Animals - Reptiles	Masticophis lateralis euryxanthus	Alameda whipsnake	ARADB21031	Threatened	Threatened	-	-	3712177	TASSAJARA	Mapped	Animals - Reptiles - Colubridae - Masticophis lateralis euryxanthus
Animals - Reptiles	Masticophis lateralis euryxanthus	Alameda whipsnake	ARADB21031	Threatened	Threatened	-	-	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Animals - Reptiles - Colubridae - Masticophis lateralis euryxanthus
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	ARAAD02031	Proposed Threatened	None	SSC	-	3712186	BRENTWOOD	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Actinemys marmorata
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	ARAAD02031	Proposed Threatened	None	SSC	-	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Actinemys marmorata
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	ARAAD02031	Proposed Threatened	None	SSC	-	3812115	BOULDIN ISLAND	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Actinemys marmorata
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	ARAAD02031	Proposed Threatened	None	SSC	-	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Actinemys marmorata
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	ARAAD02031	Proposed Threatened	None	SSC	-	3812116	JERSEY ISLAND	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Actinemys marmorata
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	ARAAD02031	Proposed Threatened	None	SSC	-	3712177	TASSAJARA	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Actinemys marmorata
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	ARAAD02031	Proposed Threatened	None	SSC	-	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Actinemys marmorata
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	ARAAD02031	Proposed Threatened	None	SSC	-	3712185	WOODWARD ISLAND	Mapped and Unprocessed	Animals - Reptiles - Emydidae -

											Actinemys marmorata
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	ARAAD02031	Proposed Threatened	None	SSC	-	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Actinemys marmorata
Animals - Reptiles	Thamnophis gigas	giant gartersnake	ARADB36150	Threatened	Threatened	-	-	3812117	ANTIOCH NORTH	Mapped	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Thamnophis gigas	giant gartersnake	ARADB36150	Threatened	Threatened	-	-	3812115	BOULDIN ISLAND	Mapped and Unprocessed	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Thamnophis gigas	giant gartersnake	ARADB36150	Threatened	Threatened	-	-	3812116	JERSEY ISLAND	Mapped and Unprocessed	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Phrynosoma blainvillii	coast horned lizard	ARACF12100	None	None	SSC	-	3712187	ANTIOCH SOUTH	Unprocessed	Animals - Reptiles - Phrynosomatidae - Phrynosoma blainvillii
Animals - Reptiles	Phrynosoma blainvillii	coast horned lizard	ARACF12100	None	None	SSC	-	3812117	ANTIOCH NORTH	Unprocessed	Animals - Reptiles - Phrynosomatidae - Phrynosoma blainvillii
Animals - Reptiles	Phrynosoma blainvillii	coast horned lizard	ARACF12100	None	None	SSC	-	3712186	BRENTWOOD	Unprocessed	Animals - Reptiles - Phrynosomatidae - Phrynosoma blainvillii
Animals - Reptiles	Phrynosoma blainvillii	coast horned lizard	ARACF12100	None	None	SSC	-	3712176	BYRON HOT SPRINGS	Mapped	Animals - Reptiles - Phrynosomatidae - Phrynosoma blainvillii
Community - Terrestrial	Alkali Meadow	Alkali Meadow	CTT45310CA	None	None	-	-	3712176	BYRON HOT SPRINGS	Mapped	Community - Terrestrial - Alkali Meadow
Community - Terrestrial	Alkali Meadow	Alkali Meadow	CTT45310CA	None	None	-	-	3712186	BRENTWOOD	Mapped	Community - Terrestrial - Alkali Meadow
Community - Terrestrial	Alkali Meadow	Alkali Meadow	CTT45310CA	None	None	-	-	3712175	CLIFTON COURT FOREBAY	Mapped	Community - Terrestrial - Alkali Meadow
Community - Terrestrial	Alkali Seep	Alkali Seep	CTT45320CA	None	None	-	-	3712186	BRENTWOOD	Mapped	Community - Terrestrial - Alkali Seep
Community - Terrestrial	Alkali Seep	Alkali Seep	CTT45320CA	None	None	-	-	3712176	BYRON HOT SPRINGS	Mapped	Community - Terrestrial - Alkali Seep
Community - Terrestrial	Cismontane Alkali Marsh	Cismontane Alkali Marsh	CTT52310CA	None	None	-	-	3712176	BYRON HOT SPRINGS	Mapped	Community - Terrestrial - Cismontane Alkali Marsh
Community - Terrestrial	Cismontane Alkali Marsh	Cismontane Alkali Marsh	CTT52310CA	None	None	-	-	3712186	BRENTWOOD	Mapped	Community - Terrestrial - Cismontane Alkali Marsh
Community - Terrestrial	Coastal and Valley Freshwater Marsh	Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	-	-	3712185	WOODWARD ISLAND	Mapped	Community - Terrestrial - Coastal and Valley Freshwater Marsh
Community - Terrestrial	Coastal and Valley Freshwater Marsh	Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	-	-	3812116	JERSEY ISLAND	Mapped	Community - Terrestrial - Coastal and Valley Freshwater Marsh
Community - Terrestrial	Coastal and Valley Freshwater Marsh	Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	-	-	3812115	BOULDIN ISLAND	Mapped	Community - Terrestrial - Coastal and Valley Freshwater Marsh
Community - Terrestrial	Coastal Brackish Marsh	Coastal Brackish Marsh	CTT52200CA	None	None	-	-	3812117	ANTIOCH NORTH	Mapped	Community - Terrestrial - Coastal Brackish Marsh
Community - Terrestrial	Northern Claypan Vernal Pool	Northern Claypan Vernal Pool	CTT44120CA	None	None	-	-	3712175	CLIFTON COURT FOREBAY	Mapped	Community - Terrestrial - Northern Claypan Vernal Pool
Community - Terrestrial	Northern Claypan Vernal Pool	Northern Claypan Vernal Pool	CTT44120CA	None	None	-	-	3712176	BYRON HOT SPRINGS	Mapped	Community - Terrestrial - Northern Claypan Vernal Pool
Community - Terrestrial	Stabilized Interior Dunes	Stabilized Interior Dunes	CTT23100CA	None	None	-	-	3812117	ANTIOCH NORTH	Mapped	Community - Terrestrial - Stabilized Interior Dunes
Community - Terrestrial	Valley Needlegrass Grassland	Valley Needlegrass Grassland	CTT42110CA	None	None	-	-	3712176	BYRON HOT SPRINGS	Mapped	Community - Terrestrial - Valley Needlegrass Grassland
Community - Terrestrial	Valley Needlegrass Grassland	Valley Needlegrass Grassland	CTT42110CA	None	None	-	-	3712177	TASSAJARA	Mapped	Community - Terrestrial - Valley Needlegrass Grassland
Community - Terrestrial	Valley Sink Scrub	Valley Sink Scrub	CTT36210CA	None	None	-	-	3712176	BYRON HOT SPRINGS	Mapped	Community - Terrestrial - Valley Sink Scrub
Community - Terrestrial	Valley Sink Scrub	Valley Sink Scrub	CTT36210CA	None	None	-	-	3712175	CLIFTON COURT FOREBAY	Mapped	Community - Terrestrial - Valley Sink Scrub
Plants - Bryophytes	Anomobryum julaceum	slender silver moss	NBMUS80010	None	None	-	4.2	3712177	TASSAJARA	Mapped	Plants - Bryophytes - Bryaceae - Anomobryum julaceum
Plants - Bryophytes	Anomobryum julaceum	slender silver moss	NBMUS80010	None	None	-	4.2	3712187	ANTIOCH SOUTH	Mapped	Plants - Bryophytes - Bryaceae - Anomobryum julaceum

Plants - Vascular	Cicuta maculata var. bolanderi	Bolanders water-hemlock	PDAPI0M051	None	None	-	2B.1	3812116	JERSEY ISLAND	Mapped and Unprocessed	Plants - Vascular - Apiaceae - Cicuta maculata var. bolanderi
Plants - Vascular	Cicuta maculata var. bolanderi	Bolanders water-hemlock	PDAPI0M051	None	None	-	2B.1	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Apiaceae - Cicuta maculata var. bolanderi
Plants - Vascular	Cicuta maculata var. bolanderi	Bolanders water-hemlock	PDAPI0M051	None	None	-	2B.1	3712186	BRENTWOOD	Mapped	Plants - Vascular - Apiaceae - Cicuta maculata var. bolanderi
Plants - Vascular	Eryngium jepsonii	Jepsons coyote-thistle	PDAPI0Z130	None	None	-	1B.2	3712177	TASSAJARA	Unprocessed	Plants - Vascular - Apiaceae - Eryngium jepsonii
Plants - Vascular	Eryngium jepsonii	Jepsons coyote-thistle	PDAPI0Z130	None	None	-	1B.2	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Plants - Vascular - Apiaceae - Eryngium jepsonii
Plants - Vascular	Eryngium racemosum	Delta button-celery	PDAPI0Z0S0	None	Endangered	-	1B.1	3712185	WOODWARD ISLAND	Mapped	Plants - Vascular - Apiaceae - Eryngium racemosum
Plants - Vascular	Eryngium spinosepalum	spiny-sepaled button-celery	PDAPI0Z0Y0	None	None	-	1B.2	3712175	CLIFTON COURT FOREBAY	Mapped	Plants - Vascular - Apiaceae - Eryngium spinosepalum
Plants - Vascular	Lilaeopsis masonii	Masons lilaeopsis	PDAPI19030	None	Rare	-	1B.1	3712175	CLIFTON COURT FOREBAY	Mapped	Plants - Vascular - Apiaceae - Lilaeopsis masonii
Plants - Vascular	Lilaeopsis masonii	Masons lilaeopsis	PDAPI19030	None	Rare	-	1B.1	3712185	WOODWARD ISLAND	Mapped	Plants - Vascular - Apiaceae - Lilaeopsis masonii
Plants - Vascular	Lilaeopsis masonii	Masons lilaeopsis	PDAPI19030	None	Rare	-	1B.1	3812116	JERSEY ISLAND	Mapped	Plants - Vascular - Apiaceae - Lilaeopsis masonii
Plants - Vascular	Lilaeopsis masonii	Masons lilaeopsis	PDAPI19030	None	Rare	-	1B.1	3812115	BOULDIN ISLAND	Mapped	Plants - Vascular - Apiaceae - Lilaeopsis masonii
Plants - Vascular	Lilaeopsis masonii	Masons lilaeopsis	PDAPI19030	None	Rare	-	1B.1	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Apiaceae - Lilaeopsis masonii
Plants - Vascular	Blepharizonia plumosa	big tarplant	PDAST1C011	None	None	-	1B.1	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Asteraceae - Blepharizonia plumosa
Plants - Vascular	Blepharizonia plumosa	big tarplant	PDAST1C011	None	None	-	1B.1	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Plants - Vascular - Asteraceae - Blepharizonia plumosa
Plants - Vascular	Blepharizonia plumosa	big tarplant	PDAST1C011	None	None	-	1B.1	3712186	BRENTWOOD	Mapped	Plants - Vascular - Asteraceae - Blepharizonia plumosa
Plants - Vascular	Blepharizonia plumosa	big tarplant	PDAST1C011	None	None	-	1B.1	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Plants - Vascular - Asteraceae - Blepharizonia plumosa
Plants - Vascular	Centromadia parryi ssp. congdonii	Congdons tarplant	PDAST4R0P1	None	None	-	1B.1	3712177	TASSAJARA	Mapped and Unprocessed	Plants - Vascular - Asteraceae - Centromadia parryi ssp. congdonii
Plants - Vascular	Centromadia parryi ssp. congdonii	Congdons tarplant	PDAST4R0P1	None	None	-	1B.1	3712175	CLIFTON COURT FOREBAY	Unprocessed	Plants - Vascular - Asteraceae - Centromadia parryi ssp. congdonii
Plants - Vascular	Centromadia parryi ssp. congdonii	Congdons tarplant	PDAST4R0P1	None	None	-	1B.1	3712176	BYRON HOT SPRINGS	Mapped	Plants - Vascular - Asteraceae - Centromadia parryi ssp. congdonii
Plants - Vascular	Eriophyllum jepsonii	Jepsons woolly sunflower	PDAST3N040	None	None	-	4.3	3712177	TASSAJARA	Unprocessed	Plants - Vascular - Asteraceae - Eriophyllum jepsonii
Plants - Vascular	Eriophyllum jepsonii	Jepsons woolly sunflower	PDAST3N040	None	None	-	4.3	3712176	BYRON HOT SPRINGS	Unprocessed	Plants - Vascular - Asteraceae - Eriophyllum jepsonii
Plants - Vascular	Eriophyllum jepsonii	Jepsons woolly sunflower	PDAST3N040	None	None	-	4.3	3712187	ANTIOCH SOUTH	Unprocessed	Plants - Vascular - Asteraceae - Eriophyllum jepsonii
Plants - Vascular	Helianthella castanea	Diablo helianthella	PDAST4M020	None	None	-	1B.2	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Plants - Vascular - Asteraceae - Helianthella castanea
Plants - Vascular	Helianthella castanea	Diablo helianthella	PDAST4M020	None	None	-	1B.2	3712177	TASSAJARA	Mapped and Unprocessed	Plants - Vascular - Asteraceae - Helianthella castanea
Plants - Vascular	Hesperevax caulescens	hogwallow starfish	PDASTE5020	None	None	-	4.2	3712176	BYRON HOT SPRINGS	Unprocessed	Plants - Vascular - Asteraceae - Hesperevax caulescens
Plants - Vascular	Hesperevax caulescens	hogwallow starfish	PDASTE5020	None	None	-	4.2	3712186	BRENTWOOD	Unprocessed	Plants - Vascular - Asteraceae - Hesperevax caulescens
Plants - Vascular	Hesperevax caulescens	hogwallow starfish	PDASTE5020	None	None	-	4.2	3712175	CLIFTON COURT FOREBAY	Unprocessed	Plants - Vascular - Asteraceae - Hesperevax caulescens
Plants - Vascular	Hesperevax caulescens	hogwallow starfish	PDASTE5020	None	None	-	4.2	3712187	ANTIOCH SOUTH	Unprocessed	Plants - Vascular - Asteraceae -

											Hesperevax caulescens
Plants - Vascular	Hesperevax caulescens	hogwallow starfish	PDASTE5020	None	None	-	4.2	3812117	ANTIOCH NORTH	Unprocessed	Plants - Vascular - Asteraceae - Hesperevax caulescens
Plants - Vascular	Lasthenia conjugens	Contra Costa goldfields	PDAST5L040	Endangered	None	-	1B.1	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Asteraceae - Lasthenia conjugens
Plants - Vascular	Lasthenia conjugens	Contra Costa goldfields	PDAST5L040	Endangered	None	-	1B.1	3712187	ANTIOCH SOUTH	Mapped	Plants - Vascular - Asteraceae - Lasthenia conjugens
Plants - Vascular	Lasthenia ferrisiae	Ferris goldfields	PDAST5L070	None	None	-	4.2	3712176	BYRON HOT SPRINGS	Unprocessed	Plants - Vascular - Asteraceae - Lasthenia ferrisiae
Plants - Vascular	Lasthenia ferrisiae	Ferris goldfields	PDAST5L070	None	None	-	4.2	3712175	CLIFTON COURT FOREBAY	Unprocessed	Plants - Vascular - Asteraceae - Lasthenia ferrisiae
Plants - Vascular	Lasthenia ferrisiae	Ferris goldfields	PDAST5L070	None	None	-	4.2	3712185	WOODWARD ISLAND	Unprocessed	Plants - Vascular - Asteraceae - Lasthenia ferrisiae
Plants - Vascular	Madia radiata	showy golden madia	PDAST650E0	None	None	-	1B.1	3712187	ANTIOCH SOUTH	Mapped	Plants - Vascular - Asteraceae - Madia radiata
Plants - Vascular	Monolopia gracilens	woodland woollythreads	PDAST6G010	None	None	-	1B.2	3712177	TASSAJARA	Mapped	Plants - Vascular - Asteraceae - Monolopia gracilens
Plants - Vascular	Senecio aphanactis	chaparral ragwort	PDAST8H060	None	None	-	2B.2	3712176	BYRON HOT SPRINGS	Mapped	Plants - Vascular - Asteraceae - Senecio aphanactis
Plants - Vascular	Senecio aphanactis	chaparral ragwort	PDAST8H060	None	None	-	2B.2	3712187	ANTIOCH SOUTH	Mapped	Plants - Vascular - Asteraceae - Senecio aphanactis
Plants - Vascular	Senecio hydrophiloides	sweet marsh ragwort	PDAST8H400	None	None	-	4.2	3812117	ANTIOCH NORTH	Unprocessed	Plants - Vascular - Asteraceae - Senecio hydrophiloides
Plants - Vascular	Symphyotrichum lentum	Suisun Marsh aster	PDASTE8470	None	None	-	1B.2	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Plants - Vascular - Asteraceae - Symphyotrichum lentum
Plants - Vascular	Symphyotrichum lentum	Suisun Marsh aster	PDASTE8470	None	None	-	1B.2	3812115	BOULDIN ISLAND	Mapped and Unprocessed	Plants - Vascular - Asteraceae - Symphyotrichum lentum
Plants - Vascular	Symphyotrichum lentum	Suisun Marsh aster	PDASTE8470	None	None	-	1B.2	3812116	JERSEY ISLAND	Mapped and Unprocessed	Plants - Vascular - Asteraceae - Symphyotrichum lentum
Plants - Vascular	Symphyotrichum lentum	Suisun Marsh aster	PDASTE8470	None	None	-	1B.2	3712185	WOODWARD ISLAND	Mapped	Plants - Vascular - Asteraceae - Symphyotrichum lentum
Plants - Vascular	Symphyotrichum lentum	Suisun Marsh aster	PDASTE8470	None	None	-	1B.2	3712186	BRENTWOOD	Mapped and Unprocessed	Plants - Vascular - Asteraceae - Symphyotrichum lentum
Plants - Vascular	Amsinckia grandiflora	large-flowered fiddleneck	PDBOR01050	Endangered	Endangered	-	1B.1	3712177	TASSAJARA	Mapped	Plants - Vascular - Boraginaceae - Amsinckia grandiflora
Plants - Vascular	Amsinckia grandiflora	large-flowered fiddleneck	PDBOR01050	Endangered	Endangered	-	1B.1	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Plants - Vascular - Boraginaceae - Amsinckia grandiflora
Plants - Vascular	Cryptantha hooveri	Hoovers cryptantha	PDBOR0A190	None	None	-	1A	3712187	ANTIOCH SOUTH	Mapped	Plants - Vascular - Boraginaceae - Cryptantha hooveri
Plants - Vascular	Cryptantha hooveri	Hoovers cryptantha	PDBOR0A190	None	None	-	1A	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Boraginaceae - Cryptantha hooveri
Plants - Vascular	Plagiobothrys hystriculus	bearded popcornflower	PDBOR0V0H0	None	None	-	1B.1	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Boraginaceae - Plagiobothrys hystriculus
Plants - Vascular	Erysimum capitatum var. angustatum	Contra Costa wallflower	PDBRA16052	Endangered	Endangered	-	1B.1	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Plants - Vascular - Brassicaceae - Erysimum capitatum var. angustatum
Plants - Vascular	Erysimum capitatum var. angustatum	Contra Costa wallflower	PDBRA16052	Endangered	Endangered	-	1B.1	3812116	JERSEY ISLAND	Mapped	Plants - Vascular - Brassicaceae - Erysimum capitatum var. angustatum
Plants - Vascular	Tropidocarpum capparideum	caper-fruited tropidocarpum	PDBRA2R010	None	None	-	1B.1	3712177	TASSAJARA	Mapped	Plants - Vascular - Brassicaceae - Tropidocarpum capparideum
Plants - Vascular	Tropidocarpum capparideum	caper-fruited tropidocarpum	PDBRA2R010	None	None	-	1B.1	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Plants - Vascular - Brassicaceae - Tropidocarpum capparideum
Plants - Vascular	Tropidocarpum capparideum	caper-fruited tropidocarpum	PDBRA2R010	None	None	-	1B.1	3712186	BRENTWOOD	Mapped	Plants - Vascular - Brassicaceae - Tropidocarpum capparideum

Plants - Vascular	Tropidocarpum capparideum	caper-fruited tropidocarpum	PDBRA2R010	None	None	-	1B.1	3712185	WOODWARD ISLAND	Mapped	Plants - Vascular - Brassicaceae - Tropidocarpum capparideum
Plants - Vascular	Tropidocarpum capparideum	caper-fruited tropidocarpum	PDBRA2R010	None	None	-	1B.1	3712175	CLIFTON COURT FOREBAY	Mapped	Plants - Vascular - Brassicaceae - Tropidocarpum capparideum
Plants - Vascular	Brasenia schreberi	watershield	PDCAB01010	None	None	-	2B.3	3812115	BOULDIN ISLAND	Mapped	Plants - Vascular - Cabombaceae - Brasenia schreberi
Plants - Vascular	Downingia pusilla	dwarf downingia	PDCAM060C0	None	None	-	2B.2	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Campanulaceae - Downingia pusilla
Plants - Vascular	Viburnum ellipticum	oval-leaved viburnum	PDCPR07080	None	None	-	2B.3	3712187	ANTIOCH SOUTH	Mapped	Plants - Vascular - Caprifoliaceae - Viburnum ellipticum
Plants - Vascular	Viburnum ellipticum	oval-leaved viburnum	PDCPR07080	None	None	-	2B.3	3712177	TASSAJARA	Mapped	Plants - Vascular - Caprifoliaceae - Viburnum ellipticum
Plants - Vascular	Spergularia macrotheca var. longistyla	long-styled sand-spurrey	PDCAR0W062	None	None	-	1B.2	3712177	TASSAJARA	Mapped	Plants - Vascular - Caryophyllaceae - Spergularia macrotheca var. longistyla
Plants - Vascular	Spergularia macrotheca var. longistyla	long-styled sand-spurrey	PDCAR0W062	None	None	-	1B.2	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Plants - Vascular - Caryophyllaceae - Spergularia macrotheca var. longistyla
Plants - Vascular	Spergularia macrotheca var. longistyla	long-styled sand-spurrey	PDCAR0W062	None	None	-	1B.2	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Plants - Vascular - Caryophyllaceae - Spergularia macrotheca var. longistyla
Plants - Vascular	Atriplex cordulata var. cordulata	heartscale	PDCHE040B0	None	None	-	1B.2	3712175	CLIFTON COURT FOREBAY	Mapped	Plants - Vascular - Chenopodiaceae - Atriplex cordulata var. cordulata
Plants - Vascular	Atriplex cordulata var. cordulata	heartscale	PDCHE040B0	None	None	-	1B.2	3712176	BYRON HOT SPRINGS	Mapped	Plants - Vascular - Chenopodiaceae - Atriplex cordulata var. cordulata
Plants - Vascular	Atriplex coronata var. coronata	crownscale	PDCHE040C3	None	None	-	4.2	3712176	BYRON HOT SPRINGS	Unprocessed	Plants - Vascular - Chenopodiaceae - Atriplex coronata var. coronata
Plants - Vascular	Atriplex coronata var. coronata	crownscale	PDCHE040C3	None	None	-	4.2	3712185	WOODWARD ISLAND	Unprocessed	Plants - Vascular - Chenopodiaceae - Atriplex coronata var. coronata
Plants - Vascular	Atriplex coronata var. coronata	crownscale	PDCHE040C3	None	None	-	4.2	3712186	BRENTWOOD	Unprocessed	Plants - Vascular - Chenopodiaceae - Atriplex coronata var. coronata
Plants - Vascular	Atriplex coronata var. coronata	crownscale	PDCHE040C3	None	None	-	4.2	3712175	CLIFTON COURT FOREBAY	Unprocessed	Plants - Vascular - Chenopodiaceae - Atriplex coronata var. coronata
Plants - Vascular	Atriplex coronata var. coronata	crownscale	PDCHE040C3	None	None	-	4.2	3712187	ANTIOCH SOUTH	Unprocessed	Plants - Vascular - Chenopodiaceae - Atriplex coronata var. coronata
Plants - Vascular	Atriplex coronata var. coronata	crownscale	PDCHE040C3	None	None	-	4.2	3812117	ANTIOCH NORTH	Unprocessed	Plants - Vascular - Chenopodiaceae - Atriplex coronata var. coronata
Plants - Vascular	Atriplex depressa	brittlescale	PDCHE042L0	None	None	-	1B.2	3712187	ANTIOCH SOUTH	Mapped	Plants - Vascular - Chenopodiaceae - Atriplex depressa
Plants - Vascular	Atriplex depressa	brittlescale	PDCHE042L0	None	None	-	1B.2	3712175	CLIFTON COURT FOREBAY	Unprocessed	Plants - Vascular - Chenopodiaceae - Atriplex depressa
Plants - Vascular	Atriplex depressa	brittlescale	PDCHE042L0	None	None	-	1B.2	3712176	BYRON HOT SPRINGS	Mapped	Plants - Vascular - Chenopodiaceae - Atriplex depressa
Plants - Vascular	Atriplex minuscula	lesser saltscale	PDCHE042M0	None	None	-	1B.1	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Plants - Vascular - Chenopodiaceae - Atriplex minuscula
Plants - Vascular	Extriplex joaquinana	San Joaquin spearscale	PDCHE041F3	None	None	-	1B.2	3712175	CLIFTON COURT FOREBAY	Mapped	Plants - Vascular - Chenopodiaceae - Extriplex joaquinana
Plants - Vascular	Extriplex joaquinana	San Joaquin spearscale	PDCHE041F3	None	None	-	1B.2	3712186	BRENTWOOD	Mapped	Plants - Vascular - Chenopodiaceae - Extriplex joaquinana
Plants - Vascular	Extriplex joaquinana	San Joaquin spearscale	PDCHE041F3	None	None	-	1B.2	3712185	WOODWARD ISLAND	Mapped	Plants - Vascular - Chenopodiaceae - Extriplex joaquinana
Plants - Vascular	Extriplex joaquinana	San Joaquin spearscale	PDCHE041F3	None	None	-	1B.2	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Plants - Vascular - Chenopodiaceae - Extriplex joaquinana
Plants - Vascular	Extriplex joaquinana	San Joaquin spearscale	PDCHE041F3	None	None	-	1B.2	3712177	TASSAJARA	Mapped	Plants - Vascular - Chenopodiaceae - Extriplex joaquinana
Plants - Vascular	Extriplex joaquinana	San Joaquin spearscale	PDCHE041F3	None	None	-	1B.2	3712187	ANTIOCH SOUTH	Mapped	Plants - Vascular - Chenopodiaceae -

											Extriplex joaquinana
Plants - Vascular	Extriplex joaquinana	San Joaquin spearscale	PDCHE041F3	None	None	-	1B.2	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Chenopodiaceae - Extriplex joaquinana
Plants - Vascular	Convolvulus simulans	small-flowered morning-glory	PDCON05060	None	None	-	4.2	3812117	ANTIOCH NORTH	Unprocessed	Plants - Vascular - Convolvulaceae - Convolvulus simulans
Plants - Vascular	Convolvulus simulans	small-flowered morning-glory	PDCON05060	None	None	-	4.2	3712187	ANTIOCH SOUTH	Unprocessed	Plants - Vascular - Convolvulaceae - Convolvulus simulans
Plants - Vascular	Convolvulus simulans	small-flowered morning-glory	PDCON05060	None	None	-	4.2	3712176	BYRON HOT SPRINGS	Unprocessed	Plants - Vascular - Convolvulaceae - Convolvulus simulans
Plants - Vascular	Carex comosa	bristly sedge	PMCYP032Y0	None	None	-	2B.1	3812115	BOULDIN ISLAND	Mapped	Plants - Vascular - Cyperaceae - Carex comosa
Plants - Vascular	Eleocharis parvula	small spikerush	PMCYP091G0	None	None	-	4.3	3812117	ANTIOCH NORTH	Unprocessed	Plants - Vascular - Cyperaceae - Eleocharis parvula
Plants - Vascular	Arctostaphylos auriculata	Mt. Diablo manzanita	PDERI04040	None	None	-	1B.3	3712187	ANTIOCH SOUTH	Mapped	Plants - Vascular - Ericaceae - Arctostaphylos auriculata
Plants - Vascular	Arctostaphylos auriculata	Mt. Diablo manzanita	PDERI04040	None	None	-	1B.3	3712177	TASSAJARA	Mapped and Unprocessed	Plants - Vascular - Ericaceae - Arctostaphylos auriculata
Plants - Vascular	Arctostaphylos manzanita ssp. laevigata	Contra Costa manzanita	PDERI04273	None	None	-	1B.2	3712177	TASSAJARA	Mapped and Unprocessed	Plants - Vascular - Ericaceae - Arctostaphylos manzanita ssp. laevigata
Plants - Vascular	Arctostaphylos manzanita ssp. laevigata	Contra Costa manzanita	PDERI04273	None	None	-	1B.2	3712176	BYRON HOT SPRINGS	Mapped	Plants - Vascular - Ericaceae - Arctostaphylos manzanita ssp. laevigata
Plants - Vascular	Arctostaphylos manzanita ssp. laevigata	Contra Costa manzanita	PDERI04273	None	None	-	1B.2	3712187	ANTIOCH SOUTH	Unprocessed	Plants - Vascular - Ericaceae - Arctostaphylos manzanita ssp. laevigata
Plants - Vascular	Astragalus tener var. tener	alkali milk-vetch	PDFAB0F8R1	None	None	-	1B.2	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Fabaceae - Astragalus tener var. tener
Plants - Vascular	Astragalus tener var. tener	alkali milk-vetch	PDFAB0F8R1	None	None	-	1B.2	3712176	BYRON HOT SPRINGS	Mapped	Plants - Vascular - Fabaceae - Astragalus tener var. tener
Plants - Vascular	Astragalus tener var. tener	alkali milk-vetch	PDFAB0F8R1	None	None	-	1B.2	3712175	CLIFTON COURT FOREBAY	Mapped	Plants - Vascular - Fabaceae - Astragalus tener var. tener
Plants - Vascular	Astragalus tener var. tener	alkali milk-vetch	PDFAB0F8R1	None	None	-	1B.2	3712185	WOODWARD ISLAND	Mapped	Plants - Vascular - Fabaceae - Astragalus tener var. tener
Plants - Vascular	Lathyrus jepsonii var. jepsonii	Delta tule pea	PDFAB250D2	None	None	-	1B.2	3712185	WOODWARD ISLAND	Mapped	Plants - Vascular - Fabaceae - Lathyrus jepsonii var. jepsonii
Plants - Vascular	Lathyrus jepsonii var. jepsonii	Delta tule pea	PDFAB250D2	None	None	-	1B.2	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Plants - Vascular - Fabaceae - Lathyrus jepsonii var. jepsonii
Plants - Vascular	Lathyrus jepsonii var. jepsonii	Delta tule pea	PDFAB250D2	None	None	-	1B.2	3812115	BOULDIN ISLAND	Mapped	Plants - Vascular - Fabaceae - Lathyrus jepsonii var. jepsonii
Plants - Vascular	Lathyrus jepsonii var. jepsonii	Delta tule pea	PDFAB250D2	None	None	-	1B.2	3812116	JERSEY ISLAND	Mapped and Unprocessed	Plants - Vascular - Fabaceae - Lathyrus jepsonii var. jepsonii
Plants - Vascular	Lupinus albifrons var. abramsii	Abrams lupine	PDFAB2B010	None	None	-	3.2	3812117	ANTIOCH NORTH	Unprocessed	Plants - Vascular - Fabaceae - Lupinus albifrons var. abramsii
Plants - Vascular	Scutellaria galericulata	marsh skullcap	PDLAM1U0J0	None	None	-	2B.2	3812115	BOULDIN ISLAND	Mapped	Plants - Vascular - Lamiaceae - Scutellaria galericulata
Plants - Vascular	Scutellaria galericulata	marsh skullcap	PDLAM1U0J0	None	None	-	2B.2	3712185	WOODWARD ISLAND	Mapped	Plants - Vascular - Lamiaceae - Scutellaria galericulata
Plants - Vascular	Scutellaria lateriflora	side-flowering skullcap	PDLAM1U0Q0	None	None	-	2B.2	3812115	BOULDIN ISLAND	Mapped	Plants - Vascular - Lamiaceae - Scutellaria lateriflora
Plants - Vascular	Calochortus pulchellus	Mt. Diablo fairy-lantern	PMLIL0D160	None	None	-	1B.2	3712187	ANTIOCH SOUTH	Mapped	Plants - Vascular - Liliaceae - Calochortus pulchellus
Plants - Vascular	Calochortus pulchellus	Mt. Diablo fairy-lantern	PMLIL0D160	None	None	-	1B.2	3712177	TASSAJARA	Mapped and Unprocessed	Plants - Vascular - Liliaceae - Calochortus pulchellus

Plants - Vascular	Calochortus pulchellus	Mt. Diablo fairy-lantern	PMLIL0D160	None	None	-	1B.2	3712176	BYRON HOT SPRINGS	Mapped	Plants - Vascular - Liliaceae - Calochortus pulchellus
Plants - Vascular	Fritillaria agrestis	stinkbells	PMLIL0V010	None	None	-	4.2	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Plants - Vascular - Liliaceae - Fritillaria agrestis
Plants - Vascular	Fritillaria agrestis	stinkbells	PMLIL0V010	None	None	-	4.2	3712175	CLIFTON COURT FOREBAY	Unprocessed	Plants - Vascular - Liliaceae - Fritillaria agrestis
Plants - Vascular	Fritillaria agrestis	stinkbells	PMLIL0V010	None	None	-	4.2	3712177	TASSAJARA	Unprocessed	Plants - Vascular - Liliaceae - Fritillaria agrestis
Plants - Vascular	Fritillaria agrestis	stinkbells	PMLIL0V010	None	None	-	4.2	3712186	BRENTWOOD	Mapped and Unprocessed	Plants - Vascular - Liliaceae - Fritillaria agrestis
Plants - Vascular	Fritillaria agrestis	stinkbells	PMLIL0V010	None	None	-	4.2	3712187	ANTIOCH SOUTH	Unprocessed	Plants - Vascular - Liliaceae - Fritillaria agrestis
Plants - Vascular	Fritillaria agrestis	stinkbells	PMLIL0V010	None	None	-	4.2	3812117	ANTIOCH NORTH	Unprocessed	Plants - Vascular - Liliaceae - Fritillaria agrestis
Plants - Vascular	Fritillaria liliacea	fragrant fritillary	PMLIL0V0C0	None	None	-	1B.2	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Liliaceae - Fritillaria liliacea
Plants - Vascular	Hesperolinon breweri	Brewers western flax	PDLIN01030	None	None	-	1B.2	3712187	ANTIOCH SOUTH	Mapped	Plants - Vascular - Linaceae - Hesperolinon breweri
Plants - Vascular	Hesperolinon breweri	Brewers western flax	PDLIN01030	None	None	-	1B.2	3712186	BRENTWOOD	Mapped	Plants - Vascular - Linaceae - Hesperolinon breweri
Plants - Vascular	Hesperolinon breweri	Brewers western flax	PDLIN01030	None	None	-	1B.2	3712177	TASSAJARA	Mapped	Plants - Vascular - Linaceae - Hesperolinon breweri
Plants - Vascular	Hesperolinon breweri	Brewers western flax	PDLIN01030	None	None	-	1B.2	3712176	BYRON HOT SPRINGS	Mapped	Plants - Vascular - Linaceae - Hesperolinon breweri
Plants - Vascular	Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	PDMAL0H0R3	None	None	-	1B.2	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Plants - Vascular - Malvaceae - Hibiscus lasiocarpos var. occidentalis
Plants - Vascular	Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	PDMAL0H0R3	None	None	-	1B.2	3712185	WOODWARD ISLAND	Mapped and Unprocessed	Plants - Vascular - Malvaceae - Hibiscus lasiocarpos var. occidentalis
Plants - Vascular	Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	PDMAL0H0R3	None	None	-	1B.2	3812115	BOULDIN ISLAND	Mapped	Plants - Vascular - Malvaceae - Hibiscus lasiocarpos var. occidentalis
Plants - Vascular	Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	PDMAL0H0R3	None	None	-	1B.2	3812116	JERSEY ISLAND	Mapped	Plants - Vascular - Malvaceae - Hibiscus lasiocarpos var. occidentalis
Plants - Vascular	Malacothamnus hallii	Halls bushmallow	PDMAL0Q0F0	None	None	-	1B.2	3712187	ANTIOCH SOUTH	Mapped	Plants - Vascular - Malvaceae - Malacothamnus hallii
Plants - Vascular	Sidalcea keckii	Kecks checkerbloom	PDMAL110D0	Endangered	None	-	1B.1	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Malvaceae - Sidalcea keckii
Plants - Vascular	Calandrinia breweri	Brewers calandrinia	PDPOR01020	None	None	-	4.2	3712187	ANTIOCH SOUTH	Unprocessed	Plants - Vascular - Montiaceae - Calandrinia breweri
Plants - Vascular	Calandrinia breweri	Brewers calandrinia	PDPOR01020	None	None	-	4.2	3712177	TASSAJARA	Unprocessed	Plants - Vascular - Montiaceae - Calandrinia breweri
Plants - Vascular	Oenothera deltoides ssp. howellii	Antioch Dunes evening-primrose	PDONA0C0B4	Endangered	Endangered	-	1B.1	3712186	BRENTWOOD	Mapped	Plants - Vascular - Onagraceae - Oenothera deltoides ssp. howellii
Plants - Vascular	Oenothera deltoides ssp. howellii	Antioch Dunes evening-primrose	PDONA0C0B4	Endangered	Endangered	-	1B.1	3812116	JERSEY ISLAND	Mapped and Unprocessed	Plants - Vascular - Onagraceae - Oenothera deltoides ssp. howellii
Plants - Vascular	Oenothera deltoides ssp. howellii	Antioch Dunes evening-primrose	PDONA0C0B4	Endangered	Endangered	-	1B.1	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Plants - Vascular - Onagraceae - Oenothera deltoides ssp. howellii
Plants - Vascular	Piperia michaelii	Michaels rein orchid	PMORC1X110	None	None	-	4.2	3712187	ANTIOCH SOUTH	Unprocessed	Plants - Vascular - Orchidaceae - Piperia michaelii
Plants - Vascular	Piperia michaelii	Michaels rein orchid	PMORC1X110	None	None	-	4.2	3712177	TASSAJARA	Unprocessed	Plants - Vascular - Orchidaceae - Piperia michaelii
Plants - Vascular	Chloropyron molle ssp. molle	soft salty birds-beak	PDSCR0J0D2	Endangered	Rare	-	1B.2	3812116	JERSEY ISLAND	Mapped	Plants - Vascular - Orobanchaceae - Chloropyron molle ssp. molle
Plants - Vascular	Chloropyron molle ssp. molle	soft salty birds-beak	PDSCR0J0D2	Endangered	Rare	-	1B.2	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Orobanchaceae - Chloropyron molle ssp. molle

Plants - Vascular	Eschscholzia rhombipetala	diamond-petaled California poppy	PDPAP0A0D0	None	None	-	1B.1	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Papaveraceae - Eschscholzia rhombipetala
Plants - Vascular	Eschscholzia rhombipetala	diamond-petaled California poppy	PDPAP0A0D0	None	None	-	1B.1	3712175	CLIFTON COURT FOREBAY	Mapped	Plants - Vascular - Papaveraceae - Eschscholzia rhombipetala
Plants - Vascular	Eschscholzia rhombipetala	diamond-petaled California poppy	PDPAP0A0D0	None	None	-	1B.1	3712176	BYRON HOT SPRINGS	Mapped	Plants - Vascular - Papaveraceae - Eschscholzia rhombipetala
Plants - Vascular	Puccinellia simplex	California alkali grass	PMPOA53110	None	None	-	1B.2	3712176	BYRON HOT SPRINGS	Mapped and Unprocessed	Plants - Vascular - Poaceae - Puccinellia simplex
Plants - Vascular	Puccinellia simplex	California alkali grass	PMPOA53110	None	None	-	1B.2	3712175	CLIFTON COURT FOREBAY	Mapped and Unprocessed	Plants - Vascular - Poaceae - Puccinellia simplex
Plants - Vascular	Puccinellia simplex	California alkali grass	PMPOA53110	None	None	-	1B.2	3712177	TASSAJARA	Mapped	Plants - Vascular - Poaceae - Puccinellia simplex
Plants - Vascular	Leptosiphon ambiguus	serpentine leptosiphon	PDPLM09020	None	None	-	4.2	3712177	TASSAJARA	Unprocessed	Plants - Vascular - Polemoniaceae - Leptosiphon ambiguus
Plants - Vascular	Navarretia cotulifolia	cotula navarretia	PDPLM0C040	None	None	-	4.2	3712176	BYRON HOT SPRINGS	Unprocessed	Plants - Vascular - Polemoniaceae - Navarretia cotulifolia
Plants - Vascular	Navarretia heterandra	Tehama navarretia	PDPLM0C0A0	None	None	-	4.3	3712187	ANTIOCH SOUTH	Unprocessed	Plants - Vascular - Polemoniaceae - Navarretia heterandra
Plants - Vascular	Navarretia nigelliformis ssp. radians	shining navarretia	PDPLM0C0J2	None	None	-	1B.2	3712187	ANTIOCH SOUTH	Mapped and Unprocessed	Plants - Vascular - Polemoniaceae - Navarretia nigelliformis ssp. radians
Plants - Vascular	Navarretia nigelliformis ssp. radians	shining navarretia	PDPLM0C0J2	None	None	-	1B.2	3712175	CLIFTON COURT FOREBAY	Mapped	Plants - Vascular - Polemoniaceae - Navarretia nigelliformis ssp. radians
Plants - Vascular	Eriogonum nudum var. psychicola	Antioch Dunes buckwheat	PDPGN0849Q	None	None	-	1B.1	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Plants - Vascular - Polygonaceae - Eriogonum nudum var. psychicola
Plants - Vascular	Eriogonum truncatum	Mt. Diablo buckwheat	PDPGN085Z0	None	None	-	1B.1	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Polygonaceae - Eriogonum truncatum
Plants - Vascular	Eriogonum truncatum	Mt. Diablo buckwheat	PDPGN085Z0	None	None	-	1B.1	3712187	ANTIOCH SOUTH	Mapped	Plants - Vascular - Polygonaceae - Eriogonum truncatum
Plants - Vascular	Eriogonum umbellatum var. bahiiforme	bay buckwheat	PDPGN086UB	None	None	-	4.2	3712177	TASSAJARA	Unprocessed	Plants - Vascular - Polygonaceae - Eriogonum umbellatum var. bahiiforme
Plants - Vascular	Potamogeton zosteriformis	eel-grass pondweed	PMPOT03160	None	None	-	2B.2	3812116	JERSEY ISLAND	Mapped	Plants - Vascular - Potamogetonaceae - Potamogeton zosteriformis
Plants - Vascular	Potamogeton zosteriformis	eel-grass pondweed	PMPOT03160	None	None	-	2B.2	3812115	BOULDIN ISLAND	Mapped	Plants - Vascular - Potamogetonaceae - Potamogeton zosteriformis
Plants - Vascular	Stuckenia striata	broadleaf pondweed	PMPOT030K0	None	None	-	2B.3	3812117	ANTIOCH NORTH	Mapped	Plants - Vascular - Potamogetonaceae - Stuckenia striata
Plants - Vascular	Androsace elongata ssp. acuta	California androsace	PDPRI02031	None	None	-	4.2	3712176	BYRON HOT SPRINGS	Unprocessed	Plants - Vascular - Primulaceae - Androsace elongata ssp. acuta
Plants - Vascular	Delphinium recurvatum	recurved larkspur	PDRAN0B1J0	None	None	-	1B.2	3712176	BYRON HOT SPRINGS	Mapped	Plants - Vascular - Ranunculaceae - Delphinium recurvatum
Plants - Vascular	Delphinium recurvatum	recurved larkspur	PDRAN0B1J0	None	None	-	1B.2	3712175	CLIFTON COURT FOREBAY	Mapped	Plants - Vascular - Ranunculaceae - Delphinium recurvatum
Plants - Vascular	Myosurus minimus ssp. apus	little mousetail	PDRAN0H031	None	None	-	3.1	3712175	CLIFTON COURT FOREBAY	Unprocessed	Plants - Vascular - Ranunculaceae - Myosurus minimus ssp. apus
Plants - Vascular	Galium andrewsii ssp. gatense	phlox-leaf serpentine bedstraw	PDRUB0N032	None	None	-	4.2	3712177	TASSAJARA	Unprocessed	Plants - Vascular - Rubiaceae - Galium andrewsii ssp. gatense
Plants - Vascular	Galium andrewsii ssp. gatense	phlox-leaf serpentine bedstraw	PDRUB0N032	None	None	-	4.2	3712187	ANTIOCH SOUTH	Unprocessed	Plants - Vascular - Rubiaceae - Galium andrewsii ssp. gatense
Plants - Vascular	Limosella australis	Delta mudwort	PDSCR10030	None	None	-	2B.1	3812115	BOULDIN ISLAND	Mapped	Plants - Vascular - Scrophulariaceae - Limosella australis
Plants - Vascular	Limosella australis	Delta mudwort	PDSCR10030	None	None	-	2B.1	3812116	JERSEY ISLAND	Mapped	Plants - Vascular - Scrophulariaceae - Limosella australis

Plants - Vascular	Limosella australis	Delta mudwort	PDSCR10030	None	None	-	2B.1	3812117	ANTIOCH NORTH	Mapped and Unprocessed	Plants - Vascular - Scrophulariaceae - Limosella australis
Plants - Vascular	Limosella australis	Delta mudwort	PDSCR10030	None	None	-	2B.1	3712185	WOODWARD ISLAND	Mapped	Plants - Vascular - Scrophulariaceae - Limosella australis
Plants - Vascular	Limosella australis	Delta mudwort	PDSCR10030	None	None	-	2B.1	3712175	CLIFTON COURT FOREBAY	Mapped	Plants - Vascular - Scrophulariaceae - Limosella australis

CALIFORNIA NATIVE PLANT SOCIETY

CNPS Rare Plant Inventory

Search Results

69 matches found. Click on scientific name for details

Search Criteria: 9-Quad include [**3712176:3712175:3712185:3812115:3712186:3812116:3712177:3712187:3812117**]

▲ SCIENTIFIC NAME	COMMON NAME	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	CA RARE PLANT RANK	GENERAL HABITATS	MICROHABITATS	LOWEST ELEVATION (FT)	HIGHEST ELEVATION (FT)
Amsinckia grandiflora	large-flowered fiddleneck	annual herb	(Mar)Apr-May	FE	CE	1B.1	Cismontane woodland, Valley and foothill grassland		885	1805
Androsace elongata ssp. *acuta*	California androsace	annual herb	Mar-Jun	None	None	4.2	Chaparral, Cismontane woodland, Coastal scrub, Meadows and seeps, Pinyon and juniper woodland, Valley and foothill grassland		490	4280
Anomobryum julaceum	slender silver moss	moss		None	None	4.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest	Roadsides (usually)	330	3280
Arctostaphylos auriculata	Mt. Diablo manzanita	perennial evergreen shrub	Jan-Mar	None	None	1B.3	Chaparral (sandstone), Cismontane woodland		445	2135
Arctostaphylos manzanita ssp. *laevigata*	Contra Costa manzanita	perennial evergreen shrub	Jan-Mar(Apr)	None	None	1B.2	Chaparral (rocky)		1410	3610
Astragalus tener var. *tener*	alkali milk-vetch	annual herb	Mar-Jun	None	None	1B.2	Playas, Valley and foothill grassland (adobe clay), Vernal pools	Alkaline	5	195
Atriplex cordulata var. *cordulata*	heartscale	annual herb	Apr-Oct	None	None	1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland (sandy)	Alkaline (sometimes)	0	1835

Atriplex coronata var. *coronata*	crownscale	annual herb	Mar-Oct	None	None	4.2	Chenopod scrub, Valley and foothill grassland, Vernal pools	Alkaline, Clay (often)	5	1935
Atriplex depressa	brittlescale	annual herb	Apr-Oct	None	None	1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools	Alkaline, Clay	5	1050
Atriplex minuscula	lesser saltscale	annual herb	May-Oct	None	None	1B.1	Chenopod scrub, Playas, Valley and foothill grassland	Alkaline, Sandy	50	655
Blepharizonia plumosa	big tarplant	annual herb	Jul-Oct	None	None	1B.1	Valley and foothill grassland	Clay (usually)	100	1655
Brasenia schreberi	watershield	perennial rhizomatous herb (aquatic)	Jun-Sep	None	None	2B.3	Marshes and swamps (freshwater)		0	7220
Calandrinia breweri	Brewer's calandrinia	annual herb	(Jan)Mar-Jun	None	None	4.2	Chaparral, Coastal scrub	Burned areas, Disturbed areas, Loam (sometimes), Sandy (sometimes)	35	4005
Calochortus pulchellus	Mt. Diablo fairy-lantern	perennial bulbiferous herb	Apr-Jun	None	None	1B.2	Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland		100	2755
Carex comosa	bristly sedge	perennial rhizomatous herb	May-Sep	None	None	2B.1	Coastal prairie, Marshes and swamps (lake margins), Valley and foothill grassland		0	2050
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	annual herb	(Apr)May-Oct(Nov)	None	None	1B.1	Valley and foothill grassland (alkaline)		0	755
Chloropyron molle ssp. *molle*	soft salty bird's-beak	annual herb (hemiparasitic)	Jun-Nov	FE	CR	1B.2	Marshes and swamps (coastal salt)		0	10
Cicuta maculata var. *bolanderi*	Bolander's water-hemlock	perennial herb	Jul-Sep	None	None	2B.1	Marshes and swamps (brackish, coastal, freshwater)		0	655

Convolvulus simulans	small-flowered morning-glory	annual herb	Mar-Jul	None	None	4.2	Chaparral (openings), Coastal scrub, Valley and foothill grassland	Clay, Seeps, Serpentine	100	2430
Cryptantha hooveri	Hoover's cryptantha	annual herb	Apr-May	None	None	1A	Inland dunes, Valley and foothill grassland (sandy)		30	490
Delphinium recurvatum	recurved larkspur	perennial herb	Mar-Jun	None	None	1B.2	Chenopod scrub, Cismontane woodland, Valley and foothill grassland	Alkaline	10	2590
Downingia pusilla	dwarf downingia	annual herb	Mar-May	None	None	2B.2	Valley and foothill grassland (mesic), Vernal pools		5	1460
Eleocharis parvula	small spikerush	perennial herb	(Apr)Jun-Aug(Sep)	None	None	4.3	Marshes and swamps		5	9910
Eriogonum nudum var. *psychicola*	Antioch Dunes buckwheat	perennial herb	Jul-Oct	None	None	1B.1	Inland dunes		0	65
Eriogonum truncatum	Mt. Diablo buckwheat	annual herb	Apr-Sep(Nov-Dec)	None	None	1B.1	Chaparral, Coastal scrub, Valley and foothill grassland	Sandy	10	1150
Eriogonum umbellatum var. *bahiiforme*	bay buckwheat	perennial herb	Jul-Sep	None	None	4.2	Cismontane woodland, Lower montane coniferous forest	Rocky, Serpentine (often)	2295	7220
Eriophyllum jepsonii	Jepson's woolly sunflower	perennial herb	Apr-Jun	None	None	4.3	Chaparral, Cismontane woodland, Coastal scrub	Serpentine (sometimes)	655	3365
Eryngium jepsonii	Jepson's coyote-thistle	perennial herb	Apr-Aug	None	None	1B.2	Valley and foothill grassland, Vernal pools	Clay	10	985
Eryngium racemosum	Delta button-celery	annual/perennial herb	(May)Jun-Oct	None	CE	1B.1	Riparian scrub (vernally mesic clay depressions)		10	100
Eryngium spinosepalum	spiny-sepaled button-celery	annual/perennial herb	Apr-Jun	None	None	1B.2	Valley and foothill grassland, Vernal pools		260	3200
Erysimum capitatum var. *angustatum*	Contra Costa wallflower	perennial herb	Mar-Jul	FE	CE	1B.1	Inland dunes		10	65

Eschscholzia rhombipetala	diamond-petaled California poppy	annual herb	Mar-Apr	None	None	1B.1	Valley and foothill grassland (alkaline, clay)		0	3200
Extriplex joaquinana	San Joaquin spearscale	annual herb	Apr-Oct	None	None	1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland	Alkaline	5	2740
Fritillaria agrestis	stinkbells	perennial bulbiferous herb	Mar-Jun	None	None	4.2	Chaparral, Cismontane woodland, Pinyon and juniper woodland, Valley and foothill grassland	Clay, Serpentine (sometimes)	35	5100
Fritillaria liliacea	fragrant fritillary	perennial bulbiferous herb	Feb-Apr	None	None	1B.2	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland	Serpentine (often)	10	1345
Galium andrewsii ssp. *gatense*	phlox-leaf serpentine bedstraw	perennial herb	Apr-Jul	None	None	4.2	Chaparral, Cismontane woodland, Lower montane coniferous forest	Rocky, Serpentine	490	4755
Helianthella castanea	Diablo helianthella	perennial herb	Mar-Jun	None	None	1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland	Rocky (usually)	195	4265
Hesperevax caulescens	hogwallow starfish	annual herb	Mar-Jun	None	None	4.2	Valley and foothill grassland (mesic clay), Vernal pools (shallow)	Alkaline (sometimes)	0	1655
Hesperolinon breweri	Brewer's western flax	annual herb	May-Jul	None	None	1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland	Serpentine (usually)	100	3100
Hibiscus lasiocarpos var. *occidentalis*	woolly rose-mallow	perennial rhizomatous herb (emergent)	Jun-Sep	None	None	1B.2	Marshes and swamps (freshwater)		0	395

Lasthenia conjugens	Contra Costa goldfields	annual herb	Mar-Jun	FE	None	1B.1	Cismontane woodland, Playas (alkaline), Valley and foothill grassland, Vernal pools	Mesic	0	1540
Lasthenia ferrisiae	Ferris' goldfields	annual herb	Feb-May	None	None	4.2	Vernal pools (alkaline, clay)		65	2295
Lathyrus jepsonii var. *jepsonii*	Delta tule pea	perennial herb	May-Jul(Aug-Sep)	None	None	1B.2	Marshes and swamps (brackish, freshwater)		0	15
Leptosiphon ambiguus	serpentine leptosiphon	annual herb	Mar-Jun	None	None	4.2	Cismontane woodland, Coastal scrub, Valley and foothill grassland	Serpentine (usually)	395	3710
Lilaeopsis masonii	Mason's lilaeopsis	perennial rhizomatous herb	Apr-Nov	None	CR	1B.1	Marshes and swamps (brackish, freshwater), Riparian scrub		0	35
Limosella australis	Delta mudwort	perennial stoloniferous herb	May-Aug	None	None	2B.1	Marshes and swamps (brackish, freshwater), Riparian scrub	Streambanks (usually)	0	10
Lupinus albifrons var. *abramsii*	Abrams' lupine	perennial herb	Apr-Jun	None	None	3.2	Broadleafed upland forest, Chaparral, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland	Serpentine (sometimes)	410	6560
Madia radiata	showy golden madia	annual herb	Mar-May	None	None	1B.1	Cismontane woodland, Valley and foothill grassland		80	3985
Malacothamnus hallii	Hall's bushmallow	perennial deciduous shrub	(Apr)May-Sep(Oct)	None	None	1B.2	Chaparral, Coastal scrub		35	2495

Monolopia gracilens	woodland woollythreads	annual herb	(Feb)Mar-Jul	None	None	1B.2	Broadleafed upland forest (openings), Chaparral (openings), Cismontane woodland, North Coast coniferous forest (openings), Valley and foothill grassland	Serpentine	330	3935
Myosurus minimus ssp. *apus*	little mousetail	annual herb	Mar-Jun	None	None	3.1	Valley and foothill grassland, Vernal pools (alkaline)		65	2100
Navarretia cotulifolia	cotula navarretia	annual herb	May-Jun	None	None	4.2	Chaparral, Cismontane woodland, Valley and foothill grassland	Adobe	15	6005
Navarretia heterandra	Tehama navarretia	annual herb	Apr-Jun	None	None	4.3	Valley and foothill grassland (mesic), Vernal pools		100	3315
Navarretia nigelliformis ssp. *radians*	shining navarretia	annual herb	(Mar)Apr-Jul	None	None	1B.2	Cismontane woodland, Valley and foothill grassland, Vernal pools	Clay (sometimes)	215	3280
Oenothera deltoides ssp. *howellii*	Antioch Dunes evening-primrose	perennial herb	Mar-Sep	FE	CE	1B.1	Inland dunes		0	100
Piperia michaelii	Michael's rein orchid	perennial herb	Apr-Aug	None	None	4.2	Chaparral, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal scrub, Lower montane coniferous forest		10	3000
Plagiobothrys hystriculus	bearded popcornflower	annual herb	Apr-May	None	None	1B.1	Valley and foothill grassland (mesic), Vernal pools (margins)		0	900
Potamogeton zosteriformis	eel-grass pondweed	annual herb (aquatic)	Jun-Jul	None	None	2B.2	Marshes and swamps (freshwater)		0	6105

Puccinellia simplex	California alkali grass	annual herb	Mar-May	None	None	1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools	Alkaline, Flats, Lake Margins, Vernally Mesic	5	3050
Scutellaria galericulata	marsh skullcap	perennial rhizomatous herb	Jun-Sep	None	None	2B.2	Lower montane coniferous forest, Marshes and swamps, Meadows and seeps (mesic)		0	6890
Scutellaria lateriflora	side-flowering skullcap	perennial rhizomatous herb	Jul-Sep	None	None	2B.2	Marshes and swamps, Meadows and seeps (mesic)		0	1640
Senecio aphanactis	chaparral ragwort	annual herb	Jan-Apr(May)	None	None	2B.2	Chaparral, Cismontane woodland, Coastal scrub	Alkaline (sometimes)	50	2625
Senecio hydrophiloides	sweet marsh ragwort	perennial herb	May-Aug	None	None	4.2	Lower montane coniferous forest, Meadows and seeps	Mesic	0	9185
Sidalcea keckii	Keck's checkerbloom	annual herb	Apr-May(Jun)	FE	None	1B.1	Cismontane woodland, Valley and foothill grassland	Clay, Serpentine	245	2135
Spergularia macrotheca var. *longistyla*	long-styled sand-spurrey	perennial herb	Feb-May	None	None	1B.2	Marshes and swamps, Meadows and seeps	Alkaline	0	835
Stuckenia striata	broadleaf pondweed	perennial rhizomatous (aquatic)	(Jun)Jul-Aug	None	None	2B.3	Marshes and swamps		-230	7005
Symphyotrichum lentum	Suisun Marsh aster	perennial rhizomatous herb	(Apr)May-Nov	None	None	1B.2	Marshes and swamps (brackish, freshwater)		0	10
Tropidocarpum capparideum	caper-fruited tropidocarpum	annual herb	Mar-Apr	None	None	1B.1	Valley and foothill grassland (alkaline hills)		5	1495
Viburnum ellipticum	oval-leaved viburnum	perennial deciduous shrub	May-Jun	None	None	2B.3	Chaparral, Cismontane woodland, Lower montane coniferous forest		705	4595

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Suggested Citation:

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Appendix B.2 Special Status Species Tables

Scientific Name	Common Name	Federal	State	CRPR	Habitat Characteristics	Impacts to be Analyzed	Rationale	East Contra Costa County HCP
Amsinckia grandiflora	large-flowered fiddleneck	FE	SE	1B.1	Cismontane woodland, grassland. Elevation: 885–1,805 feet. Blooming period: March–May	N	Project area below species elevation range.	
Arctostaphylos auriculata	Mount Diablo manzanita	None	None	1B.3	Cismontane woodland and sandstone soils of chaparral. Elevation: 442–2,132 feet. Blooming period: January–March	N	Project area below species elevation range. Not mapped in modelled habitat in Appendix D Figure 18c. All occurrences distributed further upslope in mountain range.	Covered
Arctostaphylos manzanita ssp. laevigata	Contra Costa manzanita	None	None	1B.2	Rocky soils in chaparral. Elevation: 1,410–3,610 feet. Blooming period: January–April	N	Project area below species elevation range.	
Astragalus tener var. tener	alkali milk-vetch	None	None	1B.2	Alkaline soils in playas, adobe clay grassland, and vernal pools. Elevation: 0–195 feet. Blooming period: March–June	N	Suitable habitat not present. Soils not alkaline or adobe clay. All regional occurrences in lowland valleys (Central Valley or Livermore Valley).	
Atriplex cordulata var. cordulata	heartscale	None	None	1B.2	Saline or alkaline soils in chenopod scrub, meadows, seeps, and sandy grassland. Elevation: 0–1,837 feet. Blooming period: April–October	N	Suitable habitat/soils not present.	
Atriplex depressa	brittlescale	None	None	1B.2	Alkaline or clay soils in chenopod scrub, meadows, seeps, playas, vernal pools, and grassland. Elevation: 3–1,049 feet. Blooming period: April–October	N	Not mapped in modelled habitat in Appendix D Figure 19c. Alkaline habitats and suitable soils (Pescadero and Solano series) not present.	Covered
Atriplex minuscula	lesser saltscale	None	None	1B.1	Alkaline and sandy soils in chenopod scrub, playas, and grassland. Elevation: 49–656 feet. Blooming period: May–October	N	Suitable habitat/soils not present.	
Blepharizonia plumosa	big tarplant	None	None	1B.1	Usually clay soils in grassland. Elevation: 95–1,655 feet. Blooming period: July–October	Y	Suitable habitat present. Mapped as low potential habitat in Appendix D Figure 21c. Known occurrences adjacent to BSA on Cowell Ranch property.	Covered
Brasenia schreberi	watershield	None	None	2B.3	Freshwater marshes and swamps. Elevation: 95–7,220 feet. Blooming period: June–September	N	Occurrences in lowland Delta region.	
Calochortus pulchellus	Mount Diablo fairy-lantern	None	None	1B.2	Chaparral, cismontane woodland, riparian woodland, grassland. 98–2,755 feet. Blooming period: April–June	N	Not mapped in modelled habitat in Appendix D Figure 22c. All occurrences distributed further upslope in mountain range.	Covered
Carex comosa	bristly sedge	None	None	2B.1	Coastal prairie, lake margins of marshes and swamps, and grassland. Elevation: 0–2,050 feet. Blooming period: May–September	N	Occurrences in lowland Delta region.	
Centromadia parryi ssp. congdonii	Congdon's tarplant	None	None	1B.1	Alakline soils in grassland. Elevation: 0–755 feet. Blooming period: May–November	N	Unlikely - soils not highly alkaline.	
Chloropyron molle ssp. molle	soft bird's-beak	FE	SR	1B.2	Coastal salt marshes and swamps. Elevation: 0–10 feet. Blooming period: June–November	N	Project area above species elevation range.	
Cicuta maculata var. bolanderi	Bolander's water-hemlock	None	None	2B.1	Marshes and swamps near coast in fresh or brackish water. Elevation: 0–656 feet. Blooming period: July–September	N	Occurrences in lowland Delta region.	
Delphinium recurvatum	recurved larkspur	None	None	1B.2	Alkaline soils in chenopod scrub, cismontane woodland, and grassland. Elevation: 9–2,591 feet. Blooming period: March–June	N	Suitable habitat (alkaline) not present. Mapped as low potential habitat in Appendix D Figure 23c.	Covered
Downingia pusilla	dwarf downingia	None	None	2B.2	Vernal pools and mesic grassland. Elevation: 0–1,460 feet. Blooming period: March–May	N	Suitable habitat not present.	

Scientific Name	Common Name	Federal	State	CRPR	Habitat Characteristics	Impacts to be Analyzed	Rationale	East Contra Costa County HCP
Eriogonum nudum var. psychicola	Antioch Dunes buckwheat	None	None	1B.1	Inland dunes. Elevation: 0–65 feet. Blooming period: July–October	N	Project area above species elevation range.	
Eriogonum truncatum	Mt. Diablo buckwheat	None	None	1B.1	Sandy soils in chaparral, coastal scrub, and grassland. Elevation: 5–1,150 feet. Blooming period: April–September (November and December)	N	Suitable soils not present.	
Eryngium jepsonii	Jepson's coyote thistle	None	None	1B.2	Clay soil in vernal pools and grassland. Elevation: 5–985 feet. Blooming period: April–August	Y	Suitable habitat present.	
Eryngium racemosum	Delta button-celery	None	SE	1B.1	Vernally mesic clay depressions in riparian scrub. Elevation: 5–100 feet. Blooming period: June–October	N	Project area above species elevation range.	
Eryngium spinosepalum	spiny-sepaled button-celery	None	None	1B.2	Vernal pools and grassland. Elevation: 262–2,034 feet. Blooming period: April–June	Y	Suitable habitat present.	
Erysimum capitatum var. angustatum	Contra Costa wallflower	FE	SE	1B.1	Inland dunes. Elevation: 5–65 feet. Blooming period: March–July	N	Project area above species elevation range.	
Eschscholzia rhombipetala	diamond-petaled California poppy	None	None	1B.1	Grassland in alkaline or clay soils. Elevation: 0–3,200 feet. Blooming period: March–April	Y	Suitable habitat present.	Covered
Extriplex joaquinana	San Joaquin spearscale	None	None	1B.2	Alkaline soils in chenopod scrub, meadows, seeps, playas, and grassland. Elevation: 0–2,740 feet. Blooming period: April–October (synonym of Atriplex joaquiniana)	Y	Although highly alkaline soils not present in project area, several known occurrences in vicinity.	Covered
Fritillaria liliacea	fragrant fritillary	None	None	1B.2	Often in serpentine soils in cismontane woodland, grassland, coastal prairie and scrub. Elevation: 5–1,345 feet. Blooming period: February–April	N	Suitable habitat not present.	
Helianthella castanea	Diablo helianthella	None	None	1B.2	Usually rocky, axonal soils, often in partial shade of broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and grassland. Elevation: 197–4,265 feet. Blooming period: March–June	N	Not mapped in modelled habitat in Appendix D Figure 25c. Project area just below elevation range. All occurrences distributed further upslope in mountain range. Generally occurs above 650 feet.	Covered
Hesperolinon breweri	Brewer's western flax	None	None	1B.2	Usually serpentinite, chaparral, cismontane woodland, grassland. Elevation: 98–3,100 feet. Blooming period: May–July	N	Strong associate of serpentine soils. Not mapped in modelled habitat in Appendix D Figure 26c. Suitable habitat and known occurrences south of project area, but not in project area.	Covered
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	None	None	1B.2	Often in riprap on sides of levees in freshwater marshes and swamps. Elevation: 0–395 feet. Blooming period: June–September	N	Occurrences in lowland Delta region.	
Lasthenia conjugens	Contra Costa goldfields	FE	None	1B.1	Mesic soils in vernal pools, grassland, alkaline playas, and cismontane woodland. Elevation: 0–1,540 feet. Blooming period: March–June	N	Unlikely to occur - all occurrences in lowlands. Generally found in vernal pools, which are not present.	
Lathyrus jepsonii var. jepsonii	Delta tule pea	None	None	1B.2	Freshwater and brackish marshes and swamps. Elevation: 0–16 feet. Blooming period: May–September	N	Project area above species elevation range.	
Lilaeopsis masonii	Mason's lilaeopsis	None	SR	1B.1	Brackish or freshwater marshes and swamps, riparian scrub. Elevation: 0–33 feet. Blooming period: April–November	N	Project area above species elevation range.	
Limosella australis	Delta mudwort	None	None	2B.1	Usually mud banks in freshwater or brackish marshes and swamps, riparian scrub. Elevation: 0–9 feet. Blooming period: May–August	N	Project area above species elevation range.	

Scientific Name	Common Name	Federal	State	CRPR	Habitat Characteristics	Impacts to be Analyzed	Rationale	East Contra Costa County HCP
Madia radiata	showy golden madia	None	None	1B.1	Cismontane woodland and grassland. Elevation: 82–3,986. Blooming period: March–May	Y	Suitable habitat present; however, has not been seen in Contra Costa County since 1941.	Covered
Malacothamnus hallii	Hall's bush-mallow	None	None	1B.2	Chaparral and coastal scrub. Elevation: 30–2,495 feet. Blooming period: April–October	N	Suitable habitat not present.	
Monolopia gracilens	woodland woolythreads	None	None	1B.2	Serpentine soils in the openings of chaparral and broadleafed upland and north coast coniferous forests, grassland, and cismontane woodland. Elevation: 325–3,935 feet. Blooming period: February–July	N	Project area below species elevation range.	
Navarretia nigelliformis ssp. nigelliformis	adobe navarretia	None	None	4.2	Clay, sometimes serpentine soils in vernally mesic grassland and vernal pools. Elevation: 328–3,280 feet. Blooming period: April–June	Y	Marginal habitat present in mesic herbaceous areas underlain by clay soil. Has been documented on Cowell Ranch property. Typically associated with vernal pools but could occur in vernally mesic areas around the reservoir.	Covered
Navarretia nigelliformis ssp. radians	shining navarretia	None	None	1B.2	Sometimes in clay soils in vernal pools, grassland, and cismontane woodland. Elevation: 210–3,280 feet. Blooming period: March–July	N	Project area below species elevation range.	
Oenothera deltoides ssp. howellii	Antioch Dunes evening-primrose	FE	SE	1B.1	Inland dunes. Elevation: 0–100 feet. Blooming period: March–September	N	Project area above species elevation range.	
Plagiobothrys hystriculus	bearded popcornflower	None	None	1B.1	Vernal swales and vernal pool margins as well as mesic grassland. Elevation: 0–900 feet. Blooming period: April–May	N	Suitable habitat not present.	
Potamogeton zosteriformis	eel-grass pondweed	None	None	2B.2	Freshwater marshes and swamps. Elevation: 0–6,100 feet. Blooming period: June–July	Y	Suitable habitat present.	
Puccinellia simplex	California alkali grass	None	None	1B.2	Alkaline and vernally mesic soils in sinks, flats, and lake margins of chenopod scrub, meadows, seeps, grassland, and vernal pools. Elevation: 5–3,050 feet. Blooming period: March–May	Y	Suitable habitat present.	
Scutellaria galericulata	marsh skullcap	None	None	2B.2	Marshes, swamps, meadows, seeps, and lower montane coniferous forest. Elevation: 0–6,890 feet. Blooming period: June–September	N	Occurrences in lowland Delta region.	
Scutellaria lateriflora	side-flowering skullcap	None	None	2B.2	Meadows, seeps, marshes, and swamps. Elevation: 0–1,640 feet. Blooming period: July–September	N	Occurrences in lowland Delta region.	
Senecio aphanactis	chaparral ragwort	None	None	2B.2	Chaparral, cismontane woodland, coastal scrub, and alkaline flats. Elevation: 49–2,624 feet. Blooming period: January–April	N	Suitable habitat not present.	
Sidalcea keckii	Keck's checkerbloom	FE	None	1B.1	Serpentine or clay soils in cismontane woodland and grassland. Elevation: 245–2,135 feet. Blooming period: April–June	N	Project area below species elevation range.	
Spergularia macrotheca var. longistyla	long-styled sand-spurrey	None	None	1B.2	Alkaline soils in meadows, seeps, marshes and swamps. Elevation: 0–835 feet. Blooming period: February–May	N	Highly alkaline soils not present.	
Symphyotrichum lentum	Suisun Marsh aster	None	None	1B.2	Brackish and freshwater marshes and swamps. Elevation: 0–9 feet. Blooming period: (April)May–November (synonym of Aster chilensis var. lentus and A. lentus)	N	Project area above species elevation range.	

Scientific Name	Common Name	Federal	State	CRPR	Habitat Characteristics	Impacts to be Analyzed	Rationale	East Contra Costa County HCP
Tropidocarpum capparideum	caper-fruited tropidocarpum	None	None	1B.1	Alkaline hills in grassland. Elevation: 3–1,493 feet. Blooming period: March–April	N	Suitable habitat (alkaline) not present.	
Viburnum ellipticum	oval-leaved viburnum	None	None	2B.3	Chaparral, cismontane woodland, lower montane coniferous forest. Elevation: 705–4,595 feet. Blooming period: May–June	N	Project area below species elevation range.	

Source for all plant species habitat characteristics with a CRPR value is: California Native Plant Society (CNPS). 2024. Inventory of Rare and Endangered Plants (online edition, v9-01). Sacramento, CA: CNPS. http://www.rareplants.cnps.org/.
Source for all occurrence data is the California Natural Diversity Database (CNDDB)

Species Status Legend:

Federal (USFWS)	State (CDFW)
FE Endangered	SE Endangered
FT Threatened	ST Threatened
FC Federal Candidate Species	SR Rare
	SC State Candidate Species

CRPR	CRPR Threat Code Extension
1A Plants presumed extirpated in California and either rare or extinct elsewhere	None Plants lacking any threat information
1B Plants Rare, Threatened, or Endangered in California and elsewhere	.1 Seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat)
2A Plants Presumed extirpated in California, but more common elsewhere	.2 Moderately threatened in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)
2B Plants Rare, Threatened, or Endangered in California, but more common elsewhere	.3 Not very threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known)
3 Plants about which we need more information - review list	
4 Plants of limited distribution - watch list	

Scientific Name	Common Name	Federal	State	East Contra Costa County HCP	Habitat Characteristics	Impacts to be Analyzed	Rationale	Citation
Invertebrates								
Apodemia mormo langei	Lange's metalmark	FE	None		Endemic to the Antioch Dunes in Contra Costa County. Lays its eggs on naked buckwheat (Eriogonum nudum). Naked buckwheat, California mugwort (Artemisia douglasiana), and California matchweed (Gutierrezia californica) are important nectar sources (USFWS 2008).	No	Suitable habitat not present. Outside known species range.	USFWS. 2008. Lange's metalmark butterfly (Apodemia mormo langei), Antioch Dunes evening primrose (Oenothera deltoides subsp. howelli), Contra Costa wallflower (Erysimum capitatum var. angustatum) 5-Year Review: Summary and Evaluation. USFWS; Sacramento, CA.
Bombus crotchii	Crotch's bumble bee	None	SCE		Inhabits open grassland and scrub habitats and is an underground nester. Species occurs primarily in California, including the Mediterranean region, Pacific Coast, Western Desert, Great Valley, and adjacent foothills through most of southwestern California. This species was historically common in the Central Valley of California, but now appears to be absent from most of it, especially in the center of its historic range (CDFW 2023).	Yes	Suitable habitat present.	CDFW. 2023. Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species. Available online: https://wildlife.ca.gov/Conservation/Survey-Protocols. Accessed November 2024.
Bombus occidentalis	western bumble bee	None	SCE		Inhabits meadows and grasslands with abundant floral resources. In California, populations are currently largely restricted to high elevation sites in the Sierra Nevada, though there have been a couple of observations of this species on the northern California coast (CDFW 2023).	No	Outside of current range.	CDFW. 2023. Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species. Available online: https://wildlife.ca.gov/Conservation/Survey-Protocols. Accessed November 2024.
Branchinecta conservatio	Conservancy fairy shrimp	FE	None		Endemic to California vernal pools, almost entirely in the Central Valley, with the exception of one population along the central coast in Ventura County. Majority of sites inhabited by this species are large and turbid pools which remain inundated much longer than typical vernal pools (USFWS 2012).	No	Suitable habitat not present in project site. Depressional seasonal wetlands and ponds in larger BSA may provide habitat; however, no work would occur in these areas or within 250 feet.	USFWS. 2012. Conservancy Fairy Shrimp (Branchinecta conservatio) 5-Year Review: Summary and Evaluation. USFWS; Sacramento, CA.
Branchinecta longiantenna	longhorn fairy shrimp	FE	None	Covered	Endemic to California and restricted to vernal pools in the Coast Range hills and on the western fringe of the Central Valley, from the Altamont Pass area in Conta Costa County, south to the Carrizo Plain in San Luis Obispo County. Only known from a very few sites, but those sites exhibit very different characteristics, suggesting that this species is able to inhabit a wide variety of vernal pool environments (USFWS 2012).	No	Suitable habitat not present in project site. Depressional seasonal wetlands and ponds in larger BSA may provide habitat; however, no work would occur in these areas or within 250 feet.	USFWS. 2012. Longhorn Fairy Shrimp (Branchinecta longiantenna) 5-Year Review: Summary and Evaluation. USFWS; Sacramento, CA.
Branchinecta lynchi	vernal pool fairy shrimp	FT	None	Covered	Endemic to the grasslands of the Central Valley and the Central and South Coast Range mountains of California, and the Agate Desert of southern Oregon. Found only in cool water vernal pools and vernal pool-like habitats; does not occur in riverine, marine, or other permanent bodies of water (USFWS 2007).	No	Suitable habitat not present in project site. Depressional seasonal wetlands and ponds in larger BSA may provide habitat; however, no work would occur in these areas or within 250 feet.	USFWS. 2007. Vernal Pool Fairy Shrimp (Branchinecta lynchi) 5-Year Review: Summary and Evaluation. USFWS; Sacramento, CA.
Danaus plexippus (pop. 1)	monarch (California overwintering population)	FC	None		Breeding occurs on the hostplant milkweed (Asclepias spp.). Overwinters along the coast from Mendocino County south into Baja California in wind-protected groves of gum (Eucalyptus spp.), Monterey pine (Pinus radiata), or Monterey cypress (Hesperocyparis macrocarpa) with nectar and water sources nearby (IELP 2012).	Yes	Suitable habitat present. Monarch adults observed during surveys. Milkweed host plant also observed in grassland areas.	IELP. 2012. The Legal Status of Monarch Butterflies in California. International Environmental Law Project; Portland, OR.
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT	None		Dependent on host plant, elderberry (Sambucus spp.), which most commonly grows in riparian woodlands, but also in some upland habitats such as oak savannas and annual grasslands. Current presumed range in Central Valley extends from Shasta County south to Fresno County, including the valley floor and lower foothills up to about 500 feet in elevation (USFWS 2017).	No	Outside known species distribution range. No elderberry observed in BSA.	USFWS. 2017. Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus). USFWS; Sacramento, CA.
Lepidurus packardi	vernal pool tadpole shrimp	FE	None	Covered	Found only in ephemeral freshwater habitats, including alkaline pools, clay flats, vernal lakes, vernal pools, vernal swales, and other seasonal wetlands. Patchily distributed across the Central Valley from Shasta County south to Tulare County with isolated occurrences in the East Bay Area (USFWS 2007).	No	Suitable habitat not present in project site. Depressional seasonal wetlands and ponds in larger BSA may provide habitat; however, no work would occur in these areas or within 250 feet.	USFWS. 2007. Vernal Pool Tadpole Shrimp (Lepidurus packardi) 5-Year Review: Summary and Evaluation. USFWS; Sacramento, CA.
Fish								
Acipenser medirostris	green sturgeon (southern DPS)	FT	SSC		Spawning occurs primarily in the Sacramento River, but those that spawn in the Feather and Yuba Rivers are also part of the southern DPS. Oceanic waters, bays, and estuaries during non-spawning season. Enters San Francisco Bay late winter through early spring, and spawn occurs from April through early July. Spawn in cool sections of river mainstems in deep pools containing small to medium-sized gravel, cobble, or boulder substrate (NMFS 2015).	No	Suitable habitat not present. Project site inaccessible for anadromous species.	NMFS. 2015. Southern Distinct Population Segment of the North American Green Sturgeon (Acipenser medirostris) 5-Year Review: Summary and Evaluation. NMFS; Long Beach, CA.
Acipenser transmontanus	white sturgeon	None	SSC		Salt water from Ensenada to Alaska. Spawn in large river systems along the west coast. Currently, self-sustaining populations only occur in the Sacramento, Columbia, and Fraser Rivers. Spawn in large, deep pools (Moyle 2002).	No	Suitable habitat not present.	Moyle, P. B. 2002. Inland fishes of California. Revised and expanded. University of California Press, Berkeley. xv + 502 pp.
Archoplites interruptus	Sacramento perch	None	SSC		Extirpated from historic range in Central Valley. Now persists only as introduced populations in reproductively isolated waterbodies across California Because Sacramento Perch historically inhabited the waters of the Central Valley which fluctuated with floods and droughts, it is adapted to withstand wide ranges of water clarity, temperature, dissolved oxygen, salinity and alkalinity (Moyle 2002).	No	Suitable habitat not present.	Moyle, P. B. 2002. Inland fishes of California. Revised and expanded. University of California Press, Berkeley. xv + 502 pp.
Entosphenus tridentatus	Pacific lamprey	None	SSC		Cold, clear water for spawning and incubation. Peak spawning appears to be closely tied to water temperatures that are suitable for early development, but can occur at temperatures above 72ºF. Adults use gravel areas to build nests, while ammocoetes need soft sediments in which to burrow during rearing. Nests are generally associated with cover, including gravel and cobble substrates, vegetation and woody debris. Ammocoetes burrow into larger substrates as they grow. Ammocoetes also need detritus that produces algae for food and habitats with slow or moderately slow water velocities, such as low gradient riffles, pool tailouts and lateral scour pools (CDFW 2015).	No	Suitable habitat not present. Project site inaccessible for anadromous species.	CDFW. 2015. Fish Species of Special Concern Accounts, 3rd Edition. Available online: https://www.wildlife.ca.gov/Conservation/SSC/Fishes
Hypomesus transpacificus	delta smelt	FT	SE		Endemic to open waters of San Francisco Bay and Sacramento-San Joaquin River Delta. Distribution includes San Pablo Bay up through Suisun Bay, upstream through the delta to the Sacramento River below Isleton, and the San Joaquin River below Mossdale. Spawning has not been observed in the wild, but is thought to take place in sloughs and shallow edge-water channels in the upper delta and in Montezuma Slough near Suisun Bay. (USFWS 2010).	No	Suitable habitat not present.	USFWS. 2010. Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to Reclassify the Delta Smelt from Threatened to Endangered throughout its Range. USFWS; Sacramento CA.
Lampetra ayresii	river lamprey	None	SSC		Occurs in the Sacramento-San Joaquin River systems, although it likely occurs elsewhere. Small lampreys that spend most of their lives in freshwater, with about 3 to 4 months in salt water. Adults migrate into freshwater for spawning in autumn (Moyle 2002).	No	Suitable habitat not present. Project site inaccessible for anadromous species.	Moyle, P. B. 2002. Inland fishes of California. Revised and expanded. University of California Press, Berkeley. xv + 502 pp. | Moyle, P. B., R. m. Yoshiyama, J. E. Williams, and E. D. Wikramanayake. 1995. Fish species of special concern in California. Second Edition
Lavinia exilicauda exilicauda	Sacramento hitch	None	SSC		Has a scattered distribution within the Central Valley, from the Tulare Lake Basin to Shasta Reservoir (Moyle 2002).	No	Suitable habitat not present.	Moyle, P. B. 2002. Inland fishes of California. Revised and expanded. University of California Press, Berkeley. xv + 502 pp. | Moyle, P. B., R. m. Yoshiyama, J. E. Williams, and E. D. Wikramanayake. 1995. Fish species of special concern in California. Second Edition
Mylopharodon conocephalus	hardhead	None	SSC		Small to large streams in low to mid-elevation environments. May also inhabit lakes or reservoirs. Preferred stream temperature might easily exceed 68ºF, though these fish do not favor low dissolved oxygen levels. Usually found in clear deep streams with a slow but present flow. Though spawning may occur in pools, runs, or riffles, the bedding area will typically be characterized by gravel and rocky substrate. Occurs from Sacramento-San Joaquin and Russian River drainages from the Pit River, Modoc County in the north, to the Kern River, Kern County in the south (UC Davis 2017).	No	Suitable habitat not present.	UC Davis PISCES: Center for Watershed Sciences. 2017. Hardhead (Mylopharodon conocephalus). Available online: https://pisces.ucdavis.edu/content/mylopharodon-conocephalus
Oncorhynchus kisutch (pop. 4)	coho salmon (central California coast ESU)	FE	SE		Spawns in small streams with beds of loose, silt-free, coarse gravel. Also need cover, cool water, and sufficient dissolved oxygen. At other seasons occurs in estuarine and marine waters. Occurs in Del Norte, Siskiyou, Humboldt, Trinity, Mendocino, and northern Lake Counties (NMFS 2016).	No	Suitable habitat not present. Project site inaccessible for anadromous species.	NMFS. 2016. 5-Year Review: Summary & Evaluation of Central California Coast Coho Salmon. NMFS; West Coast Region.
Oncorhynchus mykiss irideus (pop. 8)	steelhead (central California coast DPS)	FT	None		Includes naturally spawned anadromous steelhead originating below natural and manmade impassable barriers from the Russian River to and including Aptos Creek, and all drainages of San Francisco and San Pablo Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers. Also, steelhead from two artificial propagation programs: Don Clausen Fish Hatchery Program and Kingfisher Flat Hatchery Program (Monterey Bay Salmon and Trout Project). Spawning habitat includes gravel-bottomed, fast-flowing, well-oxygenated rivers and streams. Non-spawning habitat includes estuarine and marine waters (NOAA 2019).	No	Suitable habitat not present. Project site inaccessible for anadromous species.	NOAA. 2019. NOAA Fisheries, West Coast Region, Protected Species Accounts. Available online: https://archive.fisheries.noaa.gov/wcr/protected_species/salmon_steelhead/salmon_and_steelhead_listings/steelhead/central_california_coast/central_california_coast_steelhead.html
Oncorhynchus mykiss irideus (pop. 11)	steelhead (central valley DPS)	FT	None		Includes naturally spawned anadromous steelhead originating below natural and manmade impassable barriers from the Sacramento and San Joaquin Rivers and their tributaries; excludes such fish originating from San Francisco and San Pablo Bays and their tributaries. This DPS does include steelhead from two artificial propagation programs: Coleman National Fish Hatchery Program and Feather River Fish Hatchery Program. Spawning habitat includes gravel-bottomed, fast-flowing, well-oxygenated rivers and streams. Non-spawning habitat includes estuarine and marine waters (NOAA 2019).	No	Suitable habitat not present. Project site inaccessible for anadromous species.	NOAA. 2019. NOAA Fisheries, West Coast Region, Protected Species Accounts. Available online: https://archive.fisheries.noaa.gov/wcr/protected_species/salmon_steelhead/salmon_and_steelhead_listings/steelhead/california_central_valley/california_central_valley_steelhead.html

Scientific Name	Common Name	Federal	State	East Contra Costa County HCP	Habitat Characteristics	Impacts to be Analyzed	Rationale	Citation
Oncorhynchus tshawytscha (pop. 6)	chinook salmon (Central Valley spring-run ESU)	FT	ST		Currently found in the Sacramento-San Joaquin River Delta, the Sacramento River and its tributaries, including American, Yuba and Feather Rivers, and Mill, Deer, and Butte Creeks. The numbers of adults are dependent on pool depth and volume, amount of cover, and proximity to gravel. Water temperatures greater than 80°F are lethal to adults (NMFS 2016).	No	Suitable habitat not present. Project site inaccessible for anadromous species.	NMFS. 2016. 5-Year Review: Summary and Evaluation of Central Valley Spring-run Chinook Salmon ESU. NMFS; Long Beach, CA.
Oncorhynchus tshawytscha (pop. 7)	chinook salmon (Sacramento River winter-run ESU)	FE	SE		Currently found in the Sacramento River below Keswick Dam. Spawns in the Sacramento River but not its tributaries. Requires clean, cold water over gravel beds with water temperatures between 42 and 57°F for spawning (NMFS 2011).	No	Suitable habitat not present. Project site inaccessible for anadromous species.	NMFS. 2011. 5-Year Review: Summary and Evaluation of Sacramento River Winter-run Chinook Salmon ESU. NMFS; Long Beach, CA.
Oncorhynchus tshawytscha (pop. 13)	chinook salmon (Central Valley fall / late fall-run ESU)	None	SSC		Currently found primarily in the Sacramento River, where most spawning and rearing of juveniles takes place in the reach between Red Bluff Diversion Dam and Redding's Keswick Dam. The specific habitat requirements of late fall-run chinook salmon have not been determined but they are presumably similar to other Central Valley chinook salmon runs. It is believed that optimal conditions fall within the range of physical and chemical characteristics of the unimpaired Sacramento River above Shasta Dam (CDFW 2015).	No	Suitable habitat not present. Project site inaccessible for anadromous species.	CDFW. 2015. Fish Species of Special Concern Accounts, 3rd Edition. Available online: https://www.wildlife.ca.gov/Conservation/SSC/Fishes
Pogonichthys macrolepidotus	Sacramento splittail	None	SSC		Splittail depend both on brackish-water rearing habitats in the San Francisco Estuary and on floodplain and river-edge spawning habitats immediately above the estuary. Splittail are now largely confined to the Delta, Suisun Bay, Suisun Marsh, Napa River, Petaluma River, and other parts of the San Francisco Estuary, while spawning on upstream floodplains and channel edges (Moyle 2002)	No	Suitable habitat not present.	Moyle, P. B. 2002. Inland fishes of California. Revised and expanded. University of California Press, Berkeley. xv + 502 pp.
Spirinchus thaleichthys	longfin smelt	None	ST		Considered pelagic and anadromous, though anadromy in this species is poorly understood, and certain populations are not anadromous, completing their life cycle in freshwater lakes and streams (USFWS 2012).	No	Suitable habitat not present.	USFWS. 2012. Endangered and Threatened Wildlife and Plants; 12-month Finding on a Petition to List the San Francisco Bay-Delta Population of the Longfin Smelt as Endangered or Threatened
Spirinchus thaleichthys pop. 2	longfin smelt San Francisco DPS	FE	ST		Bay-Delta longfin smelt DPS occupies the San Francisco Bay Estuary and areas of the Pacific Ocean out to the Farallon Islands. This DPS is pelagic fish that exhibit a facultatively anadromous life history with reporduction within low-salinity to freshwater habitats beginning in late fall/early winter and extends into the spring as water temperature and low-salinity conditions allow. (USFWS 2022)	No	Suitable habitat not present.	USFWS. 2022. Endangered and Threatened Wildlife Plants; Endangered Species Status for the San Francisco Bay-Delta Distinct Population Segment of the Longfin Smelt
Thaleichthys pacificus	eulachon (southern DPS)	FT	None		Spawn in lower reaches of coastal rivers with moderate water velocities and with bottoms of pea-sized gravel, sand, and woody debris (NMFS 2016).	No	Suitable habitat not present.	NMFS. 2016. 5-Year Review: Summary & Evaluation of Eulachon. NMFS; Portland, OR.
Amphibians								
Ambystoma californiense pop. 1	California tiger salamander - central California DPS	FT	ST	Covered	Breeds in fish-free ephemeral ponds which form in winter and dry in summer. Some also breed in slow streams and semi-permanent waters, including cattle ponds. Spends most of the year underground in small mammal burrows, especially those of California ground squirrel (Otospermophilus beecheyi). Typical habitat associations include grassland, oak savanna, edges of mixed woodland, and lower elevation coniferous forest (Nafis 2024).	Yes	Suitable habitat present. Many occurrences in region.	Nafis, Gary. 2024. California Herps: A Guide to Reptiles and Amphibians of California. Available online: http://www.californiaherps.com/
Rana boylii pop. 4	foothill yellow-legged frog - central coast DPS	FT	SE	Covered	Ranges in the northern half of California except for the Central Valley, Modoc Plateau, and eastern side of the Sierra Nevada Mountains. Generally found in shallow flowing streams and rivers with at least cobble sized substrate. Breeding generally occurs at the margins of wide shallow channels with reduced flow variation near tributary confluences. Specifically, egg masses are placed in low flow locations on or under rocks with preferred substrates being boulders, cobbles, or gravel. Eggs have been found at depths to 34 inches in water velocities of 0 - 0.69 feet per second and at most 40 feet from shore. Maximum water temperature for breeding is 79oF and 48 to 70oF is the preferred range. Tadpoles avoid areas below 55oF and prefer temperatures between 62oF and 72.oF (Thomson et al. 2016).	No	Occurrences in the watershed likely extirpated (CDFW 2024a). Habitat is low quality given intermittent nature of waterways.	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.
Rana draytonii	California red-legged frog	FT	SSC	Covered	Breeds in permanent fresh water sources including streams, lakes, marshes, natural and manmade ponds, and drainages in valley bottoms and foothills with emergent or riparian vegetation, but can be found in ephemeral water bodies with minimal vegetation. Depending on conditions, breeding sites typically retain water for a minimum of 20 weeks to allow for tadpole development and metamorphosis. Upland habitat is adajcent to aquatic habitats and includes nearly any terrestrial area within 100 m of aquatic habitat that contains cover features such as dense riparian vegetation, wood or rock debris, burrows, or anthropogenic cover including discarded tires and wooden boards(USFWS 2022).	Yes	Suitable habitat present. Many occurrences in region.	USFWS. 2022. California Red-legged Frog (Rana draytonii) 5-Year Review: Summary and Evaluation. Sacramento Fish and Wildlife Office, December 2022.
Spea hammondii	western spadefoot	PT	SSC		Require both aquatic habitat for breeding and upland habitat for feeding and dormancy (burrows). Habitat is primarily open treeless grasslands, scrub, or mixed woodland and grassland where aquatic breeding habitat is available. Aquatic habitat typically includes temporary vernal pools, sand or gravel washes, and small streams that are often seasonal. However, eggs and larvae of western spadefoot have been observed in a variety of permanent and temporary wetlands, both natural and altered, including rivers, creeks, artificial ponds, livestock ponds, sedimentation and flood control ponds, irrigation and roadside ditches, roadside puddles, tire ruts, and borrow pits (USFWS 2023).	No	Outside known species distribution which is primarily in Central Valley and adjacent hills, not in areas near the Delta (CDFW 2024a). No records of this species exist within the HCP/NCCP inventory area, and given the survey effort for special-status vernal pool branchiopods and California tiger salamanders in temporary pools in the area, there is a low probability that the spadefoot has gone undetected in the area (H.T. Harvey 2015).	USFWS. 2023.Species Status Assessment Report for Western Spadefoot (Spea hammondii), Version 1.1. Sacramento Fish and Wildlife Office. May 2023. H.T. Harvey. 2015. East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Pan: Assessment of Plan Effects on CEQA Species. Prepared for East Contra Costa County Habitat Conservancy. 17 February 2015.
Reptiles								
Anniella pulchra	Northern California legless lizard	None	SSC	Covered	Generally found in habitats with a relatively sparse amount of vegetation including coastal sand dunes, chaparral, pine-oak woodland, desert scrub, grassland, and riparian zones. Specifically, requires sandy to loose loamy substrates suitable for burrowing, and avoids areas with gravel or larger sized substrates and those with greater than 10% clay content. Also tends to avoid non-native grasslands, iceplant fields, and other non-native dominated herbaceous communities (Thomson et al. 2016). Occurs from the southern edge of the San Joaquin River in northern Contra Costa County south to Ventura County, south of which there is a wide area where the species of Anniella is or are unknown. Occurs in scattered locations in the San Joaquin Valley, along the southern Sierra Nevada Mountains, on the desert side of the Tehachapi Mountains, and part of the San Gabriel Mountains. Two melanistic or dusky populations occur. One is in coastal dunes from Morro Bay south to the mouth of the Santa Maria River in San Luis Obispo County. The other, recognized as Anniella pulchra nigra, occurs in beach dunes on the Monterey Peninsula and on the southern coast of Monterey Bay south of the Salinas River in Monterey County (Nafis 2024).	No	Suitable habitat/soils not present.	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA. | Nafis, Gary. 2024. California Herps: A Guide to Reptiles and Amphibians of California. Available online: http://www.californiaherps.com/
Arizona elegans occidentalis	California glossy snake	None	SSC		Ranges in the cismontane portion of southern California, the southern portion of the Central Coast Ranges, and in isolated pockets up to the Alameda and San Joaquin County border. Generally found in open desert, grasslands, shrublands, chaparral, and woodlands. Some evidence of open and sandy habitat preference exists, but specific habitat requirements for this species aren't known (Thomson et al. 2016).	No	Suitable habitat/soils not present.	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.
Actinemys marmorata	northwestern pond turtle	FC	SSC	Covered	Western pond turtles are semi-aquatic, requiring both aquatic and terrestrial habitats and occurring in a broad range of permanent and ephemeral aquatic water bodies from remote to urban landscapes, including flowing rivers and streams, lakes, ponds, reservoirs, settling ponds, marshes, vernal pools irrigation ditches, and other wetlands, including some with estuaries with tidal influence. Preferred aquatic conditions are those with abundant basking sites, underwater shelter sites (undercut banks, submerged vegetation, mud, rocks, and logs), and standing or slow-moving water. Upland habitat typically characterized as having sparse vegetation with short grasses and forbs and little or no canopy cover to allow for exposure to direct sunlight (USFWS 2023).	Yes	Suitable habitat present. Known to occur in Marsh Creek watershed.	USFWS. 2023.Species Status Assessment Report for Northwestern Pond Turtle (Actinemys marmorata) and Southwestern Pond Turtle (Actinemys pallida), Version 1.1. Sacramento Fish and Wildlife Office. April 2023.
Masticophis lateralis euryxanthus	Alameda whipsnake	FT	ST	Covered	Endemic to California where it is only found in the East Bay area in Alameda and Contra Costa Counties. Prefers open areas in canyons, rocky hillsides, and chaparral scrublands, but will range into adjacent grasslands and woodlands (Nafis 2024).	No	Suitable habitat not present. No chaparral adjacent to project site (over a mile away).	Nafis, Gary. 2024. California Herps: A Guide to Reptiles and Amphibians of California. Available online: http://www.californiaherps.com
Phrynosoma blainvillii	coast horned lizard	None	SSC		Ranges in the southern half of California outside of the desert, along the foothills of the Sierra Nevada Mountains to Butte County, and along the Central Coast ranges up to Contra Costa County. Generally occurs in sage scrub, dunes, alluvial scrub, annual grassland, chaparral, oak, riparian, and Joshua tree woodland, coniferous forest, and saltbush scrub. Needs loose, fine soils for burrowing, open areas for basking, and dense foliage for cover. Negatively associated with Argentine ants (Linepithema humi) (Thomson et al. 2016).	No	Suitable habitat/soils not present.	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.
Thamnophis gigas	giant garter snake	FT	ST	Covered	Marshes, sloughs, ponds, small lakes, low gradient streams, irrigation and drainage canals, rice fields and their associated uplands. Upland habitat should have burrows or other soil crevices suitable for snakes to reside during their dormancy period (November- mid March). Formerly ranged in the Central Valley from Butte County to Buena Vista Lake in Kern County, but now thought to be absent south of Fresno and in Stanislaus County (USFWS 2020).	No	Outside known distribution range.	USFWS. 2020. Giant Garter Snake (Thamnophis gigas) 5-Year Review: Summary and Evaluation. USFWS; Sacramento, CA.
Birds								

Scientific Name	Common Name	Federal	State	East Contra Costa County HCP	Habitat Characteristics	Impacts to be Analyzed	Rationale	Citation
Agelaius tricolor	tricolored blackbird	None	ST, SSC	Covered	Colonial nested typically associated with native emergent marsh veegtation dominated by cattails (Typha spp.) or tules (Scoenoplectus spp.). Alos found to occasionally nest in willows or spiny vegetation such as Himalayan blackberries (Rubus armeniacus) or thistles. Also found nesting in wheat-rye agricultural fields (Center for Biological Diversity 2015). Several known colonies in Contra Costa County (Colibri 2022).	Yes	Suitable habitat present. Recorded occurrence in BSA (CDFW 2024a).	Center for Biological Diversity. 2015. A Petition to List the Tricolored Blackbird (Agelaius tricolor) as Endangered under the California Endangered Species Act and Request for Emergency Action to Protect the Species. August 19, 2015. Colibri Ecological Consulting. 2022. 2022 Tricolored Blackbird Statewide Survey. September. Fresno, CA. Prepared for California Department of Fish and Wildlife, Sacramento, CA.
Ammodramus savannarum	grasshopper sparrow	None	SSC		Nests in a variety of grassland habitats throughout much of the Central Valley, Coast Range Mountains, and the Inland Empire region. Prefers short to middle-height, moderately open grasslands with scattered shrubs. Avoids areas with high shrub cover (Shuford and Gardali 2008).	Yes	Suitable habitat present.	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
Antigone canadensis canadensis	lesser sandhill crane	None	SSC		Does not nest in California. Present in California as a migrant and winter resident (mainly October through March) with concentrations in the Butte Sink, Sacramento-San Joaquin River Delta, Merced County, Carrizo Plain, Tulare Basin, and Imperial Valley. Forages in agricultural fields and grasslands. Roost sites are in a variety of wetland habitats (Shuford and Gardali 2008).	No	Suitable habitat not present.	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
Antigone canadensis tabida	greater sandhill crane	None	ST, FP		Breeds in and near wet meadow, shallow lacustrine, and fresh emergent wetland habitats. Winters in annual and perennial grassland habitats, moist croplands with rice or corn stubble, and open, emergent wetlands. Prefers treeless plains. Nests in remote portions of extensive wetlands or sometimes shortgrass prairies. In California, breeds only in Siskiyou, Modoc, and Lassen Counties, and in Sierra Valley in Plumas and Sierra Counties. Winters primarily in the Sacramento and San Joaquin Valleys from Tehama County south to Kings County (Beedy et al. 1990).	No	Suitable habitat not present.	Beedy, E., Mewaldt, L., Granholm, S., and Duke, R. 1990. "Sandhill Crane", California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA
Aquila chrysaetos	golden eagle	BGEPA	FP	Covered	Uncommon resident in hills and mountains throughout California, and an uncommon migrant and winter resident in the Central Valley and Mojave Desert. Prefers rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, cliffs, and rock outcrops. (Polite et al. 1990)	Yes	Suitable habitat present. No nests observed during site surveys.	Polite, C., Pratt, J., Kiff, L. 1990. "Golden Eagle," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1681&inline=1
Asio flammeus	short-eared owl	None	SSC		Suitable habitats may include salt- and freshwater marshes, irrigated alfalfa or grain fields, and ungrazed grasslands and old pastures. Tule marsh or tall grasslands with cover 30–50 cm in height can support nesting pairs. Require rodent prey (Shuford and Gardali 2008).	Yes	Suitable habitat present.	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
Asio otus	long-eared owl	None	SSC		Nest in conifer, oak, riparian, pinyon-juniper, and desert woodlands that are either open or are adjacent to grasslands, meadows, or shrublands. Key habitat components are some dense cover for nesting and roosting, suitable nest platforms, and open foraging areas (Shuford and Gardali 2008).	Yes	Suitable habitat present.	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
Athene cunicularia	burrowing owl	None	SCE,SSC	Covered	Preferred habitat is generally typified by short, sparse vegetation with few shrubs, level to gentle topography and well-drained soils. Grassland, shrub steppe, and desert are naturally occurring habitat types used by the species. In addition, burrowing owls may occur in some agricultural areas, ruderal grassy fields, vacant lots and pastures if the vegetation structure is suitable and there are useable burrows and foraging habitat in proximity (CDFW 2012).	Yes	Suitable habitat present. Minimal suitable burrows in BSA. Many occurrences in region.	CDFW. 2012. Staff Report on Burrowing Owl Mitigation. State of California Natural Resources Agency. March 7, 2012.
Buteo swainsoni	Swainson's hawk	None	ST	Covered	Nests in oak savanna and cottonwood riparian areas adjacent to foraging habitat of grasslands, agricultural fields, and pastures where they often follow farm equipment to gather killed and maimed rodents. Increasingly also nests in sparse stands of gum trees (Eucalyptus spp.) and Australian pines (Casuarina equisetifolia) and often forage along roadsides and grassy highway medians. Breeding resident in the Central Valley, Klamath Basin, Northeastern Plateau, and in juniper-sagebrush flats of Lassen County. Limited breeding reported from Lanfair Valley, Owens Valley, Fish Lake Valley, and Antelope Valley. Winters primarily in Argentina, with most birds absent from California October through February, though a few overwinter in the Sacramento-San Joaquin River Delta. Prolific migrant through southern California in spring and fall, with large mixed-age groups of birds frequently observed kettling high overhead on thermals or foraging together on freshly cut agricultural fields (CWHR Program Staff 2006). Regulatory buffer of 1,320 feet (¼ mile) from active nests. Buffer should be increased to 1/2 mile if nesting area is away from urban development (CDFW 1994)	Yes	Suitable habitat present.	CWHR Program Staff. 2006. "Swainson's Hawk," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1595&inline=1 CDFW. 1994. Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California. Accessed February, 2022 https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83992&inline
Chaetura vauxi	Vaux's swift	None	SSC		Nests in cavities in a variety of trees and less frequently in artificial structures such as smokestacks. Shows an affinity for old-growth coast redwood (Sequoia sempervirens) and Douglas fir (Pseudotsuga menziesii) forests with nest sites in large hollow trees and snags, especially tall, burnt-out stubs (Shuford and Gardali 2008).	No	Outside the breeding distribution and potential to occur would be limited to occasional foraging of migrant individuals.	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
Charadrius montanus	mountain plover	None	SSC		Strongly associated with short-grass prairie habitats, or their equivalents, that are flat and nearly devoid of vegetation. Have been observed wintering in alkali flats, recently burned fields, and grasslands heavily grazed by domestic livestock or fossorial mammals. Winters in California only, no nesting (Shuford and Gardali 2008).	No	May overwinter, but no nesting.	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
Charadrius nivosus nivosus	western snowy plover	FT	SSC		Coastal populations nest on sandy or gravelly dune-backed beaches, sand spits, and on estuarine salt pans and lagoons (USFWS 2005). Inland populations nest along barren to sparsely vegetated flats and along shores of alkaline and saline lakes, reservoirs, ponds, braided river channels, agricultural wastewater ponds, and salt evaporation ponds (Shuford and Gardali 2008). Inland nesting occurs at Salton Sea, Mono Lake, and isolated sites on the shores of alkali lakes in northeastern California, the Central Valley, and southeastern deserts (CWHR Program Staff 2008).	No	Suitable habitat not present.	USFWS. 2005. Designation of Critical Habitat for the Pacific Coast Population of the Western Snowy Plover (Charadrius alexandrinus nivosus). Federal Register Vol. 70 (188): 56969-57018 | Shuford, W.D. and Gardali, T., editors. 2008. California Bird Species of Special Concern | CWHR Program Staff. 2008. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA
Circus hudsonius	northern harrier	None	SSC		Nests on the ground in patches of dense, tall vegetation in undisturbed areas. Breed and forage in a variety of open habitats such as marshes, wet meadows, weedy borders of lakes, rivers and streams, grasslands, pastures, croplands, sagebrush flats, and desert sinks (Shuford and Gardali 2008).	Yes	Suitable habitat present.	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
Elanus leucurus	white-tailed kite	None	FP		Fairly common resident of the Central Valley, coast, and Coast Range Mountains. Nests in oak savanna, oak and willow riparian, and other open areas with scattered trees near foraging habitat. Forages in open grasslands, meadows, farmlands, and emergent wetlands. Often seen hover foraging over roadsides or grassy highway medians (CWHR Program Staff 2005).	Yes	Suitable habitat present.	CWHR Program Staff. 2005. "White-tailed Kite," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1659&inline=1
Geothlypis trichas sinuosa	San Francisco common yellowthroat	None	SSC		Dwells only in the San Francisco Bay Area. Primarily found in brackish and fresh marshes, but also occupies salt marsh and riparian woodland habitat. (Shuford and Gardali 2008).	No	Outside species range (Shuford and Gardali 2008).	Shuford, W.D. and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
Haliaeetus leucocephalus	bald eagle	BGEPA	SE, FP		Permanent resident in the highest Coast Range mountains, across the Cascade Range, and down the Sierra Nevada to the eastern Transverse Ranges of San Bernardino and Riverside Counties. Uncommon migrant and winter visitor to lowland rivers, lakes, and reservoirs. Nests in large, old-growth, or dominant live trees with open branchwork, especially ponderosa pine (Pinus ponderosa). Requires large bodies of water or rivers with abundant fish, and adjacent snags (CWHR Program Staff 1999).	No	Suitable habitat not present. Reservoir does not provide quality foraging habitat given absence of fish. Nearest known nest at Lake Del Valle, south of Livermore (CDFW 2024a).	CWHR Program Staff. 1999. "Bald Eagle," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1661&inline=1
Icteria virens	yellow-breasted chat	None	SSC		Nests in early-successional riparian habitats with a well-developed shrub layer and an open canopy. Restricted to narrow borders of streams, creeks, sloughs, and rivers. Often nest in dense thickets of blackberry (Rubus spp.) and willow (Salix spp.) (Shuford and Gardali 2008).	Yes	Suitable habitat present.	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
Lanius ludovicianus	loggerhead shrike	None	SSC		Shrublands and open woodlands with a fair amount of grass cover and areas of bare ground. Requires tall shrubs or trees, fences, or power lines for hunting perches and territorial advertisement. Also requires open areas of short grasses, forbs, or bare ground for hunting, large shrubs or trees for nest placement, and thorny vegetation or barbed wire fences for impaling prey. Ranges across most of the state, but absent from the highest mountains and the northwest forests and coast (Shuford and Gardali 2008).	Yes	Suitable habitat present.	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

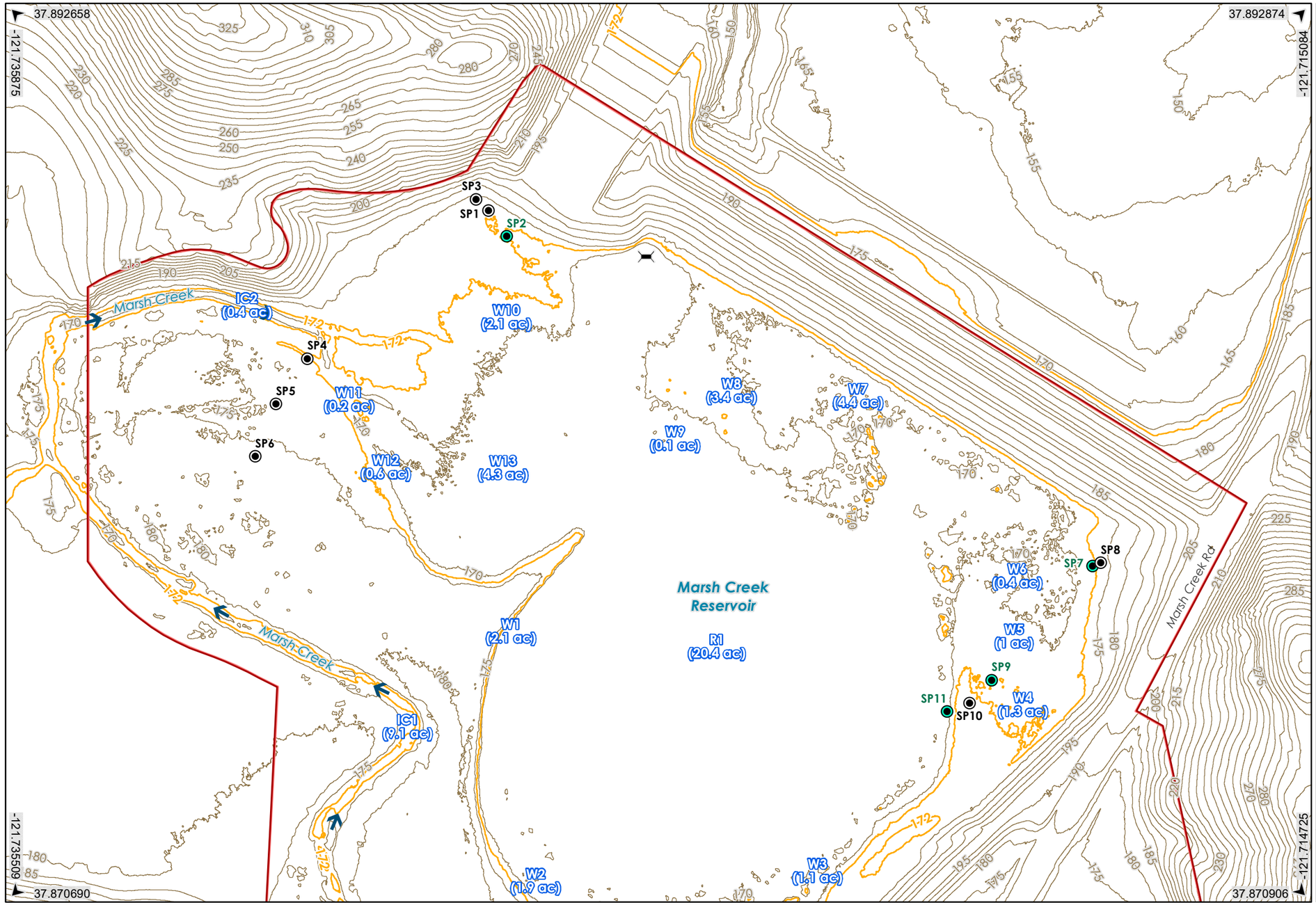
Scientific Name	Common Name	Federal	State	East Contra Costa County HCP	Habitat Characteristics	Impacts to be Analyzed	Rationale	Citation
Laterallus jamaicensis coturniculus	California black rail	None	ST, FP		Saline, brackish, and fresh emergent wetlands. Scarce, but true abundance difficult to determine due to small size and extremely secretive nature. Known to nest at scattered locations in the San Francisco Bay Area and Delta region, Point Reyes National Seashore, San Luis Obispo and Orange Counties, as well as the Imperial and Lower Colorado River Valleys. Appears intermittently and sparingly at a few locations in the Sacramento Valley (CWHR Program Staff 1999).	No	Species distribution within the region is limited to the Bay edge and tidal waterways and that no suitable habitat is present on the site (CDFW 2024a).	CWHR Program Staff. 1999. "Black Rail," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1711&inline=1
Melospiza melodia	song sparrow (Modesto population)	None	SSC		Often found in emergent freshwater marshes dominated by bulrushes (Scirpus spp.), cattails (Typha spp.), and willow (Salix spp.). Also nests in riparian forests of valley oak (Quercus lobata) with a sufficient understory of blackberry (Rubus spp.), along vegetated irrigation canals and levees, and in recently planted valley oak restoration sites. Found throughout the Sacramento Valley, from the delta north to Chico (Shuford and Gardali 2008).	No	Species distribution limited to lowland marshes Central Valley lowlands.	Shuford, W.D. and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
Melospiza melodia maxillaris	Suisun song sparrow	None	SSC		Confined to tidal salt and brackish marshes fringing Carquinez Strait and Suisun Bay east to Antioch and the confluence of the San Joaquin and Sacramento Rivers (Shuford and Gardali 2008).	No	Suitable habitat not present.	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
Pelecanus erythrorhynchos	American white pelican	None	SSC		In California, nests almost exclusively in large lakes in the Klamath Basin region. On migration and over winter, occurs across much of the state in open wetlands and sheltered bays and lagoons. Nests on ground on earthen, sandy, and rocky islands or rarely on peninsulas or floating tule mat islands. Nests may be in the open in the sand or interspersed with or adjacent to tall weeds and open, low-stature shrubs. Roosts along water edges, beaches, sandbars, or old drift wood (Shuford and Gardali 2008).	No	Suitable nesting habitat not present.	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
Riparia riparia	bank swallow	None	ST		A colonial nester in riparian and lacustrine bluffs or cliffs with fine-textured or sandy soils into which the nest cavities are dug. Also nests in earthen banks as well as sand and gravel pits. Declined drastically in the state over the 20th Century due to loss of riparian habitat and stabilization of natural banks. Currently most numerous in the Sacramento Valley along the Sacramento, Feather, and American Rivers, and Cache Creek in western Yolo County. Scarce and very local on the central coast. Occurs elsewhere in the state as an uncommon to rare migrant (CWHR Program Staff 1999).	No	Project site is outside the breeding distribution and potential to occur would be limited to occasional foraging of migrant individuals.	CWHR Program Staff. 1999. "Bank Swallow," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1981&inline=1
Setophaga petechia	yellow warbler	None	SSC		Usually found in riparian deciduous habitats in summer: cottonwoods (Populus ssp.), willows (Salix ssp.), alders (Alnus ssp.), and other small trees and shrubs typical of low, open-canopy riparian woodland. Also breeds in montane shrubbery in open coniferous forests (CWHR Program Staff 2005).	Yes	Suitable habitat present.	CWHR Program Staff. 2005. "Yellow Warbler," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2109&inline=1
Sternula antillarum browni	California least tern	FE	SE, FP		Breeds on the coast from San Francisco Bay south, and rarely up through the Delta to Sacramento County and at the Salton Sea. Nests and roosts in colonies on fine-grain sandy or pebbly beaches, or in smaller numbers on pebbly levees at water treatment plants or evaporation ponds. Forages over near shore ocean waters and in shallow estuaries and lagoons (USFWS 2006).	No	Suitable habitat not present.	USFWS. 2006. California Least Tern 5-Year Review: Summary and Evaluation. USFWS; Carlsbad, CA.
Xanthocephalus xanthocephalus	yellow-headed blackbird	None	SSC		Nests in fresh marshes with tall, emergent vegetation such as bulrushes (Schoenoplectus ssp.) and cattails (Typha ssp.) adjacent to deep water (Shuford and Gardali 2008).	Yes	Suitable habitat present.	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
Mammals								
Antrozous pallidus	pallid bat	None	SSC		Ranges across nearly all of California except for high elevation portions of the Sierra Nevada Mountains and Del Norte, western Siskiyou, Humboldt, and northern Mendocino Counties. Generally found in a wide variety of habitats but with some preference for drier areas. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings (Harris et al. 1990).	Yes	Suitable habitat present.	Harris, J., Alley, D., Duke, R. 1990. "Pallid Bat," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2349&inline=1
Corynorhinus townsendii	Townsend's big-eared bat	None	SSC	Covered	Townsend's big-eared bats occur in a variety of habitats throughout California, but they are most commonly associated with desert scrub, mixed conifer forest, and pinon-juniper or pine forest habitat. Within these communities, they are specifically associated with limestone caves, mines, lava tubes, and buildings (Jones and Stokes 2006).	Yes	Suitable habitat present.	Jones & Stokes. 2006. East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan, Vols 1 & 2. October 2006.
Lasiurus blossevillii	western red bat	None	SSC		Ranges across the Central Valley, as well as the coast and Coast Range mountains from Mendocino County south, and east across the Los Angeles area into the Inland Empire region. Occurs in most habitats except desert and alpine areas. Roosts in trees, sometimes shrubs, and typically at the margins of habitats (Alley et al. 1990).	Yes	Suitable habitat present.	Alley, D., Harris, J., Duke, R. 1990. "Western Red Bat," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2339&inline=1
Neotoma fuscipes annectens	San Francisco dusky-footed woodrat	None	SSC		Found throughout the San Francisco Bay area in grasslands, scrub and wooded areas with evergreen / live oaks (Quercus spp.) and other thick-leaved trees and shrubs. Houses are typically placed on the ground, against or straddling a log or exposed roots of a standing tree, and are often located in dense brush. Nests are also placed in the crotches and cavities of trees and in hollow logs. Sometimes arboreal nests are constructed but this behavior seems to be more common in habitat with evergreen / live oak trees (Kelly 1990). Largely restricted to Santa Cruz Mountains and a few areas in greater San Francisco Bay Area. Found in oak woodland, chaparral, conifer, hardwood, and riparian habitats (UC Santa Cruz Campus Natural Reserve n.d.)	No	Outside species range.	Kelly, P. A. 1990. Population ecology and social organization of dusky-footed woodrats, Neotoma fuscipes . Ph.D. dissertation, Univ. of California, Berkeley, 191 pp. UC Santa Cruz Campus Natural Reserve. San Francisco Dusky-footed Woodrate. Rui Chen.
Reithrodontomys raviventris	salt-marsh harvest mouse	FE	SE, FP		Salt and brackish marshes with dense stands of pickleweed (Salicornia pacifica) adjacent to upland, salt-tolerant vegetation in the San Francisco, San Pablo, and Suisun Bay areas (USFWS 2010).	No	Suitable habitat not present.	USFWS. 2010. Salt marsh harvest mouse (Reithrodontomys raviventris) 5-Year Review: Summary and Evaluation. USFWS; Sacramento CA.
Taxidea taxus	American badger	None	SSC		Ranges across nearly all of California except northernmost Humboldt and Del Norte Counties. Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils (Ahlborn and White 1990).	Yes	Suitable habitat present. No dens observed during surveys.	Ahlborn, G., White, M. 1990. "American Badger," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2597&inline=1
Vulpes macrotis mutica	San Joaquin kit fox	FE	ST	Covered	The subspecies historically ranged in alkali scrub/shrub and arid grasslands throughout the level terrain of the San Joaquin Valley floor from southern Kern County north to Tracy in San Joaquin County, and up into more gradual slopes of the surrounding foothills and adjoining valleys of the interior Coast Range. Occurs in desert-like habitats characterized by sparse or absent shrub cover, sparse ground cover, and short vegetative structure. Prefers areas with open, level, sandy ground (USFWS 2010). Few recent occurrences in Contra Costa COunty (USFWS 2020).	Yes	Suitable habitat present. No dens observed during surveys.	USFWS. 2010. San Joaquin Kit Fox (Vulpes macrotis mutica) 5-Year Review: Summary and Evaluation. USFWS; Sacramento, CA. USFWS. 2020. Species Status Assessment Report for the San Joaquin kit fox (Vulpes macrotis mutica), Version 1.0. Sacramento Fish and Wildlife Office. August 2020.

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; DPS: Distinct Population Segment

Species Status Legend:

Federal (USFWS)	*State (CDFW)*
BGEPA Bald and Golden Eagle Protection Act	SE Endangered
FE Endangered	ST Threatened
FT Threatened	SCE Candidate Endangered
FCE Candidate Endangered	SCT Candidate Threatened
FCT Candidate Threatened	SCD Candidate for delisting
FCD Candidate for delisting	FP Fully Protected
	SSC Species of Special Concern

Appendix B.3 Aquatic Resources Delineation Map



Aquatic Resources Delineation
(Tile 1 of 4)

- Reservoir Outlet
- Upland Sample Point
- Wetland Sample Point
- Elevation Contour (5 ft)
- 172-ft Elevation Contour
- Water Flow
- Aquatic Resources Survey Area

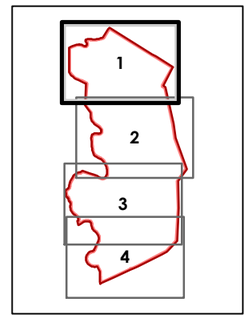
Aquatic Resources

- Ephemeral Channel (< 0.1 acre; 281 LF)
- Forested Wetland (9.5 acres)
- Fresh Emergent Wetland (5.7 acres)
- Intermittent Channel (9.5 acres; 8,960 LF)
- Reservoir (20.4 acres)
- Scrub Wetland (6.2 acres)
- Seasonal Wetland (1.6 acres)

N

0 125 250 500
Feet

Coordinate System: NAD 1983 State Plane, California Zone III
Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: NAVD88, U.S. Feet



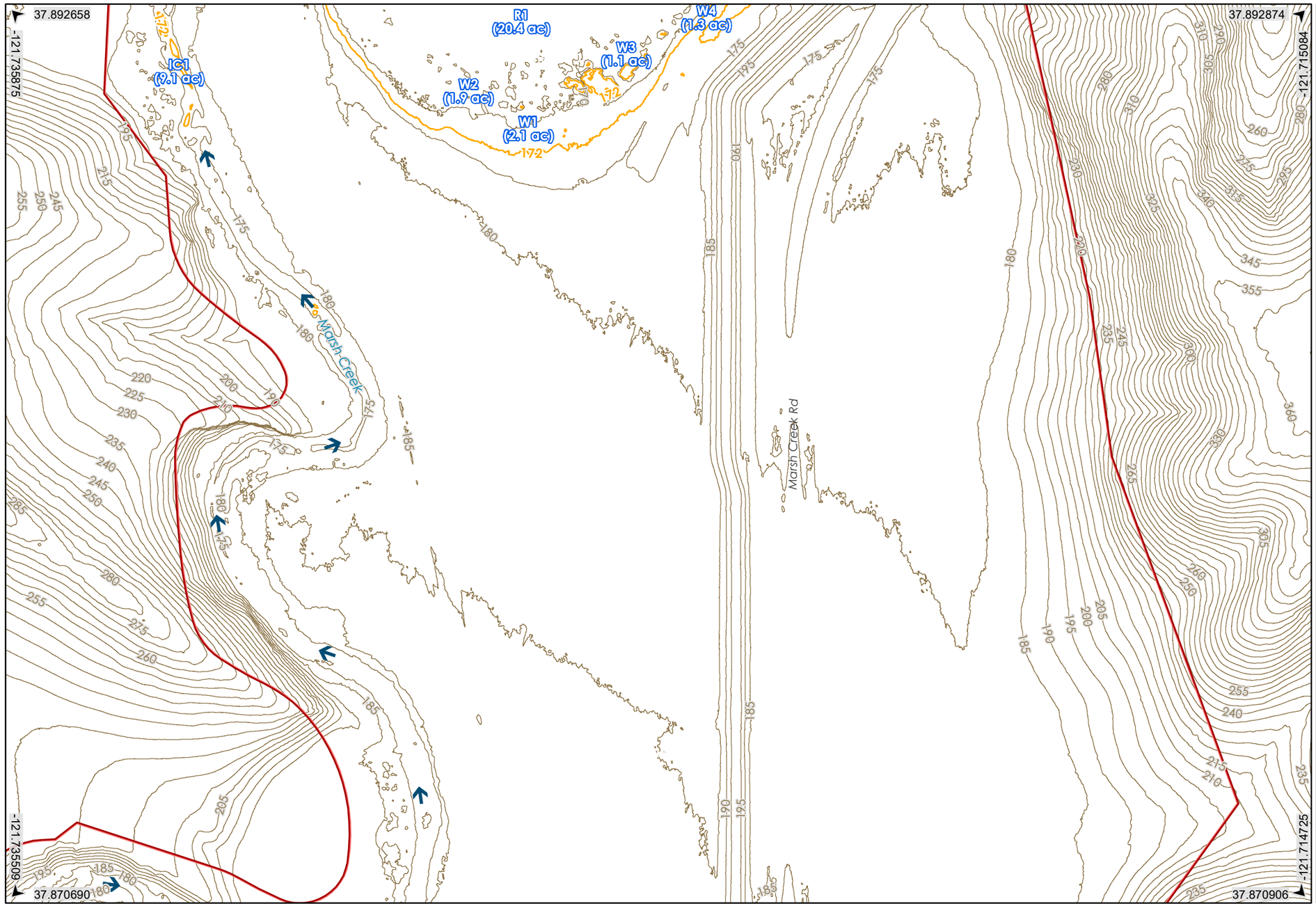
DELINEATED BY:
Leslie Parker PWS (#3244) and Maggie Woodworth
September 11 and 12, 2023

Marsh Creek Reservoir Restoration
and Total Mercury Reduction Project

Contra Costa County Flood Control
and Water Conservation District

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Figure Source: GEI Consultants, Inc. 2023.



Aquatic Resources Delineation
(Tile 2 of 4)

- Reservoir Outlet
- Upland Sample Point
- Wetland Sample Point
- Elevation Contour (5 ft)
- 172-ft Elevation Contour
- Water Flow
- Aquatic Resources Survey Area

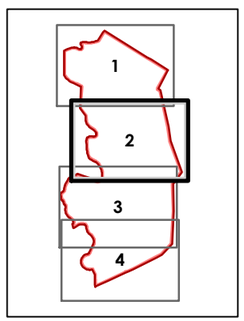
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N

0 125 250 500
Feet

Coordinate System: NAD 1983 State Plane, California Zone III
Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: NAVD88, U.S. Feet



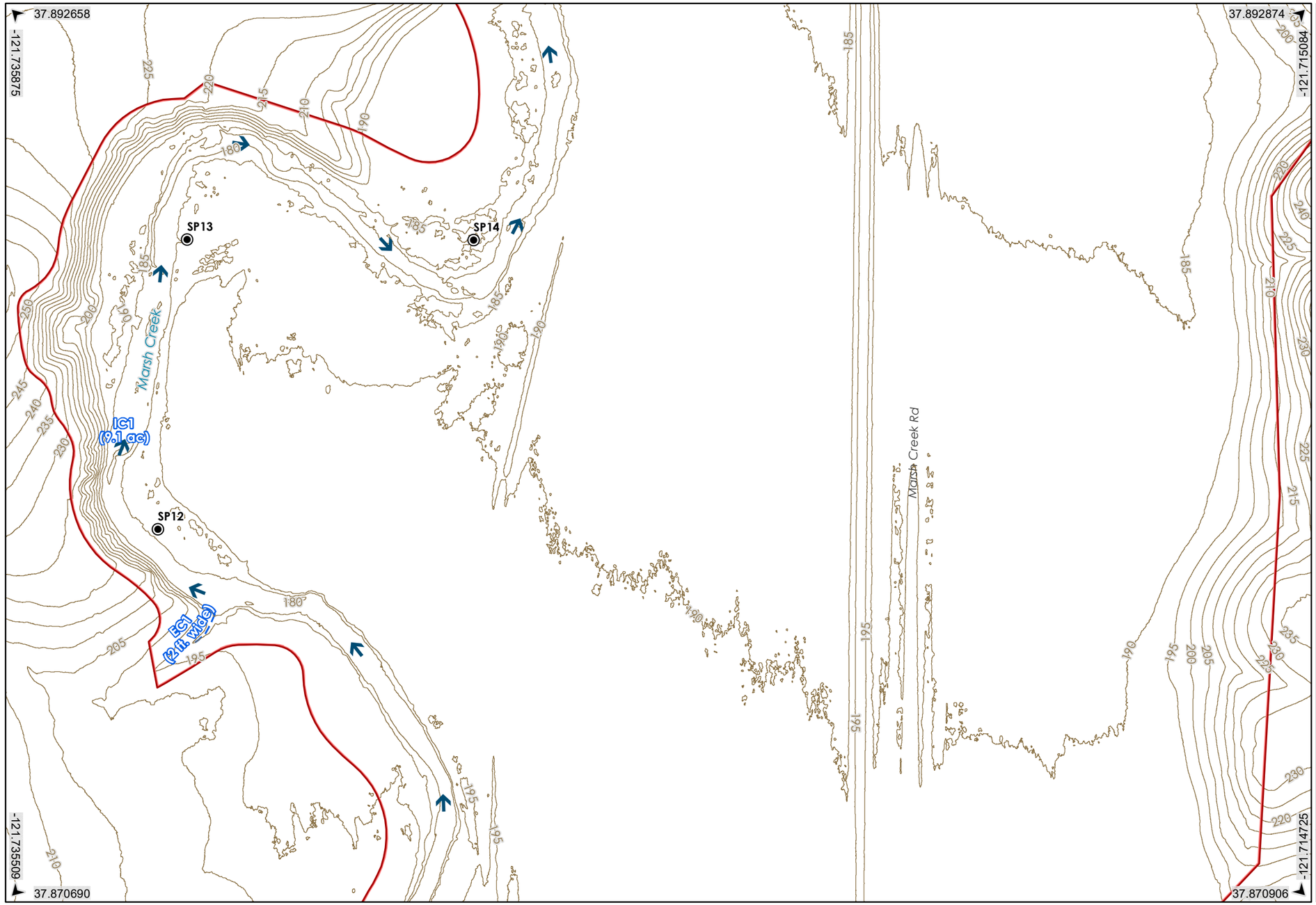
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Figure Source: GEI Consultants, Inc. 2023.



Aquatic Resources Delineation
(Tile 3 of 4)

- Reservoir Outlet
- Upland Sample Point
- Wetland Sample Point
- Elevation Contour (5 ft)
- 172-ft Elevation Contour
- Water Flow
- Aquatic Resources Survey Area

Aquatic Resources

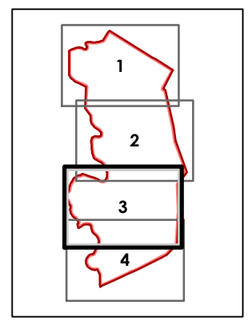
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- Reservoir (20.4 acres)
- Scrub Wetland (6.2 acres)
- Seasonal Wetland (1.6 acres)

N

0 125 250 500

Feet

Coordinate System: NAD 1983 State Plane, California Zone III
Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: NAVD88, U.S. Feet



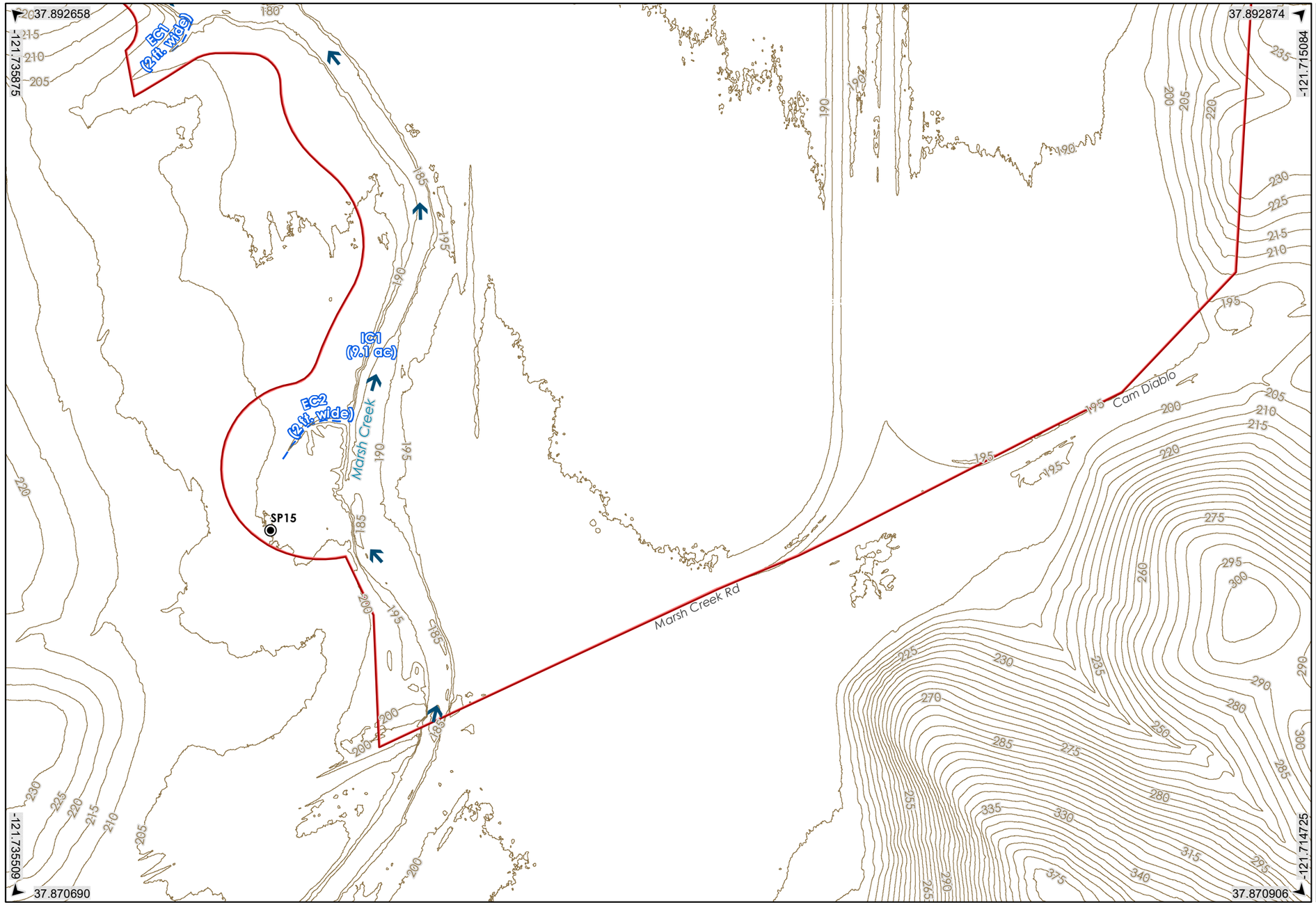
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Figure Source: GEI Consultants, Inc. 2023.



Aquatic Resources Delineation
(Tile 4 of 4)

- Reservoir Outlet
- Upland Sample Point
- Wetland Sample Point
- Elevation Contour (5 ft)
- 172-ft Elevation Contour
- Water Flow
- Aquatic Resources Survey Area

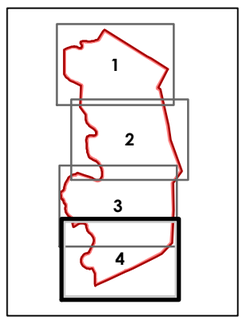
Aquatic Resources

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- Fresh Emergent Wetland (5.7 acres)
- Intermittent Channel (9.5 acres; 8,960 LF)
- Reservoir (20.4 acres)
- Scrub Wetland (6.2 acres)
- Seasonal Wetland (1.6 acres)

N

0 125 250 500
Feet

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Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: NAVD88, U.S. Feet



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Figure Source: GEI Consultants, Inc. 2023.