

Public Review Draft

# INFILTRATION GALLERY DEMONSTRATION PROJECT

## Initial Study/Mitigated Negative Declaration

Prepared for  
South Valley Water Resources Authority

April 2025





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South Valley Water Resources Authority

April 2025

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# Acronyms and Other Abbreviations

| <b>Abbreviation</b> | <b>Definition</b>                                                                  |
|---------------------|------------------------------------------------------------------------------------|
| AEP                 | Association of Environmental Professionals                                         |
| ARIS                | Adaptive Resolution Imaging Sonar                                                  |
| BAAQMD              | Bay Area Air Quality Management District                                           |
| BC3                 | Business Council on Climate Change                                                 |
| BMP                 | best management practice                                                           |
| BMP                 | addition, the best management practices                                            |
| CAAQS               | hour O3 California Ambient Air Quality Standards                                   |
| CAP                 | Costa County's Climate Action Plan                                                 |
| CARB                | California Air Resources Board                                                     |
| CCWD                | Contra Costa Water District                                                        |
| CDFW                | California Department of Fish and Wildlife                                         |
| CEC                 | California Energy Commission                                                       |
| CNDDDB              | California Department of Fish and Wildlife's California Natural Diversity Database |
| CNPS                | California Native Plant Society                                                    |
| CO                  | carbon monoxide                                                                    |
| CRPR                | California Rare Plant Rank                                                         |
| dB                  | decibels                                                                           |
| dBA                 | A-weighted decibels                                                                |
| DOC                 | California Department of Conservation                                              |
| DPM                 | diesel particulate matter                                                          |
| DTSC                | California Department of Toxic Substances Control                                  |
| EFH                 | Essential Fish Habitat                                                             |
| EPA                 | U.S. Environmental Protection Agency                                               |
| FEMA                | Federal Emergency Management Agency                                                |
| FESA                | Federal Endangered Species Act                                                     |
| FIRM                | floodplain zones on Flood Insurance Rate Maps                                      |
| FMP                 | federal fisheries management plans                                                 |
| HRA                 | health risk assessments                                                            |
| MCE                 | Marin Clean Energy                                                                 |
| NAAQS               | National Ambient Air Quality Standards                                             |
| NAHC                | California Native American Heritage Commission                                     |
| NCI                 | National Cancer Institute                                                          |

| <b>Abbreviation</b> | <b>Definition</b>                                                  |
|---------------------|--------------------------------------------------------------------|
| NMFS                | National Marine Fisheries Service                                  |
| NO <sub>2</sub>     | nitrogen dioxide                                                   |
| NO <sub>x</sub>     | oxides of nitrogen                                                 |
| NPDES               | National Pollutant Discharge Elimination System                    |
| NWIC                | Northwest Information Center                                       |
| OEHHA               | Office of Environmental Health Hazard Assessment                   |
| OWTS                | on-site wastewater treatment systems                               |
| PPV                 | peak particle velocity                                             |
| RMS                 | root mean square                                                   |
| ROG                 | reactive organic gases                                             |
| SFBAAB              | San Francisco Bay Area Air Basin                                   |
| SLF                 | California Native American Heritage Commission's Sacred Lands File |
| SO <sub>2</sub>     | sulfur dioxide                                                     |
| SVWRA               | South Valley Water Resources Authority                             |
| SWPPP               | storm water pollution prevention plan                              |
| TAC                 | toxic air contaminants                                             |
| TTHM                | trihalomethane                                                     |
| USACE               | U.S. Army Corps of Engineers                                       |
| USFWS               | U.S. Fish and Wildlife Service                                     |
| USFWS               | U.S. Fish and Wildlife                                             |
| USGS                | U.S. Geological Survey                                             |
| VdB                 | vibration decibels                                                 |
| VMT                 | vehicle miles traveled                                             |
| WGCEP               | Working Group on California Earthquake Probabilities               |



# CHAPTER 1

---

## Project Description

### 1.1 Introduction

Existing water project diversions in the south Sacramento-San Joaquin River Delta (Delta) salvage fish before they reach project pumps. Fish mortality can occur in the capture, handling, transport and release of salvaged fish. Salvage operations are also not completely effective at preventing fish from reaching the pumps. Additionally, some fish are subject to predation prior to reaching the salvage facilities, particularly in Clifton Court Forebay. Some of the fish inhabiting the south Delta are listed under state and federal Endangered Species Acts. Therefore, there is a need to identify and test new methods for diverting water from the Delta that reduce harm to fish and the Delta ecosystem.

The purpose of the Infiltration Gallery Demonstration Project (Proposed Project) is to evaluate the biological and engineering performance of an alternative method to diverting water in an estuarine system such as the Delta that is less harmful to fishery resources. This demonstration project is small. The infiltration gallery is around 0.1 acres. It is expected to divert between 0.2 and 2.2 cfs depending on the tides and time of year. The water passing through the infiltration gallery will be returned to the Delta. The project operates at very low velocities. Fish will have the freedom to move between the project and adjoining Delta waters. Because of its small size, the biological, landscape disturbances and other effects, as detailed in this report, are expected to be minimal. In its simplest form, the Proposed Project's infiltration gallery concept is a classic subsurface collection system, akin to a slow gravel or sand filter, in which water would flow downward through an engineered "filter" media to an underdrain system of perforated pipes. As part of the project design, pumping rates will be set so that downward velocities are sufficiently slow to not affect fish behavior or survival. A subsurface diversion system of sufficient size to meet water project export needs would undoubtedly require the infiltration gallery to be large and would be expensive. Before evaluating, considering and investing in an endeavor of that magnitude, it is necessary to test the design on a small scale, examining both biological and engineering characteristics of the demonstration project system to ensure that the design is effective for the intended purposes and to learn from the system's performance and operations in order to potentially inform and improve upon future designs.

The South Valley Water Resources Authority (SVWRA) is a California public entity formed and existing pursuant to the Joint Exercise of Powers Act (Gov't Code § 6500, et seq.), will act as lead agency and carryout this proposed demonstration project.

### 1.2 Project Location

The Proposed Project would be located on a privately owned parcel in southeastern unincorporated Contra Costa County adjacent to Italian Slough and Clifton Court Road (**Figure 1**) on Assessor's Parcel

Number 002-230-002-4 (Project Site). The Project Site would be accessed from California State Route 4 (SR 4) and Clifton Court Road. The parcel is zoned Agricultural and currently used for grazing cattle. There are no above ground structures on the Project Site. There is a buried gas pipeline that lies to the west of the proposed construction area and would not be harmed by the demonstration project.

## 1.3 Project Objectives

The objective of the Proposed Project is to conduct studies and collect information to further evaluate and refine designs. Several operational objectives will be evaluated, including:

- assessment of optimal pipe spacing,
- monitoring of infiltration rates over time to determine how infiltration rates might diminish due to sediment and biological fouling, and whether such changes create any detectable changes in velocity uniformity near the media surface,
- assessment of the impact of infiltration gallery operation on approach velocities to the infiltration gallery,
- evaluation of infiltration gallery cleaning methods, if needed,
- periodic monitoring of vertical velocities across the infiltration gallery,

In addition to operational objectives, biological studies will be conducted to evaluate key uncertainties around effects to fish species, including:

- documentation of the relative predation risk of native fish species inhabiting the infiltration gallery compared to the adjacent Delta channel.
- assessment of alterations to local food availability through entrainment losses of zooplankton resulting from Proposed Project operations.

## 1.4 Project Description

The Proposed Project (**Figure 2**) would divert water from Italian Slough through an unscreened box culvert (**Figures 3 and 4**). Water diverted through the infiltration gallery will flow by gravity into a vault (a tank or sump). That is, there will be no suction on the perforated pipes. Hydraulic theory indicate that in this kind of system, flow into and through the pipes, will be controlled by the hydraulic head over the pipes so that if the pipes are at a uniform elevation, flow into the pipes will be uniformly distributed. Water will be pumped from the collection facility through a pipe and re-routed back into Italian Slough directly or through the adjacent wetland. No water consumption would occur as a result of the Proposed Project. At completion of the pilot testing, all equipment and infrastructure will be removed from the Project Site and the site revegetated and returned to agricultural grazing land.

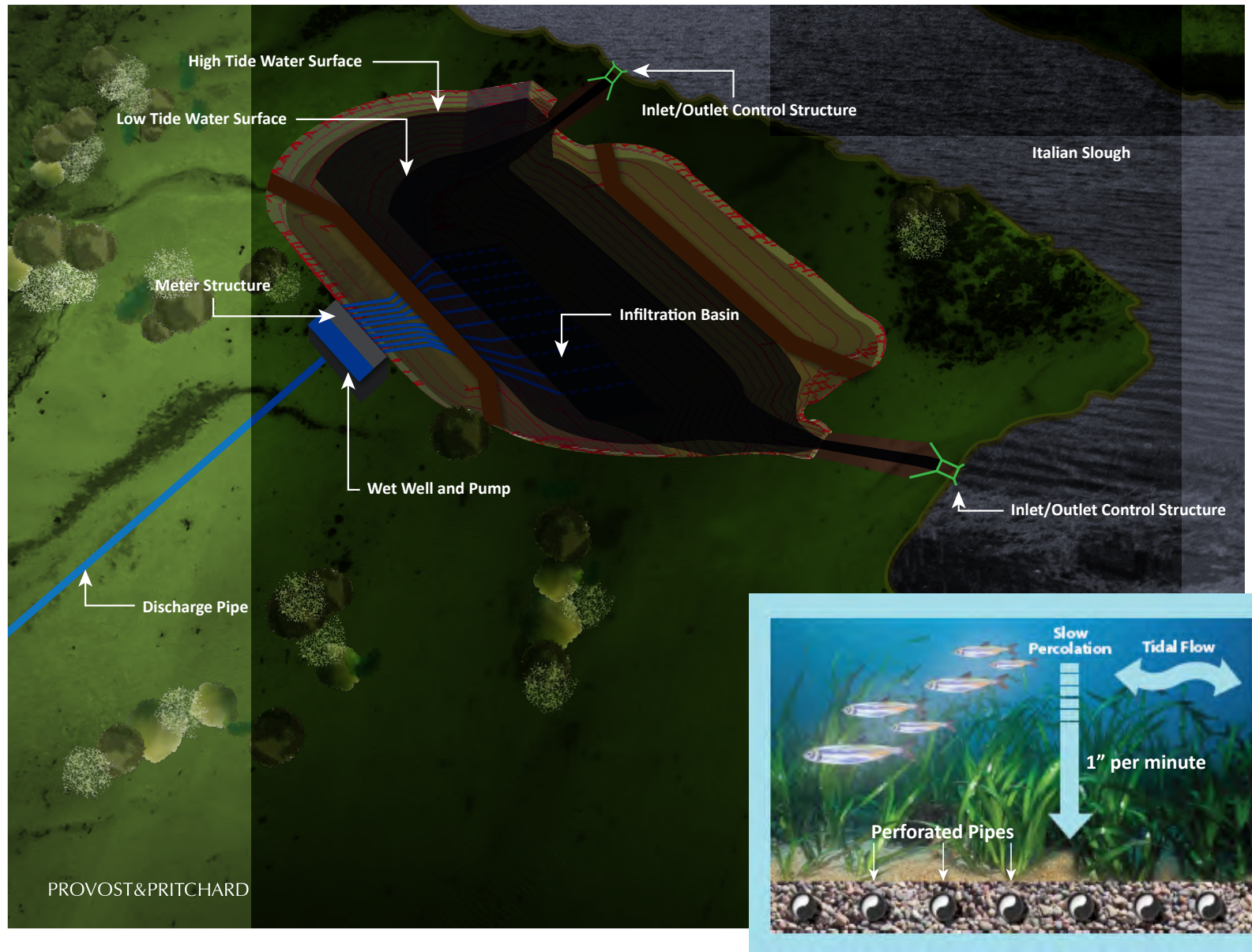
The footprint of the Proposed Project is approximately 2.5 acres. The temporary test facility will run for up to 36 months and the Project Site returned to pre-existing conditions following completion of the Proposed Project.



SOURCE: Provost & Pritchard

Infiltration Gallery Demonstration Project

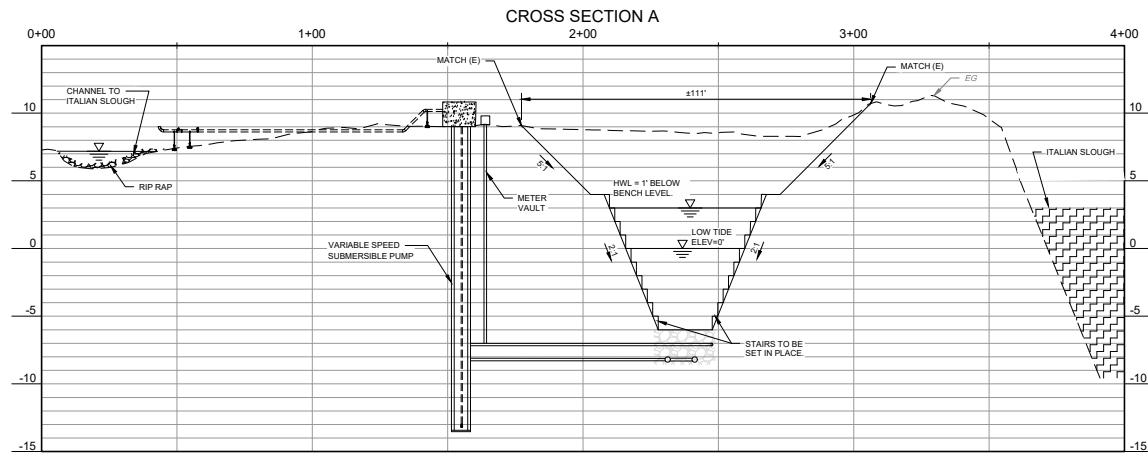
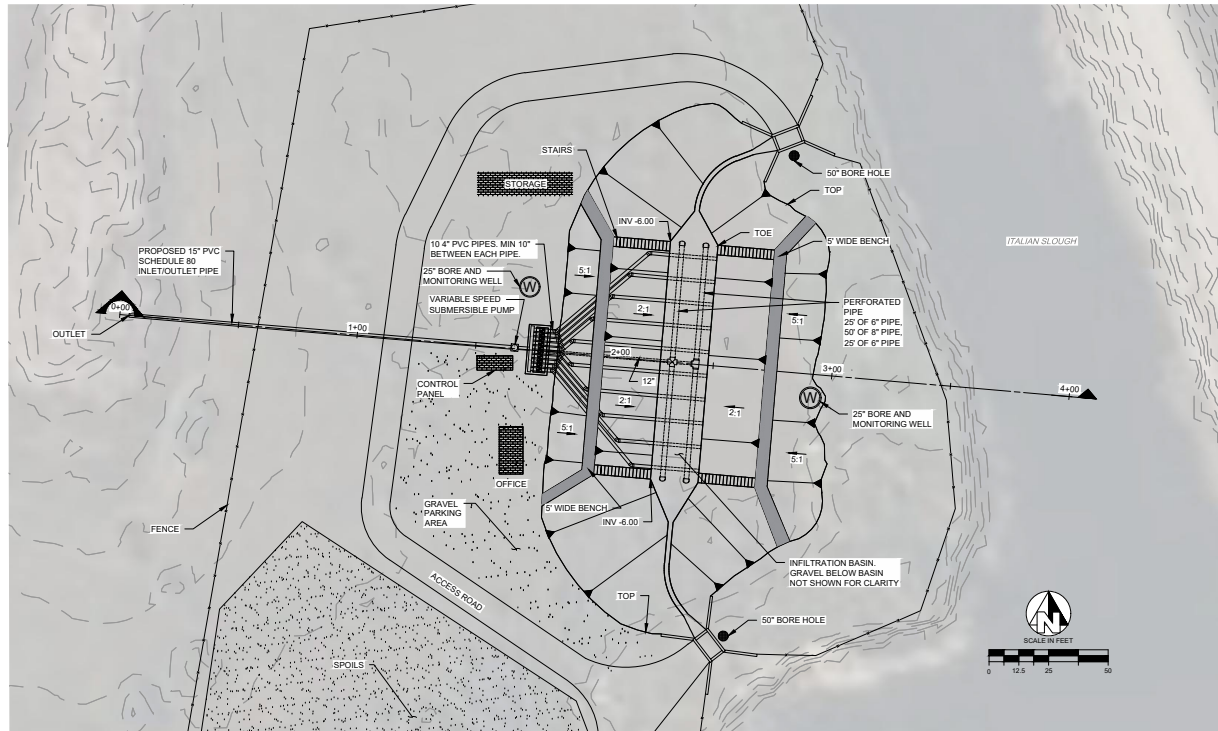
**Figure 1**  
Project Location



SOURCE: Provost & Pritchard

Infiltration Gallery Demonstration Project

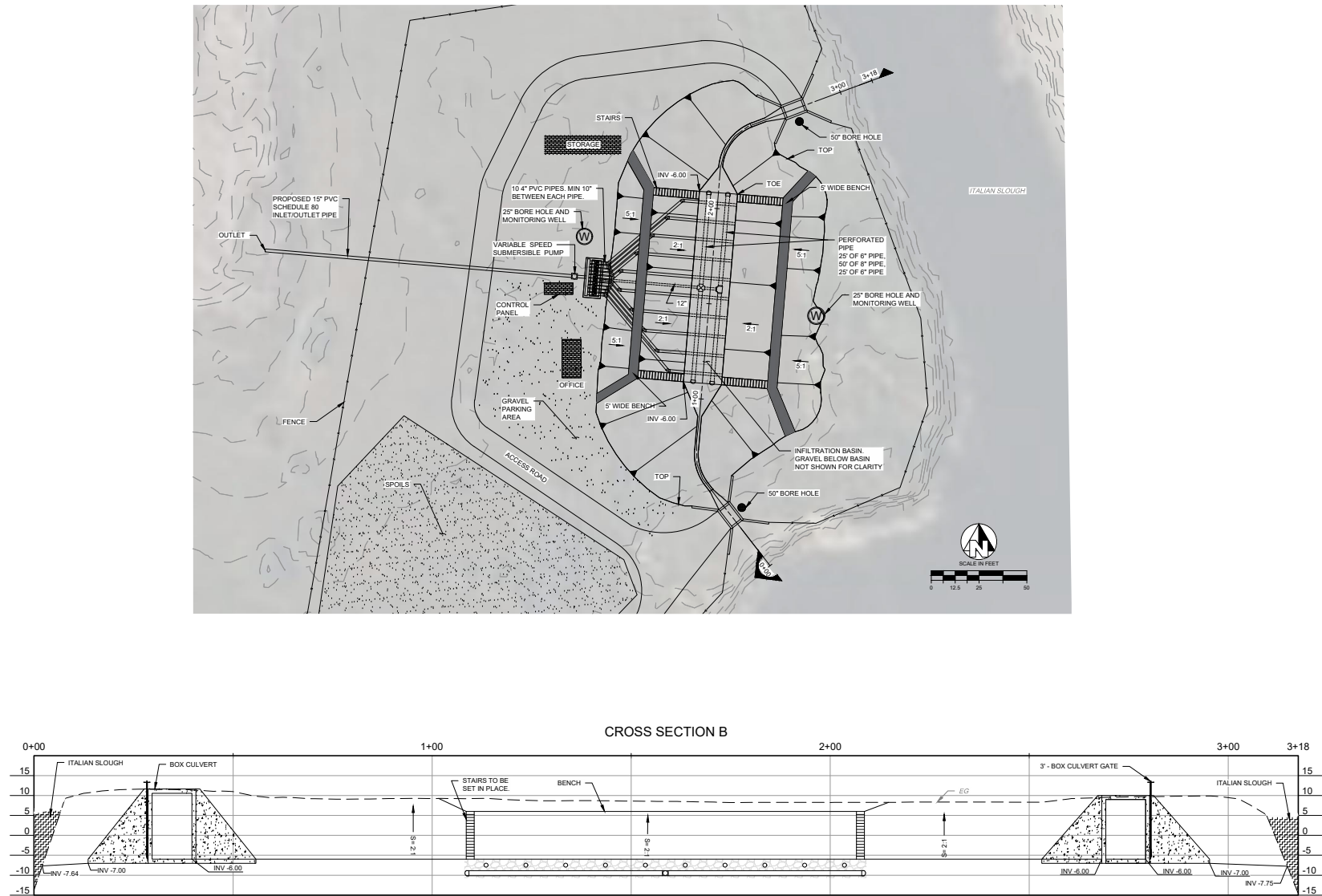
**Figure 2**  
Conceptual Project Layout



SOURCE: Provost & Pritchard

Infiltration Gallery Demonstration Project





SOURCE: Provost & Pritchard

Infiltration Gallery Demonstration Project

Features of the inlet/outlet facilities include:

- gates on the Italian Slough side,
- a structure to enable the attachment of a zooplankton net on the infiltration gallery side,
- flow meters,
- a roadway over the top of the box culvert to provide a crossing for light vehicles,
- box culverts that will be approximately 10 feet high, 4 feet wide and 15 feet deep, with the bottom 6 feet below the level of low tide and approximately least 5 feet above the bottom of Italian slough adjacent to the inlet/outlet facilities, and
- entrances and exits from the box culverts that will be flared at approximately 45 degrees to Italian Slough and to the delivery channels.

The Proposed Project would include an infiltration gallery (Figures 3 and 4) with the following features:

- channels leading to and from the infiltration gallery that are approximately two feet wide at the bottom and have 2:1 side slopes,
- dimensions of the infiltration gallery that are approximately 80 feet long by 20 feet wide,
- a slip-resistant walkway from a point above the high tide level to the infiltration gallery bottoms,
- up to 16 perforated pipes placed at intervals of approximately 5 feet, each with a control valve, that may vary in size from approximately 4 inches to 12 inches,
- a vault below grade providing access to the control valves,
- an infiltration gallery bottom (the top of the gravel) approximately 6 feet below the level of the low tide,
- gravel covering the pipes at a depth that may range between approximately 6 inches and 18 inches that will be sized to reduce clogging,
- optional smaller pipes that may be installed and used to convey pressurized air or water to flush the gravel through a series of pulses moving sequentially across the infiltration gallery,
- underneath the infiltration gallery a layer of compacted clay soils will be constructed to avoid groundwater from contaminating the produced water (materials to be determined),
- a small reservoir (tank or sump open to the atmosphere) that collects the water from the perforated pipes,
- a depression adjacent to the infiltration gallery to facilitate collection of fish during dewatering,
- a structure at the entrance to the reservoir to enable the attachment of a zooplankton net,
- a variable speed centrifugal pump with electric motors capable of pumping up to 6 cfs to remove water from the reservoir,
- standard pump operation anticipated flow rate of up to 2.2 cfs during the December to June period and potential operation at higher pumping rates during the July to November period to assess media performance,

- an electrical control panel (to be determined on electrical design),
- a pipeline from the pump to a nearby seasonal wetland contiguous with Italian Slough or directly or into Italian Slough, and
- flow meters in accordance to plan to be developed.

## 1.5 Project Construction

Proposed Project construction will result in disturbance of approximately 2.5 acres and the excavated earth will be stockpiled over 1 acre. A new power line will be constructed to deliver power to the Project. The sites for the infiltration gallery, channels, vault and reservoir will be excavated to 15 feet below grade and the earth redistributed over the property. This will be followed by the installation of the infiltration gallery, construction of the box culverts and other cement work. The pump and discharge pipeline will then be installed. Once the Proposed Project facilities are complete, the remaining earth plugs separating the Proposed Project from Italian Slough will be removed while the gates at the Box culvert remain closed to reduce sediment moving into the infiltration gallery. This approach will eliminate the need for coffer dams and any dewatering in Italian Slough.

Construction of the channels and ponds may require dewatering around perimeter consisting of a tile drain system approximately 10 feet below low tide. The anticipated amount of the tile drain is approximately 850 feet of 12-inch perforated drainpipe (sizes and depth to be determined from geotechnical analysis).

It is likely that a temporary storage and office building (approx. 400 square feet) will be constructed on-site or a transportable building will be delivered to the site. Approximately 1,200 feet of barbwire fencing will be installed for security purposes.

### 1.5.1 Construction Equipment

Construction would include the use of the following equipment:

- excavators
- drainpipe trencher/installer
- graders and dozers
- dump trucks
- loaders
- well drilling rig

### 1.5.2 Staging Areas

Construction equipment and materials staging area would be located on the Project Site near the area to be excavated. To avoid potential contamination of soil, surface water or groundwater, fuel will be stored off-site and delivered to the site for refueling. Refueling will occur either off-site or in containment facilities on-site. Gravel will be laid down on the Project Site near the exit to clean dirt off of vehicles tires before entering paved roadway.



### 1.5.3 Construction Schedule

Subject to the availability of funding and obtaining the necessary permitting, construction activities for the proposed project are anticipated to start approximately mid-2025 and would be completed in approximately 2 months once materials are received. Any construction involving access to or disturbance of Italian Slough will occur during the July 1 to October 31<sup>st</sup> time period to avoid impacts to listed fish species. At the end of the Proposed Project, the land will be revegetated and returned to its pre-Project condition.

## 1.6 Project Operations

Flows through the demonstration project are designed to oscillate with the tides with water moving into the demonstration project during incoming (flood) tides and moving from the demonstration project during the outgoing (ebb) tides. To achieve this, pumping rates will be adjusted as the tides change to ensure natural tidal flux through the Project Site. The change in elevation between low tide and high tide in the area of the demonstration project is 3 ft. That equates to 570 cubic yards within the demonstration project area. To fill or empty that space over a period of 6 hours (an ebb or flow tidal period) equates to 0.71 cubic feet per second (cfs). Therefore, to obtain positive outflow during an ebb tide period requires diversions through the infiltration gallery to be less than 0.7 cfs. Proposed operations during ebb flows is 0.5 cfs and during flood tides is 2.2 cfs. Velocities coming into the demonstration project through the box culverts, assuming a 4-foot width, will be 0.03 feet per second (fps) during flood tides, and velocities leaving the demonstration project during ebb tides will be 0.003 fps during ebb tides.

The infiltration gallery is designed to divert a maximum of 1000 gallons per minute (2.2 cubic feet per second). This maximum diversion rate equates to a drawdown of one inch (0.083 feet) per minute, equivalent to 0.0014 fps. Therefore, average vertical velocities will be 0.0014 fps during flood tides and 0.0003 fps during ebb tides.

## 1.7 Project Monitoring and Maintenance

Monitoring and maintenance of the Proposed Project would require regular visits. Water quality samples will be collected monthly at three sites: water entering the Proposed Project at the box culverts, water in the infiltration gallery at the catwalks and water leaving the infiltration gallery in the reservoir. Water will be continuously monitored (telemetered) for water flow rate, water temperature, turbidity, salinity, pH, dissolved oxygen.

It is anticipated that the Proposed Project will be dewatered once annually during July 1 through October 31 to examine media fouling and to assess fish assemblages (see Mitigation Measure BIO-7 for details on fish rescue). Vegetation growth on the Project Site east of the new fence will be managed by mowing or grazing. No chemicals will be used with the Proposed Project other than fuel for equipment. Existing cattle grazing operations will be used to maintain vegetation on the west side of the new fence. Boats will likely be required for some of the performance measurements in the ponds, particularly to assess water velocities over the infiltration gallery.

### 1.7.1 Access and Security

Access to the Project Site would be from Clifton Court Road. A temporary access road will be constructed from Clifton Court Road to the infiltration gallery.

The Project Site will be protected by a barbwire fence to keep neighboring cattle from fouling the Project area. A new gate with a lock will be installed at the access point on Clifton Court Road. Security cameras will be installed as needed.

### 1.7.2 Biological Considerations

Botanical and wildlife surveys of the Project Site have been performed to identify potential adverse effects of project construction and operations of the Proposed Project.

In-water construction will occur during July 1 to October 31 to avoid impacts to listed fish species. In addition, any dewatering of the Project Site for maintenance purposes will also occur in the July to October period (see Mitigation Measure BIO-7 for details on fish rescue). The Proposed Project will be designed to facilitate fish rescue and relocation during dewatering. A low flow channel will drain to a collection point – a depression alongside the infiltration gallery. Dewatering will occur by closing the inlet/outlet facilities, and pumping water through the infiltration gallery until there is less than 3 feet of water in the infiltration gallery. Using a beach seine, biologists will herd fish to the collection point while the pumps continue to dewater the infiltration gallery. Once at the collection point fish will be collected using a beach seine or other standard fishery collection methods. Prior to dewatering, the SVWRA or its contractors shall develop a fish salvage and relocation plan and submit to NMFS, CDFW, and USFWS for approval.

### 1.7.3 Biological Studies

Key uncertainties around the effect of the Proposed Project on biological resources will be examined through a series of biological studies that will be implemented over the life of the project. Effects of Proposed Project operations on both predation and food availability may be examined during the juvenile salmonid emigration season (December through May). As part of obtaining permit approvals (e.g., FESA Section 7, CESA [Fish and Game Code Sections 2080.1, 2081], the SVWRA will consult with NMFS, USFWS, and CDFW to develop detailed study plans for biological studies at the demonstration project.

Studies may be conducted to examine relative predatory fish densities and relative predation risk at the demonstration project and in the adjacent Italian Slough habitat. Possible methods include Adaptive Resolution Imaging Sonar (ARIS) cameras deployed at each inlet/outlet to examine predatory fish numbers entering and exiting the demonstration project, or the application floating tethered-fish devices to examine predation risk of native fishes both in the demonstration project and in the adjacent Italian Slough habitat. In addition, zooplankton sampling could be completed during Proposed Project operations to determine whether or not exposure of zooplankton to Proposed Project operations results in a significant reduction in zooplankton abundance in the water column.

## 1.8 Responsible Agencies, Permits, and Approvals

**Table 1-1** summarizes the permits and/or approvals that may be required before construction of the Proposed Project.

**TABLE 1-1**  
**REGULATORY REQUIREMENTS, PERMITS, AND AUTHORIZATIONS FOR PROJECT FACILITIES**

| Jurisdiction     | Agency                                              | Type of Approval                                                                                                                                                                                                           |
|------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Federal Agencies | National Marine Fisheries                           | ESA Section 7 Consultation                                                                                                                                                                                                 |
|                  | U.S. Fish and Wildlife Service                      | ESA Section 7 Consultation                                                                                                                                                                                                 |
| State Agencies   | Central Valley Regional Water Quality Control Board | Clean Water Act Section 401 Water Quality Certification; NPDES General Permit for Stormwater Discharge Associated with Construction; General Order for Dewatering and Other Low Threat Discharges to Surface Waters Permit |
|                  | Cal/OSHA                                            | Construction or Excavation Permit                                                                                                                                                                                          |
|                  | California Department of Fish and Wildlife          | Lake and Streambed Alteration Permit, Incidental Take Permit                                                                                                                                                               |
| Local Agencies   | Contra Costa County                                 | Building Permit and Grading Permit                                                                                                                                                                                         |

NOTES: Cal/OSHA = California Division of Occupational Safety and Health; N/A = not applicable; NPDES = National Pollutant Discharge Elimination System

SOURCE: Data compiled by Environmental Science Associates in 2025

## 1.9 Resources Not Considered in Detail

### 1.9.1 Land Use and Planning

The Project Site is located in unincorporated Contra Costa County adjacent to Italian Slough and near Clifton Court Forebay. The Project Site is zoned agricultural and is currently used for grazing cattle. The Proposed Project is not located in a city or community and would be consistent with existing land uses, plans, policies, and regulations. At the end of the Proposed Project, the land will be revegetated and returned to its pre-Project condition. Therefore, no impacts related to land use and planning would occur.

### 1.9.2 Mineral Resources

The Proposed Project is located on a site zoned agricultural and is currently used for grazing cattle. The Proposed Project is not located within a designated mineral resource area and would not result in the loss of availability of a known mineral resource and would not affect a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts on mineral resources would occur.

### 1.9.3 Population and Housing

The Proposed Project would involve the construction and operation of an infiltration gallery, channels, vault and reservoir in order to evaluate the biological and engineering performance of an alternative approach to diverting water in an estuarine system. The Proposed Project would not include new homes. Construction would be short-term and would not require additional workers outside of the existing

workforce in the Project area. Operation would require minimal workers for periodic monitoring and maintenance and would not result in a large increase in outside workers. The Project Site is located on a parcel zoned for agriculture and would not displace any housing or people. Therefore, no impacts related to population and housing would occur.

### 1.9.4 Public Services

The Proposed Project would not result in the construction of any new facilities or population that would generate a need for new or physically altered government facilities. Therefore, demand for police and fire protection and for community amenities such as schools and parks would not change relative to existing conditions, and no impacts would occur.

### 1.9.5 Recreation

The Proposed Project would involve the construction and operation of an infiltration gallery, channels, vault and reservoir in order to evaluate the biological and engineering performance of an alternative approach to diverting water in an estuarine system. The Proposed Project would be a private facility and not open to the public. As such, the Proposed Project would not 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 Proposed Project would not require the construction or expansion of recreational facilities. Therefore, no impacts on recreation would occur.

# CHAPTER 2

---

## Environmental Checklist

### 2.1 Background

1. **Project Title:** Infiltration Gallery Demonstration Project
2. **Lead Agency Name and Address:** South Valley Water Resources Authority
3. **Contact Person and Phone Number:** Scott Hamilton
4. **Project Location:** Contra Costa County
5. **Project Sponsor's Name and Address:** South Valley Water Resources Authority  
7718 Davin Park Drive, Bakersfield, CA, 93308
6. **General Plan Designation(s):** Agricultural Lands
7. **Zoning:** Agricultural
8. **Description of Project:** (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)  
  
See Project Description
9. **Surrounding Land Uses and Setting.** (Briefly describe the project's surroundings.)  
  
The Project Site is in rural Contra Costa County. Surrounding land uses include grazing land and agricultural land. Industrial uses and a marina are also in the area.
10. **Other public agencies whose approval is required** (e.g., permits, financing approval, or participation agreement.)  
  
See Table 1-1
11. **Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?**

*Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.*

No

## 2.2 Environmental Factors Potentially Affected

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

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

### DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial study:

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

Signature Scott Hamilton

4/14/2025  
Date

Signature \_\_\_\_\_

Date \_\_\_\_\_

## 2.3 Environmental Checklist

### 2.3.1 Aesthetics

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

### Environmental Setting

Aesthetic or visual resources include the “scenic character” of a particular region and site. Scenic features can be either natural (e.g., vegetation and topography) or man-made (e.g., historic structures). Areas that are more sensitive to potential effects are usually readily observable, such as land found adjacent to major roadways and hilltops.

### Visual Environment

The Project Site is located in unincorporated Contra Costa County adjacent to Italian Slough and near Clifton Court Forebay. The Project Site is surrounded by rural agricultural land and a marina. The area is relatively flat. Contra Costa County has two officially designated State Scenic Highways: State Route 24 and Interstate 680 (Caltrans 2024). Both scenic routes are located over 20 miles to the east of the Project Site and on the far side of the Coast Range and the Project Site would not be visible from drivers along these Scenic Routes. The Contra Costa County General Plan identifies scenic ridges and prohibits development adjacent to them. The Project Site is not located near an identified scenic ridge and would not result in development adjacent to them.

### Discussion

- a) **No Impact.** No designated scenic vistas or notable geographic features have been identified near the Project Site in the Contra Costa County General Plan (Contra Costa County 2024). As a result, no impact on a scenic vista would occur.
- b) **Less than Significant.** A review of the current California Department of Transportation (Caltrans) Map of Designated Scenic Routes indicates two State Scenic Highways are within Contra Costa County (Caltrans 2024). The proposed Project would not be visible to travelers on State Route 24 and Interstate 680 and would not affect the scenic quality of the landscape or

intrude upon travelers' enjoyment of the view. The Proposed Project would be visible to people from Clifton Court Road; however, the Proposed Project would be similar visually to existing development of the rural agricultural area and would not have substantial height. This impact would be less than significant.

- c) **Less than Significant.** Construction of the Proposed Project would result in the removal of existing grazing land. Clearing, grading, excavation and scraping would occur to construct the Proposed Project. As discussed previously, the appearance of the Proposed Project would be utilitarian and match the appearance of the rural agricultural area. Although the Proposed Project would alter the existing visual conditions of the Project Site by adding the infiltration gallery, channels, vault and reservoir, the Proposed Project would be consistent with the area's agricultural nature, which includes agricultural lands, equipment and machinery. This impact would be less than significant.
- d) **Less than Significant.** Construction of the Proposed Project would occur during the daytime and would not require nighttime lighting. The Proposed Project would not include exterior lighting. The Proposed Project would include an infiltration gallery with water which could reflect sunlight; however, the infiltration gallery would not be easily visible from the surrounding area and is relatively small. Therefore, no impact related to new sources of light and glare would occur.

## References

California Department of Transportation (Caltrans). 2024. *California State Scenic Highway System Map*. Available: <https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aaca>. Accessed December 12, 2024.

Contra Costa County. 2024. Contra Costa County 2045 General Plan. Available: <https://www.contracosta.ca.gov/4732/General-Plan>. Accessed December 5, 2024.

## 2.3.2 Agriculture and Forestry Resources

| <i>Issues (and Supporting Information Sources):</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i>                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|-------------------------------------|
| <b>II. AGRICULTURE AND FORESTRY RESOURCES —</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                       |                                                           |                                     |                                     |
| In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project: |                                       |                                                           |                                     |                                     |
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |



| <i>Issues (and Supporting Information Sources):</i>                                                                                                                                                                                                                                        | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i>                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|-------------------------------------|
| c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| d) Result in the loss of forest land or conversion of forest land to non-forest use?                                                                                                                                                                                                       | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 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?                                                                               | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

## Environmental Setting

There are approximately 254,500 acres of agricultural land mapped by the State in Contra Costa County, most of it in the unincorporated area (Contra Costa County 2024).

The California Department of Conservation (DOC) administers the Farmland Mapping and Monitoring Program, California's statewide agricultural land inventory. Through this mapping effort, DOC classifies farmland under four categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. The Project Site is located on land classified as grazing land and not located on Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance (DOC 2024). There is no forest land in or adjacent to the Project Site. The Project Site is designated by the Contra Costa County General Plan as Agriculture.

The Williamson Act enables governments to enter into contracts with private landowners to restrict specific land parcels to agricultural or related open space use. The Project Site is not in a Williamson Act contract (DOC 2022).

## Discussion

- a, e) **No Impact.** The Project Site is on land designated as grazing land and not designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (DOC 2024). The Project Site is not designated as farmland and implementation of the Proposed Project would not result in the conversion of farmland to non-agricultural use. Therefore, no impact would occur.
- b) **Less than Significant.** The Project Site is on land designated as grazing land but is not under a Williamson Act contract (DOC 2022). The Proposed Project would operate for up to 36 months and following operation, the land will be revegetated and returned to its pre-Project condition and would not result in a permanent conversion of agricultural land to other uses or conflict with existing zoning for agricultural use. Therefore, impacts related to agriculture would be less than significant.
- c, d) **No Impact.** The Project Site is on land designated as grazing land and not designated as forest land or timberland and implementation of the Proposed Project would not result in the conversion of forest land or timberland to non-forest land or timberland use. Therefore, no impact would occur.

## References

California Department of Conservation (DOC). 2024. California Important Farmland Finder. Available: <https://maps.conservation.ca.gov/DLRP/CIFF/>. Accessed December 9, 2024.

.2022. Division of Land Resource Protection/California Williamson Act Enrollment 2022. Available: [https://www.arcgis.com/apps/mapviewer/index.html?url=https://gis.conservation.ca.gov/server/rest/services/DLRP/California\\_Williamson\\_Act\\_Enrollment\\_2022/MapServer&source=sd](https://www.arcgis.com/apps/mapviewer/index.html?url=https://gis.conservation.ca.gov/server/rest/services/DLRP/California_Williamson_Act_Enrollment_2022/MapServer&source=sd). Accessed December 9, 2024.

Contra Costa County. 2024. Contra Costa County 2045 General Plan. Available: <https://www.contracosta.ca.gov/4732/General-Plan>. Accessed December 5, 2024.

### 2.3.3 Air Quality

| <i>Issues (and Supporting Information Sources):</i>                                                                                                                                                                    | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i>         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|--------------------------|
| <b>III. AIR QUALITY —</b>                                                                                                                                                                                              |                                       |                                                           |                                     |                          |
| Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project: |                                       |                                                           |                                     |                          |
| a) Conflict with or obstruct implementation of the applicable air quality plan?                                                                                                                                        | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?                      | <input type="checkbox"/>              | <input checked="" type="checkbox"/>                       | <input type="checkbox"/>            | <input type="checkbox"/> |
| c) Expose sensitive receptors to substantial pollutant concentrations?                                                                                                                                                 | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?                                                                                                      | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

## Environmental Setting

The Proposed Project is located in unincorporated Contra Costa County within the San Francisco Bay Area Air Basin (SFBAAB), along with Alameda, Marin, Napa, Santa Clara, San Francisco and San Mateo, Solano and Sonoma (southern) counties.

The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns. The Coast Range splits in the Bay Area, creating a western coast gap, the Golden Gate, and an eastern coast gap, the Carquinez Strait, which allows air to flow in and out of the Bay Area and the Central Valley. The climate is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell. During the summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below the surface because of the northwesterly flow produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold-water band, resulting in condensation and the presence of fog and stratus clouds along the Northern California coast. In the winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow

offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential.

Summertime temperatures in the SFBAAB are determined in large part by the effect of differential heating between land and water surfaces. On summer afternoons, the temperatures at the coast can be 35 degrees Fahrenheit (°F) cooler than temperatures 15 to 20 miles inland; at night, this contrast usually decreases to less than 10°F. In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large. The SFBAAB is characterized by moderately wet winters and dry summers. Winter rains (November through March) account for about 75 percent of the average annual rainfall.

## **Criteria Air Pollutants**

Concentrations of criteria air pollutants are used as indicators of ambient air quality conditions. Source types, health effects, and future trends associated with each air pollutant are described below along with the most current attainment area designations and monitoring data for the Project Site and vicinity.

### **Ozone**

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Ozone is not emitted directly into the atmosphere but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NO<sub>x</sub>). ROG and NO<sub>x</sub> are known as precursor compounds for ozone.

Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is considered both a secondary and regional air pollutant because it is not emitted directly by sources but is formed downwind of sources of ROG and NO<sub>x</sub> under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone.

### **Carbon Monoxide**

Ambient carbon monoxide (CO) concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence CO concentrations. Under inversion conditions, CO concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the blood's oxygen-carrying capacity. This reduces the amount of oxygen that can reach the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, and for fetuses.

CO concentrations have declined dramatically in California as a result of existing controls and programs. Most areas of the state, including the region surrounding the proposed Project Site, have no problem meeting the state and federal standards for CO. Measurements and modeling for CO were important in the early 1980s when CO levels were regularly exceeded throughout California. In more recent years, CO

measurements and modeling results have not been a priority in most California air districts, given the retirement of older polluting vehicles, lower emissions from new vehicles, and improvements in fuels.

### ***Nitrogen Dioxide***

Nitrogen dioxide (NO<sub>2</sub>) is a reddish brown gas that is a byproduct of combustion processes. NO<sub>2</sub> may be visible as a coloring component of a brown cloud on high-pollution days, especially in conjunction with high ozone levels.

Vehicle internal combustion engines and industrial operations are the main sources of NO<sub>2</sub>, which is an air quality concern because it acts a respiratory irritant and is a precursor of ozone. NO<sub>2</sub> is a major component of the group of gaseous nitrogen compounds commonly referred to as NO<sub>x</sub>, which are produced by fuel combustion in motor vehicles, industrial stationary sources, ships, aircraft, and rail transit. Typically, NO<sub>x</sub> emitted from fuel combustion are in the form of nitric oxide and NO<sub>2</sub>. Nitric oxide is often converted to NO<sub>2</sub> when it reacts with ozone or undergoes photochemical reactions in the atmosphere. Therefore, NO<sub>2</sub> emissions from combustion sources are typically evaluated based on the amount of NO<sub>x</sub> emitted from the source.

### ***Sulfur Dioxide***

Sulfur dioxide (SO<sub>2</sub>) is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel. SO<sub>2</sub> is also a precursor to the formation of atmospheric sulfate and particulate matter and contributes to the potential atmospheric formation of sulfuric acid that could precipitate downwind as acid rain. The concentration of SO<sub>2</sub>, rather than the duration of exposure, is an important determinant of respiratory effects. Exposure to high SO<sub>2</sub> concentrations may result in edema of the lungs or the glottis and respiratory paralysis.

### ***Particulate Matter***

PM<sub>10</sub> and PM<sub>2.5</sub> are particulate matter measuring 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. (A micron is one-millionth of a meter.) PM<sub>10</sub> and PM<sub>2.5</sub> represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility.

Large dust particles (those with a diameter greater than 10 microns) settle out rapidly and are easily filtered by the human breathing passages. This large dust is of more concern as a soiling nuisance than as a health hazard. The remaining fraction, PM<sub>10</sub> and PM<sub>2.5</sub>, are a health concern, particularly when present at levels exceeding the federal and state ambient air quality standards. PM<sub>2.5</sub> (including diesel exhaust particles) is thought to have greater effects on health, because these particles are so small and thus can penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, and acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Diesel particulate is carcinogenic and considered a toxic as discussed below. Recent studies have shown an association between morbidity (suffering from a disease or medical condition) and mortality (premature deaths) and daily concentrations of particulate matter in

the air. Children are more susceptible to the health risks of PM<sub>10</sub> and PM<sub>2.5</sub> because their immune and respiratory systems are still developing.

Mortality studies conducted since the 1990s have shown a statistically significant direct association between mortality and daily concentrations of particulate matter in the air. Despite important gaps in scientific knowledge and continued reasons for some skepticism, a comprehensive evaluation of the research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health (Pope and Dockery 2006). The California Air Resources Board (CARB) has estimated that achieving the ambient air quality standards for PM<sub>10</sub> could reduce premature mortality rates by 6,500 cases per year (CARB 2002).

### **Lead**

Ambient lead concentrations meet both the federal and state standards in the proposed Project area. Lead has a range of adverse neurotoxin health effects and was formerly released into the atmosphere primarily via leaded gasoline products. The phase-out of leaded gasoline in California caused atmospheric lead levels to decrease.

The Proposed Project would not introduce any new sources of lead emissions; consequently, quantification of lead emissions is not required, and such emissions are not evaluated further in this analysis.

### **Toxic Air Contaminants**

Non-criteria air pollutants, or toxic air contaminants (TACs), are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer-causing) adverse effects on human health. TACs include both organic and inorganic chemical substances. They may be emitted by a variety of common sources including gasoline stations, automobiles, diesel engines, dry cleaners, industrial operations, and painting operations. TACs are regulated differently than criteria air pollutants at both the federal and state levels. At the federal level, these airborne substances are referred to as hazardous air pollutants. The state list of TACs identifies 243 substances and the federal list of hazardous air pollutants identifies 189 substances.

CARB identified diesel particulate matter (DPM) as a TAC in 1998, based primarily on evidence demonstrating cancer effects in humans. Exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and DPM concentrations are higher near heavily traveled highways and rail lines with diesel locomotive operations. The risk from DPM, as determined by CARB, declined from 750 in 1 million in 1990 to 570 in 1 million in 1995; by 2000, CARB estimated the average statewide cancer risk from DPM to be 540 in 1 million (CARB 2009). These calculated cancer risk values from ambient air exposure can be compared against the lifetime probability of being diagnosed with cancer in the United States, from all causes, which is more than 40 percent (based on a sampling of 17 regions nationwide), or greater than 400,000 in 1 million, according to the National Cancer Institute (NCI 2012).

## Odorous Emissions

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. In a phenomenon known as odor fatigue, a person can become desensitized to almost any odor and recognition occurs only with an alteration in the intensity.

The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors. Odor impacts should be considered for any proposed new odor sources located near existing receptors, and for any new sensitive receptors located near existing odor sources. Generally, increasing the distance between the receptor and the odor source will mitigate odor impacts.

## Sensitive Receptors

Some receptors are considered more sensitive than others to air pollutants. The reasons for this greater sensitivity include preexisting health problems, proximity to an emissions source, or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory infections and other air quality–related health problems than the general public. Residential areas are also sensitive to poor air quality because people usually stay home for extended periods of time. Sensitive receptor land uses in the vicinity of the Project Site include several residences in the vicinity of the Project Site including one residence approximately 300 feet to the southwest (as part of a marina business), one residence approximately 750 feet to the southeast and one residence approximately 400 feet to the northeast.

## Discussion

- a) **Less than Significant.** The Proposed Project is located within the jurisdiction of the BAAQMD. The BAAQMD shares responsibility with CARB for ensuring ambient air quality standards are attained within Contra Costa County. The BAAQMD and the Proposed Project are located within the SFBAAB, which consists of nine counties. The SFBAAB is currently designated as nonattainment for the 1-hour O<sub>3</sub> California Ambient Air Quality Standards (CAAQS), nonattainment for the 8-hour O<sub>3</sub> National Ambient Air Quality Standards (NAAQS).

The potential air quality impacts for this project were evaluated using the BAAQMD 2022 CEQA guidelines screening criteria (BAAQMD 2022). Pursuant to these guidelines, if a project does not exceed the screening criteria size it is generally expected to result in less than significant impacts to air quality. The BAAQMD screening criteria for the general light industry are 452,000 square feet for construction and 998,000 square feet for operation. The Proposed Project is well below these criteria and given the size and relatively short construction period it is not expected to produce criteria air pollutants in significant quantities. Since the 2017 Clean Air Plan generally involves a multi-pollutant strategy to reduce ozone, particulate matter and toxic air contaminants, and BAAQMD screening criteria indicate that a development of this scale would not produce

significant quantities of such criteria pollutants, the Proposed Project would not conflict with BAAQMD's implementation of the Clean Air Plan.

The Proposed Project would result in an increase in criteria pollutant emissions, generated by employee trips for periodic maintenance, cleaning and biological surveys. The Proposed Project would be well below the BAAQMD screening criteria for the general light industry operations of 998,000 square feet for operation. The Proposed Project is well below these criteria and given the size and relatively short construction period it is not expected to produce criteria air pollutants in significant quantities. However, operation and maintenance would not result in a substantial amount of worker trips and no new stationary-source emissions would occur at the Project Site. The Proposed Project would not conflict with the BAAQMD thresholds of significance. This operational impact would be less than significant.

- b) **Less than Significant with Mitigation Incorporated.** Construction activities are short term and typically result in combustion exhaust emissions (e.g., vehicle and equipment tailpipe emissions), including ozone precursors (ROG and NO<sub>x</sub>), and PM from combustion and in the form of dust (fugitive dust). Emissions of ozone precursors and PM are primarily a result of the combustion of fuel from on-road vehicles and off-road equipment. The SFBAAB is currently designated a nonattainment area for California and National O<sub>3</sub>, California and National PM<sub>2.5</sub>, and California PM<sub>10</sub> AAQS. At a project level, air quality impacts are measured by the potential for a project to exceed BAAQMD's significance criteria and contribute to the State and federal nonattainment designations in the SFBAAB. As described in Impact a, the Proposed Project would be consistent with the 2017 Clean Air Plan.

Pollutant emissions associated with construction of the Proposed Project would be generated from the following general construction activities: (1) ground disturbance from grading, excavation, etc.; (2) vehicle trips from workers traveling to and from the proposed Project Site; (3) trips associated with delivery of construction supplies to, and hauling waste from, the Project Site; and (4) fuel combustion by on-site construction equipment. These construction activities would temporarily generate air pollutant emissions, including dust and fumes. The amount of emissions that would be generated on a daily basis would vary, depending on the intensity and types of construction activities that would occur simultaneously. Overall, construction activities associated with the Proposed Project would occur over a period of approximately 2 months, starting in the summer of 2025.

The incremental pollutant increase that construction of the Proposed Project would contribute to O<sub>3</sub> non-attainment would not be cumulatively considerable, and additionally the Proposed Project would adhere to the 2017 Clean Air Plan in order to further minimize ROG, NO<sub>x</sub> and dust generation from the proposed Project Site. With implementation of **Mitigation Measure AQ-1**, the Proposed Project's construction-related impacts would be further reduced to less-than-significant levels.

**Mitigation Measure AQ-1: Implement Standard Air Quality Construction Mitigation Measures.**

During all phases of construction, the following procedures shall be implemented;

Require implementation of the BAAQMD Best Management Practices for fugitive dust control, such as:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, grading areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- 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.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
- 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.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
- All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
- 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.
- 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. BAAQMD's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.

Measures shall be incorporated into appropriate construction documents (e.g., construction management plans) submitted to the County and shall be verified by the Department of Conservation and Development.

Once operational, emission sources resulting from project operations would be associated primarily with employee trips for periodic maintenance, cleaning and biological surveys. Operational impacts would be considered less than significant. With respect to project conformity with the federal Clean Air Act, the Proposed Project's potential emissions would be below minimum thresholds and are below the area's inventory specified for each criteria pollutant designated non-attainment or maintenance for the SFBAAB. As such, further general conformity analysis is not required. Therefore, this impact would be less than significant.

- c) **Less than Significant.** Construction of the proposed Project would result in the short-term generation of DPM emissions from the use of off-road diesel equipment and from construction material deliveries. As discussed above, DPM is a complex mixture of chemicals and particulate matter that has been identified by the State of California as a TAC with potential cancer and chronic non-cancer effects. The dose to which receptors are exposed is the primary factor affecting health risk from TACs. Dose is a function of the concentration of a substance in the environment and the duration of exposure to the substance. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments (HRAs), which



determine the exposure of sensitive receptors to TAC emissions, should be based on a 30-year exposure period when assessing TACs (such as DPM) that have only cancer or chronic non-cancer health effects (OEHHA 2015).

As identified above there are several residences located near the Project Site. The increase in lifetime cancer risk and non-cancer hazard index from exposure to construction DPM emissions from the Proposed Project at the nearest receptor is anticipated to be less than the respective BAAQMD thresholds because of the short-term nature of the Proposed Project and the distance from the Proposed Project. This impact would be less than significant.

Operation and maintenance would include periodic maintenance, cleaning and biological surveys. As a result, the impact related to exposure of sensitive receptors to substantial TAC emissions from the Proposed Project operations would be less than significant.

- d) **Less than Significant.** Construction of the Proposed Project would last for approximately 2 months total, up to approximately 8 hours per day. The use of on-site diesel-powered equipment can produce odorous exhaust; however, equipment use at the Project Site would be temporary, and potential odors would not affect a substantial number of people in the vicinity, given the rural nature of the Project Site. Therefore, construction of the Proposed Project would not create objectionable odors that would affect a substantial number of people, and odor impacts would be less than significant.

As a general matter, the types of land use development that pose potential odor problems include wastewater treatment plants, refineries, landfills, composting facilities, and transfer stations. Because the proposed Project would consist of an infiltration gallery test facility and no uses known to pose potential odor problems would occupy the Project Site, operation of the Proposed Project would not create objectionable odors that would affect a substantial number of people. This impact would be less than significant.

## References

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Office of Environmental Health Hazard Assessment (OEHHA). 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments*. Adopted February 2015.

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## 2.3.4 Biological Resources

| <i>Issues (and Supporting Information Sources):</i>                                                                                                                                                                                                                                                              | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i>                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|-------------------------------------|
| <b>IV. BIOLOGICAL RESOURCES — Would the project:</b>                                                                                                                                                                                                                                                             |                                       |                                                           |                                     |                                     |
| 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 Game or U.S. Fish and Wildlife Service? | <input type="checkbox"/>              | <input checked="" type="checkbox"/>                       | <input type="checkbox"/>            | <input type="checkbox"/>            |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?                                                              | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?                                                                                     | <input type="checkbox"/>              | <input checked="" type="checkbox"/>                       | <input type="checkbox"/>            | <input type="checkbox"/>            |
| d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?                                                                               | <input type="checkbox"/>              | <input checked="" type="checkbox"/>                       | <input type="checkbox"/>            | <input type="checkbox"/>            |
| e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?                                                                                                                                                                              | <input type="checkbox"/>              | <input checked="" type="checkbox"/>                       | <input type="checkbox"/>            | <input type="checkbox"/>            |
| f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?                                                                                                                             | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

## Environmental Setting

This section describes the natural setting and context of the Project Site based on the field reconnaissance survey and aquatic resources delineation conducted on April 13 and October 10, 2024, and associated reports. Use of the term “study area” in this section refers to the area within and adjacent to the Project Site, where direct, indirect, or cumulative biological resources impacts could occur as a result of the Project. Notes regarding existing vegetation communities, plant and wildlife species, as well as habitat assessed for its suitability to support special-status species<sup>1</sup> within and adjacent to the Project Site were recorded

<sup>1</sup> Species that are protected pursuant to federal or state endangered species laws or have been designated as Species of Special Concern by CDFW, or species that are not included on any agency listing but meet the definition of rare, endangered or threatened species of the CEQA Guidelines Section 15380(b), are collectively referred to as “special-status species.”

during this survey effort. The survey also included a formal aquatic resource delineation to determine the location of biologically sensitive resources including wetlands, riparian habitat, and drainages.

### **Wildlife Habitats and Vegetation Communities**

Wildlife habitats are described in terms of dominant plant species and plant communities along with landforms, disturbance regime, and other unique environmental characteristics. Wildlife habitats generally correspond to vegetation communities, which are assemblages of plant species that occur together in the same area and are influenced by soil types. Wildlife habitat and vegetation communities are defined by species composition and relative abundance. Each habitat and vegetation community is described below.

#### **Non-Native Annual Grassland**

The study area was primarily covered by non-native annual grassland, including barley grasses (*Hordeum* sp.), with scattered iodine bush (*Allenrolfea occidentalis*) shrubs. Other herbaceous, vine and shrub species in the study area included sedges (*Carex* sp.), blow-wives (*Achyraea mollis*), Himalayan blackberry (*Rubus armeniacus*), cutleaf geranium (*Geranium dissectum*), lavender (*Lavandula* sp.), California goldfields (*Lasthenia californica*), and bird's-foot trefoil (*Lotus corniculatus*). Many common reptile, amphibian and small mammal species use non-native grasslands for refugia, nesting, and foraging. Non-native annual grassland does not constitute a sensitive natural community protected by the California Department of Fish and Wildlife (CDFW). No other upland communities were present in the study area.

#### **Riverine Habitat (Italian Slough)**

The study area includes a portion of Italian Slough, a perennial channel that is about 95 feet wide. Italian Slough flows into Old River approximately 3 miles downstream of the study area and is connected to Clifton Court Forebay to the east. The slough and forebay are tidally influenced so depth, salinity and direction of flow change with the tides. The slough channel is connected to the emergent wetland in the study area, and may provide habitat for fish, aquatic birds and reptiles, and amphibians tolerant of variations in salinity.

#### **Emergent Wetland**

The study area contains approximately 1.52 acres of emergent wetland (Cowardin classification *Palustrine Emergent Wetland (Seasonally Flooded)*) (ESA 2025). This feature appears to be engineered and may have been constructed for drainage of grazing land. The wetland vegetation in the study area consisted primarily of bulrush (*Schoenoplectus* sp.), and also included rushes (*Juncus* spp.), cattail (*Typha* sp.), invasive yellow iris (*Iris pseudacorus*) and water hyacinth (*Eichhornia crassipes*). Wetlands provide valuable habitat for small mammals, reptiles, and aquatic birds, including waterfowl and shorebirds. A pair of mallards (*Anas platyrhynchos*) Wilson's snipe (*Gallinago delicata*) were observed in this community during the site visit.

### **Sensitive Natural Communities**

A *sensitive natural community* is a biological community that is regionally rare, provides important habitat opportunities for wildlife, is structurally complex, or is otherwise of special concern to federal, state, or local agencies. Most sensitive natural communities are given special consideration because they perform important ecological functions, such as maintaining water quality and providing essential habitat for plants and wildlife. Some plant communities support a unique or diverse assemblage of plant species and therefore are considered sensitive from a botanical standpoint. Until the mid-1990s, CDFW tracked

sensitive natural community occurrences in the CNDDDB. These occurrences were classified according to the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986).

As described above, Italian Slough and emergent wetlands are sensitive natural communities that occur within the study area.

### ***Special-Status Species***

Special-status species are species protected pursuant to federal and/or state endangered species laws or that have been designated Species of Special Concern, Rare, or Fully Protected by the California Department of Fish and Wildlife (CDFW). CEQA Guidelines Section 15380(b) also provides a definition of rare, endangered, or threatened species that are not included in other listings. Plant species with a California Rare Plant Rank (CRPR) of 1 or 2 are required to be considered under CEQA.<sup>2</sup>

A list of special-status species with potential to occur in the vicinity of the study area was developed based on a query of CDFW's California Natural Diversity Database (CNDDDB) (CDFW 2024), the California Native Plant Society's (CNPS) Rare Plant Inventory (CNPS 2024), and U.S. Fish and Wildlife's (USFWS) Environmental Conservation Online database (USFWS 2024). **Appendix A** presents a comprehensive list of special-status plant and wildlife species that were included in the database searches (CDFW 2024; CNPS 2024; USFWS 2024a). However, most of the noted species are unlikely to occur in the study area or be affected by the Project due to the Project's location being outside of special-status species' geographic range, habitats within the study area being poor quality or insufficient to support the species, the degree of habitat isolation or fragmentation, or otherwise unsuitable conditions being present. From the full list of species in Appendix A, each special-status species was individually assessed based on habitat requirements and current distribution relative to vegetation communities and habitat characteristics that occur in and around the Project Site. **Table BIO-1** lists the special-status species that have at least a moderate potential to occur within the study area based on the database searches and the April 13, 2024 reconnaissance-level site assessment.

### ***Wildlife Movement Corridors***

Wildlife movement corridors are considered an important ecological resource by various agencies (e.g., CDFW and USFWS) and under CEQA. Movement corridors may provide favorable locations for wildlife to travel between different habitat areas such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. They may also function as dispersal corridors allowing animals to move between various locations within their range. Topography and other natural factors, in combination with urbanization, can fragment or separate large open-space areas. Areas of human disturbance or urban development can fragment wildlife habitats and impede wildlife movement between areas of suitable habitat. This fragmentation creates isolated "islands" of vegetation that may not provide sufficient area to accommodate sustainable populations and can adversely affect genetic and species diversity. Movement corridors mitigate the effects of this fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished and promotes genetic exchange between separate populations.

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<sup>2</sup> For example, vascular plants listed as rare or endangered or as CRPR Rank 1 or 2 are considered to meet Section 15380(b). Under some circumstances, CRPR Rank 3 or 4 species, or other species with locally limited distribution may also warrant consideration under CEQA.

**TABLE BIO-1**  
**SPECIAL-STATUS SPECIES THAT MAY OCCUR WITHIN THE STUDY AREA**

| Species Name                                                   | Listing Status | General Habitat Requirements                                                                                                                                                                                                                                                                                                                                                        | Potential for Species Occurrence Within the Study Area                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Plants</b>                                                  |                |                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| San Joaquin spearscale ( <i>Extriplex joaquiniana</i> )        | - / - /1B.2    | San Joaquin spearscale typically occurs in alkali grassland and alkali meadow, or on the margins of alkali scrub. It occurs on clay soils, often in areas of high alkalinity. In seasonal alkali wetlands or alkali sink scrub with <i>Distichlis spicata</i> , <i>Frankenia</i> , etc. 0-800 meters above mean sea level.                                                          | <b>Moderate.</b> Presence of suitable habitat in the study area. A recorded occurrence from 1958 along Byron Highway within one mile of the site.                                                                                                                                                                                                                                                                                                                                                |
| Mason's lilaeopsis ( <i>Lilaeopsis masonii</i> )               | - / - /1B.1    | Marshes and swamps, riparian scrub. Tidal zones, in muddy or silty soil formed through river deposition or river bank erosion. In brackish or freshwater. 0-10 m meters above mean sea level.                                                                                                                                                                                       | <b>Moderate.</b> Marginal suitable habitat presents in the study area within the Italian Slough. Occurrence has been recorded immediately east of the study area on exposed mudflats of islands and levees (CDFW 2024).                                                                                                                                                                                                                                                                          |
| <b>Amphibians</b>                                              |                |                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| California tiger salamander ( <i>Ambystoma californiense</i> ) | FE/SE/FP       | Cismontane woodland   Meadow & seep   Riparian woodland   Valley & foothill grassland   Vernal pool   Wetland. Species live in vacant or mammal-occupied burrows throughout most of the year in grassland, savanna, or open woodland habitats. Needs underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.        | <b>Moderate.</b> Marginally suitable movement and breeding habitat is present within the study area. Two records of this species within one mile of the study area, both in pond habitats to the south (CDFW 2024).                                                                                                                                                                                                                                                                              |
| Western spadefoot toad ( <i>Spea hammondi</i> )                | FP/SSC         | Cismontane woodland   Coastal scrub   Valley & foothill grassland   Vernal pool   Wetland. Occurs primarily in grassland habitats but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.                                                                                                                                   | <b>High.</b> The western spadefoot requires seasonal ponds for aquatic breeding that hold water for at least three weeks, invertebrate prey and nearby terrestrial upland habitat that is gently sloped where the species can burrow during its inactive period (88 FR 84252). Suitable movement and breeding habitat is present within the study area. The nearest CNDDB records are more than five miles south.                                                                                |
| <b>Reptiles</b>                                                |                |                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Northwestern pond turtle ( <i>Emys marmorata</i> )             | FPT/SSC        | A thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches, usually with aquatic vegetation, below 6,000 feet elevation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.3 miles from water for egg-laying.                                                                                                  | <b>High.</b> Suitable habitat exists in study area and recorded occurrence of this species is approximately one-half mile south of the study area along Italian Slough, where adult and juvenile turtles were seen.                                                                                                                                                                                                                                                                              |
| <b>Birds</b>                                                   |                |                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Swainson's hawk ( <i>Buteo swainsonii</i> ),                   | --/ST/         | Great Basin grassland   Riparian forest   Riparian woodland   Valley & foothill grassland. Species breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations. | <b>Moderate.</b> This species prefers open ranchlands and agricultural lands for foraging, nesting in scattered trees or riparian areas or landscaped ranch trees. A nesting pair was recorded in 2017 along Clifton Court Road across from the study area, approximately one-quarter mile away in an unidentified nest tree (CDFW 2024). Numerous other occurrences are recorded farther east and south of Clifton Court Forebay. Although the 2017 nesting pair is within one-half mile of the |

| Species Name                                                                   | Listing Status | General Habitat Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Potential for Species Occurrence Within the Study Area                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | study area (CDFW 2012), the road and marina are existing sources of human disturbance, and construction of the demonstration project would be unlikely to disturb the birds, if still present during construction. Nesting Swainson's hawks are moderately likely within one half mile of the site.                                                                                                                      |
| burrowing owl<br>( <i>Athene cunicularia</i> )                                 | -/CCE          | Prefers open annual or perennial grasslands and disturbed sites with existing burrows, elevated perches, large areas of bare ground or low vegetation, and few visual obstructions. Ground squirrel colonies often provide a source of burrows and are typically located near water and areas with large numbers of prey species, primarily insects. Breeding takes place between February and August, peaking in April and May.                                                                 | <b>Moderate.</b> The nearest CNDDDB record is immediately adjacent to the parcel from 2002, along Clifton Court Road (CDFW 2024). The parcel itself is flat and covered with long grasses, which is not preferred habitat for owls, but this species is moderately likely to occur due to the local record, and the presence of rodent burrows, though no sign of owls was observed during the site survey.              |
| grasshopper sparrow<br>( <i>Ammodramus savannarum</i> ).                       | --/--/ SSC     | Valley & foothill grassland. Species is found in dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs and scattered shrubs. Loosely colonial when nesting.                                                                                                                                                                                                                             | <b>Moderate.</b> This songbird favors dense grasslands in lowland plains, in valleys and on hillsides and nests in loose colonies in preferably native grasslands with a mix of grasses, forbs and scattered shrubs (CDFW 2024). This species has not been recorded within 5 miles of the study area but is considered moderately likely due to the presence of suitable grassland habitat.                              |
| <b>Fish</b>                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                          |
| California Central Valley steelhead DPS ( <i>Oncorhynchus mykiss irideus</i> ) | FT/SSC         | Aquatic, Sacramento/San Joaquin flowing rivers and their tributaries. This DPS enters the Sacramento and San Joaquin rivers and their tributaries from July to May; spawning from December to April. Young move to rearing areas in and through the Sacramento and San Joaquin Rivers, Delta, and San Pablo and San Francisco Bays.                                                                                                                                                              | <b>Present.</b> This anadromous species has been recorded in Clifton Court Forebay where they have been entrained by existing pumping facilities and often fall prey to non-native fish or piscivorous birds, and in Italian Slough adjacent to the study area (CDFW 2024). Steelhead should be assumed present within the slough, and protective measures applied during construction to avoid impacts to fish species. |
| green sturgeon southern DPS ( <i>Acipenser medirostris</i> )                   | FT/SSC         | Aquatic, Estuary, Marine bay, Sacramento/San Joaquin flowing waters. Species exhibits spawning site fidelity and spawns in the Sacramento, Feather and Yuba Rivers. Species' presence in upper Stanislaus and San Joaquin Rivers may indicate spawning. Non-Spawning adults occupy marine/estuarine waters. Spawning occurs primarily in cool (11-15 C) sections of mainstem rivers in deep pools (8-9 meters) with substrate containing small to medium sized sand, gravel, cobble, or boulder. | <b>Present.</b> This species is present in Clifton Court Forebay, which provides juvenile rearing and adult migration habitat for this anadromous species (CDFW 2024). The species should be assumed present in Italian Slough, which connects to Clifton Court Forebay.                                                                                                                                                 |
| White Sturgeon ( <i>Acipenser transmontanus</i> )                              | --/CCE         | Spawning occurs primarily in cool (11-15 C) sections of mainstem rivers in deep pools (8-9 meters) with substrate containing small to medium-sized sand, gravel, cobble, or boulder. Primarily reside in the San Francisco Estuary.                                                                                                                                                                                                                                                              | <b>Present.</b> This species is present in Clifton Court Forebay, which provides juvenile rearing and adult migration habitat for this anadromous species (CDFW 2024). The species should be assumed present in Italian Slough, which connects to Clifton Court Forebay.                                                                                                                                                 |

| Species Name                                                                            | Listing Status | General Habitat Requirements                                                                                                                                                                                                                                                        | Potential for Species Occurrence Within the Study Area                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Delta smelt<br>( <i>Hypomesus transpacificus</i> )                                      | FT/SSC         | Aquatic, Estuary, Sacramento-San Joaquin Delta. Occurs seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Found in Delta estuaries with dense aquatic vegetation and low occurrence of predators. Seldom found at salinities > 10 ppt. Most often at salinities < 2 ppt. | <b>Present.</b> Delta smelt are typically found in brackish waters, ranging from the Delta to San Francisco Bay, and spawn in fresh or brackish sloughs and channel edge waters in winter and spring. The nearest record is from just north of Clifton Court Forebay one mile northeast of the study area in 2005 (CDFW 2024), where larvae were detected. Juvenile or adult longfin smelt may enter Italian Slough from Clifton Court Forebay and should be assumed present in the study area channel.                                       |
| longfin smelt<br>( <i>Spirinchus thaleichthys</i> )                                     | FE/ST          | Aquatic   Estuary. Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30 ppt, but can be found in completely freshwater to almost pure seawater.                                           | <b>Present.</b> Longfin smelt commonly found in estuaries with fresh or brackish water where they prefer sandy or gravel substrates. Longfin spawn preferentially in fresh water between January and March, but are not known to spawn in the Italian Slough area. The nearest record is from just north of Clifton Court Forebay one mile northeast of the study area in 2012 (CDFW 2024). Juvenile or adult longfin smelt may stray into Italian Slough from Clifton Court Forebay and should be assumed present in the study area channel. |
| Central Valley Spring-run Chinook Salmon<br>( <i>Oncorhynchus tshawytscha</i> )         | FT/ST          | Anadromous species using riverine, estuarine, and saltwater habitat. Adult migration occurs from March through May. Juvenile outmigration occurs from November through April.                                                                                                       | <b>Present.</b> This anadromous species has been recorded in Clifton Court Forebay where they have been entrained by existing pumping facilities and often fall prey to non-native fish or piscivorous birds, and in Italian Slough adjacent to the study area (CDFW 2024). Chinook salmon should be assumed present within the slough, and protective measures applied during construction to avoid impacts to fish species.                                                                                                                 |
| Central Valley Winter-run Chinook Salmon<br>( <i>Oncorhynchus tshawytscha</i> )         | FE/SE          | Anadromous species using riverine, estuarine, and saltwater habitat. Adult migration occurs from January through May. Juvenile outmigration occurs from November through March.                                                                                                     | <b>Present.</b> This anadromous species has been recorded in Clifton Court Forebay where they have been entrained by existing pumping facilities and often fall prey to non-native fish or piscivorous birds, and in Italian Slough adjacent to the study area (CDFW 2024). Chinook salmon should be assumed present within the slough, and protective measures applied during construction to avoid impacts to fish species.                                                                                                                 |
| Central Valley Fall/Late-Fall-run Chinook Salmon<br>( <i>Oncorhynchus tshawytscha</i> ) | SC/SSC         | Anadromous species using riverine, estuarine, and saltwater habitat. Adult migration occurs from June through December. Juvenile outmigration occurs from March through July.                                                                                                       | <b>Present.</b> This anadromous species has been recorded in Clifton Court Forebay where they have been entrained by existing pumping facilities and often fall prey to non-native fish or piscivorous birds, and in Italian Slough adjacent to the study area (CDFW 2024). Chinook salmon should be assumed present within the slough, and protective measures applied during construction to avoid impacts to fish species.                                                                                                                 |

**STATUS CODES:****FEDERAL (U.S. Fish and Wildlife Service):**

FE = Listed as Endangered by the Federal Government  
 FT = Listed as Threatened by the Federal Government  
 FPT = Federally Proposed as Threatened  
 FP = Proposed for Federal Listing  
 FC = Candidate for Federal Listing  
 SC = Species of Concern

**California Native Plant Society (CNPS):**

Rank 1B = Plants rare, threatened, or endangered in California and elsewhere  
 CNPS Code Extensions  
 .1 = Seriously threatened in California (over 80% of occurrences threatened/  
 high degree and immediacy of threat)  
 .2 = Fairly threatened in California (20-80% occurrences threatened)

| Species Name                                                                                                                                                                                                                                   | Listing Status | General Habitat Requirements                                                                                                                                                                                                                                                               | Potential for Species Occurrence Within the Study Area |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| STATE (California Department of Fish and Wildlife):<br>SE = Listed as Endangered by the State of California<br>ST=Listed as Threatened by the State of California<br>SSC = Species of Special Concern<br>CCE = Candidate Endangered under CESA |                | <u>Potential to Occur Categories:</u><br>Low = The project area and/or immediate vicinities only provide limited habitat.<br>In addition, the species' known range may be outside of the project areas.<br>Moderate = The study area and/or immediate vicinities provide suitable habitat. |                                                        |
| SOURCE: CDFW 2023; USFWS 2023a; CNPS 2023, Horizon 2022a                                                                                                                                                                                       |                |                                                                                                                                                                                                                                                                                            |                                                        |

The study area is located along Italian Slough, which provides a movement corridor for many common and special-status fish and other aquatic species. However, the upland portion of the site is part of a large grazing allotment bordered on the west by Byron Highway and the south by Clifton Court Road and is not likely to be used as a movement corridor by terrestrial species. There are no documented wildlife movement corridors on the Project Site (CDFW 2024). Construction of the demonstration project on upland portions of the study area would have minimal impact on wildlife movement corridors.

### **Critical Habitat**

Critical habitat is defined in Section 3(5)A of the Federal Endangered Species Act (FESA) as the specific portions of the geographic area occupied by the species in which physical or biological features essential to the conservation of the species are found and that may require special management considerations or protection. While critical habitat designations can cover large areas, the presence of primary constituent elements for federally listed species is required for a location to qualify as critical habitat. The Italian Slough within the study area is designated critical habitat for Delta smelt (*Hypomesus transpacificus*) (USFWS 2024a).

### **Discussion**

- a) **Less than Significant with Mitigation Incorporated.** Special-status species and their habitats may be affected either directly or indirectly through implementation of the Proposed Project. In addition, common (i.e., non-special-status) nesting raptors and migratory birds may also be affected by Proposed Project construction. Each of these potentially affected species is listed in Table BIO-1 and described below.

#### **Special-status Plants**

Focused botanical surveys have not been performed on the Project Site; however, suitable habitat for two special-status plants (San Joaquin spearscale and Mason's lilaeopsis) exists on site. Because Proposed Project construction requires vegetation clearing and earthwork, which could remove these species or degrade local habitat conditions if present, the Proposed Project could adversely affect these species through direct removal of plants. Such an impact may be significant without mitigation. However, implementation of **Mitigation Measure BIO-1: Worker Awareness Environmental Training** and **Mitigation Measure BIO-2: Pre-Construction Survey for Special-status Plants** would avoid or reduce potential impacts to these special-status plants through worker education about the species and pre-construction surveys during blooming season to determine presence or absence of the species. If presence is determined, appropriate conservation actions would be taken, as described in Mitigation Measure BIO-2. With



implementation of Mitigation Measures BIO-1 and BIO-2, construction impacts would be reduced to **less than significant with mitigation**.

Due to the small operational footprint of the Proposed Project, operational use of existing roadways for maintenance access, limited habitat value of the site, and limited scale and infrequent maintenance during operation, operational impacts on special-status plants would be **less than significant**.

#### **Mitigation Measure BIO-1: Worker Awareness Environmental Training**

Prior to construction, a qualified biologist shall provide worker awareness environmental training to inform construction personnel about protected biological resources, including special-status species, their habitat, legal protections, and wetlands and waters of the U.S. and/or State. The training shall include photos of special-status species to aid in identification, the qualified biologist's contact information, and SVWRA's point of contact. All construction personnel must undergo this training prior to working on the Project and a sign-in sheet shall be maintained to keep a record of those trained.

#### **Mitigation Measure BIO-2: Pre-Construction Survey for Special-Status Plants**

A qualified biologist shall conduct appropriately timed bloom surveys to identify any special-status plant species (San Joaquin spearscale and Mason's lilaeopsis) that may occur within the Project Site. The optimal identification window for San Joaquin spearscale is April through September; the window for Mason's lilaeopsis is June through August. If a special-status plant is observed during the survey, a 10-foot buffer shall be placed around the plant for the construction contractor to avoid during construction. The biologist shall prepare a report of the special-status plant species survey for the Project lead engineer at SVWRA.

If impacts to special-status plant species cannot be avoided, a restoration and mitigation plan would be prepared to provide plant salvage and relocation consistent with CDFW guidance. At a minimum, the plan shall include collection of reproductive structures from affected plants, a full description of microhabitat conditions necessary, seed germination requirements, assessments of potential transplant and enhancement sites, success and performance criteria, and monitoring programs, as well as measures to ensure long-term sustainability. The following considerations shall be met:

- a. Prior to unavoidable and permanent disturbance to a population of a special-status plant species, propagules shall be collected from the population to be disturbed. This may include seed collection or cuttings, and these propagules shall be used to establish a new population in or near the Project Site. Transplantation may be attempted but shall not be used as the primary means of plant salvage and new population creation, because for many local rare plant species, seeding may provide a better option to establish annual species. Irrigation shall be provided as necessary to ensure survival of new plantings.
- b. A minimum 5-year monitoring plan with adaptive management shall be implemented to document the success of new plant populations. Adequate assurances shall be provided to ensure long-term protection and management of lands to promote established rare plant populations. Success criteria for seeded or transplanted populations shall include at least 75 percent survival of salvaged or relocated plants after 5 years, a similar number of new plants (by area and numbers) to the impacted population, and minimal presence of invasive weeds at planting locations.

### ***Special-status Amphibians and Reptiles***

The Italian Slough and emergent wetlands in the study area provide suitable habitat for special-status amphibians and reptiles California tiger salamander, Western spadefoot toad, and northwestern pond turtle. No special-status amphibians or reptiles were observed during the April and October 2024 biological surveys. If present in Italian Slough or nearby uplands, individuals of these species could be killed or injured during initial grading activities or from construction traffic, resulting in a significant impact. Implementation of Mitigation Measure BIO-1: Worker Awareness Environmental Training, **Mitigation Measure BIO-3: Pre-construction Surveys for Special-Status Amphibians and Reptiles**, and **Mitigation Measure BIO-4: Wildlife Exclusion Fencing** would reduce impacts to these species by education of workers, requiring pre-construction surveys, and isolating the work area from adjacent habitat to deter the potential movement of these species into the work area. With implementation of Mitigation Measures BIO1, BIO-3 and BIO-4, construction impacts would be reduced to **less than significant with mitigation**.

Due to the small operational footprint of the Proposed Project, operational use of existing roadways for access, limited habitat value of the site, and limited scale and infrequent maintenance during operation, operational impacts on special-status amphibians and reptiles would be **less than significant**.

#### **Mitigation Measure BIO-3: Pre-Construction Surveys for Special-Status Amphibians and Reptiles**

A qualified biologist shall conduct a pre-construction survey of suitable (e.g., unpaved) habitat within 500 feet Italian Slough in the Project Site and surrounding area for special-status amphibians and reptiles no more than 5 days prior to commencement of clearing, materials staging, or ground disturbing activities (whichever happens first). If the pre-construction survey finds that special-status species are absent, then a letter report shall be submitted to SVWRA within 14 days of the survey and no additional actions are required for Project initiation. If construction does not commence within 5 days of the pre-construction survey, or halts for more than 5 days, the pre-construction survey shall be repeated.

If special-status species are observed during the survey, SVWRA shall coordinate with USFWS and/or CDFW as appropriate to determine whether their relocation is appropriate and if additional measures are necessary. If relocation is deemed appropriate, the biologist shall develop a relocation plan and acquire other necessary permits in consultation with SVWRA. The approved biologist shall relocate the species outside of the Project work area to similar habitat on public land, as described in the relocation plan. Wildlife exclusion fencing pursuant to Mitigation Measure BIO-4 shall be implemented prior to any relocation effort to prevent the individual from moving into the work area. Further, if special-status species are found on-site, the biologist shall monitor all staging and initial grading activities to ensure the species is avoided during these activities. Any special-status species relocation work and monitoring shall be documented in a letter report and provided to SVWRA within 14 days of the completion of monitoring.

#### **Mitigation Measure BIO-4: Wildlife Exclusion Fencing**

To prevent special-status amphibians and reptiles from entering the work area, the construction contractor shall install a multi-purpose protective barrier (such as silt fencing) at

the upstream and downstream boundaries of the Project work site adjacent to suitable wildlife habitat. If special-status species are found during pre-construction surveys, a qualified biologist shall oversee the fence installation. The fence shall be a minimum of 3 feet above ground surface with an additional 4 to 6 inches of fence material buried such that species cannot crawl under the fence. If a portion of the fence cannot be buried, it shall be continuously weighed down with sand or gravel bags. Fence installation shall occur prior to any protected species relocation or within three days following pre-construction survey where protected species are determined to be absent, whichever occurs first.

- No equipment mobilization, grading, clearing, or storage of equipment or machinery, or similar activity shall occur at the Project Site until a qualified biologist has inspected and approved the wildlife exclusion fencing; and
- SVWRA shall ensure that the fencing is continuously maintained until all construction is complete.

### ***Special-status Birds and Migratory Birds***

Swainson's hawk, a state threatened species, burrowing owl, a state candidate endangered species, and grassland sparrow, a species of special concern, all have moderate potential to occur in the study area, though Swainson's hawk would not nest there. In addition, the Migratory Bird Treaty Act protects nesting birds from direct take, and California Fish and Game Code Sections 3503 and 3503.5 protect migratory birds and their eggs and nests from both direct and incidental take. These protections apply to special-status birds identified in Table BIO-1, as well as other birds that may occur at the Project Site.

Burrowing owl and grassland sparrow have suitable nesting habitat in the grassland in the study area. Swainson's hawks have suitable foraging habitat in the study area, and suitable nesting habitat within a half-mile of the study area. Migratory birds are likely to nest in shrubs, or tall grasses within the Project Site. If construction activities or removal and trimming of vegetation are scheduled during the bird nesting season (between February 1 and July 31), the implementation of **Mitigation Measure BIO-5 (Protection of Nesting Birds)**, will ensure that potential impacts on nesting birds would be **less than significant with mitigation**.

### **Mitigation Measure BIO-5: Protection of Nesting Birds**

For construction activities that occur between February 1 and July 31, preconstruction nesting bird surveys shall be conducted by a qualified biologist familiar with bird behavior and knowledgeable of nest types prior to and within 14 days of any initial ground-disturbance activities. Surveys shall be conducted on foot within all suitable nesting habitat within 250 feet for songbirds, one half-mile for Swainson's hawk, and 500 feet for other raptors, to the extent access is feasible. If active nests are identified at the time of the survey, a minimum 50-foot radius exclusion zone for songbirds shall be established and flagged. Active raptor or special-status bird nests shall be protected by a buffer with a minimum radius of 250 feet. Swainson's hawk nests would be protected by a buffer of one quarter-mile, or as negotiated with CDFW. These distances may be adjusted depending on the level of surrounding ambient activity (i.e., if the Project Site is adjacent to a road) and if an obstruction is within line-of-sight between the nest and construction. For bird species that are federally- and/or State-listed sensitive species, the Applicant shall consult with the USFWS and/or CDFW regarding modifying nest buffers, prohibiting construction within the buffer, modifying construction, and removing or relocating active nests that are found on the site. Each exclusion zone will

remain in place until the nest has successfully fledged or is otherwise inactive, as determined by a qualified biologist.

- Survey results are valid for 14 days from the survey date. Should ground disturbance commence later than 14 days from the survey date, surveys will be repeated. If no nesting birds are encountered, then work may proceed as planned.
- After commencement of work, if there is a period of no work activity of 14 days or longer during the bird breeding season, surveys will be repeated to ensure birds have not established nests during inactivity. If new nests are encountered, buffers shall be established.
- Any birds that begin nesting amid construction activities shall be assumed to be habituated to construction-related noise and disturbance levels, and minimum work exclusion zones of 25 feet shall be established around active nests in these cases.

### ***Special-status Fish***

#### **Construction Impacts**

Construction of the Proposed Project would involve earth-disturbing activities (e.g., excavation, trenching, grading) that could result in the release of sediments into Italian Slough. Suspended sediments in the water column have the potential to affect fish by disrupting normal feeding behavior, reducing growth rates, increasing stress levels, and reducing respiratory functions. Increased suspended solids can also affect aquatic organisms by reducing dissolved oxygen levels and light transmission, and when the sediment in the suspended solids resettles, it could have the potential to smother aquatic habitats and organisms. Changes in light transmission have the potential to limit photosynthesis and reduce foraging abilities for organisms that rely on visual signals for feeding (e.g., salmonids) (Anchor Environmental 2003). Substantially depressed oxygen levels (i.e., below 5.0 mg/l) may cause respiratory stress to aquatic life, and levels below 3.0 mg/l may cause mortality.

Research with salmonids has shown that high turbidity concentrations can: reduce feeding efficiency, decrease food availability, reduce dissolved oxygen in the water column, result in reduced respiratory functions, reduce tolerance to diseases, and can also cause fish mortality (Berg and Northcote 1985; Gregory and Northcote 1993; Velagic 1995; Waters 1995). Even small pulses of turbid water will cause salmonids to disperse from established territories (Waters 1995), which can interrupt normal movement patterns, displace fish into less suitable habitat, and/or increase competition and predation, decreasing chances of survival. Nevertheless, much of the research mentioned above focused on turbidity levels significantly higher than those likely to result from the proposed project activities, especially with implementation of the proposed mitigation measures. Therefore, the small pulses of moderately turbid water expected from the proposed construction activities will likely cause only minor physiological and behavioral effects, such as dispersing listed fish from established territories, potentially increasing interspecific and intraspecific competition, as well as predation risk for the small number of affected fish.

Furthermore, turbidity increases would be relatively brief and generally confined to within a few hundred feet of the activity. Turbidity levels would initially be higher than baseline levels, but the sediment would disperse and be re-deposited, and background levels would be expected to be

restored within hours of the disturbance. Therefore, fish would be able to use their preferred habitats and continue their normal migration routes in a matter of hours.

Construction activities could also accidentally introduce contaminants such as fuels, oils, hydraulic fluids, and other chemicals/compounds into the wetted environment either directly through spills or incrementally through surface runoff from haul routes and staging areas. Given sufficient scale, such alterations to aquatic habitats could affect fish by altering water temperature, pH, clarity, or chemical composition, as well as stream substrates, most likely by introducing silt, sand, soil, or gravel. These alterations could render otherwise suitable habitat unsuitable for fish, at least temporarily, or they could introduce contaminants that would affect fish health, reproductive success, and juvenile survivorship. If present in sufficient concentrations, contaminants could be toxic to fish and prey organisms occupying adjacent aquatic habitats. Contaminants could also alter oxygen diffusion rates and cause acute and chronic toxicity to aquatic organisms, thereby reducing growth and survival and possibly causing mortality of listed fish.

While most construction activities will occur in upland areas, the earth plugs separating the Proposed Project from Italian Slough will be removed once construction of the Proposed Project facilities are complete (see Section 1.5, *Project Construction*). The gates at the box culvert will remain closed to reduce sediment moving into the infiltration gallery. However, release of sediments into Italian Slough is still possible. In-water work, although minor, may generate temporary increases in turbidity. Increased turbidity levels associated with in-water construction would be minor, relatively short-lived, and generally localized to the immediate area of construction. Following construction work, sediments would disperse, and background levels would be restored within hours of disturbance. Nonetheless, implementation of **Mitigation Measure BIO-6 (In-Water Work Window)** would ensure that potential water quality impacts on special-status fish species would occur at less-than-significant levels.

As described in Section 2.3.9, *Hazards and Hazardous Materials*, Proposed Project construction activities would be required to comply with numerous regulations to ensure that construction-related fuels and other hazardous materials are transported, used, stored, and disposed of safely to protect worker safety, and to reduce the potential for such fuels or other hazardous materials to be released into the environment, including stormwater and downstream receiving water bodies. Furthermore, contractors would be required to prepare and implement hazardous-materials business plans and a storm water pollution prevention plan (SWPPP) for construction activities. These plans will detail the proper use and storage of hazardous materials during construction, describe spill prevention measures, and include protocols for responding to an accidental spill or release of hazardous materials. In addition, the best management practices (BMPs) described in Section 2.3.10, *Hydrology and Water Quality*, will be implemented to minimize release of sediments into Italian Slough. Implementation of construction BMPs in conjunction with Mitigation Measures BIO-1 and BIO-6 will ensure that potential impacts on special-status fish would be **less than significant with mitigation**.

#### **Mitigation Measure BIO-6: In-Water Work Window.**

In-water work will be conducted during the seasonal work window of August 1 through October 31 (July 1 through October 31 for salmonids; August 1 through November 30 for

smelt; combined work window of August 1 through October 31 for salmonids and smelt) to avoid and/or minimize potential adverse effects to listed fish.

**Significance After Mitigation:** Implementation of Mitigation Measures BIO-1 through BIO-6 would require construction contractors to complete worker awareness training and for qualified biologists to conduct pre-construction surveys for special status species. The measures also require exclusion fencing for special-status wildlife and an in-water work window for special-status fish. Overall, with implementation of Mitigation Measures BIO-1 through BIO-6, Project construction would not cause a substantial adverse effect, either directly or through habitat modifications, on any listed fish species, and this impact would be **less than significant with mitigation**.

## Operations Impacts

### Dewatering

Maintenance of the Proposed Project includes yearly dewatering of the infiltration gallery to examine media fouling and assess fish assemblages (see Section 1.7, *Project Monitoring and Maintenance*). During dewatering activities, fish could potentially become stranded, causing direct mortality to fish species present in the infiltration gallery. However, dewatering would occur only once annually during the designated in-water work window when fish are least likely to be present in the Project area. Nonetheless, as an extra precaution, Mitigation Measure BIO-7 (Fish Salvage and Relocation Plan) will be developed and implemented during dewatering activities.

### Entrainment

Given the very slow vertical velocities, entrainment of fish of any life stage in the infiltration gallery is not expected during operation of the demonstration project. Additionally, as described in the *Project Description*, flows through the demonstration project are designed to oscillate with the tides, with flows moving into the box culverts during flood tides and out during ebb tides, providing a natural connection with the adjacent Italian Slough habitat, thereby limiting potential exposure of listed fish species to the project area.

The maximum diversion rate through the infiltration gallery equates to a drawdown rate of 0.0014 fps. NMFS guidelines for infiltration gallery diversions have been developed as part of the NOAA West Coast Region Anadromous Salmonid Passage Design Manual (NMFS 2022). The guidelines state that to be protective for salmonids that the average velocity through the projected area is no greater than 0.1 fps. The Proposed Project's maximum vertical velocity of 0.0014 fps is 71 times slower than this NMFS criteria for salmonids. Also, while this project is not a T-screen as used in many other diversions in the Delta, the Proposed Project's infiltration velocity is over 100 times less than the maximum approach velocity (0.2 fps) required for T-screen diversions to meet the USFWS screening criteria when Delta smelt are present, as required by CDFW (2000) and NMFS (1996). In addition, a recent study found evidence of vertical velocities up to one inch per minute (0.0014 fps) having no adverse impact on larval delta smelt (Appendix C). Therefore, entrainment of larval Delta smelt and juvenile salmonids is not expected.

## Predation

Operation of the Proposed Project has the potential to provide habitat for predators, further increasing predation risk on listed fish. Any unnatural habitats, such as the box culverts as part of the inlet/outlets and access to the infiltration gallery, may provide physical habitat and cover that may attract various predatory fish species to the area. Predatory fish, such as largemouth bass and striped bass, could aggregate near the proposed inlet/outlets, thus creating a predatory hotspot and increasing the likelihood of predation on native and special-status fish.

However, the footprint of the new intake is very small relative to the expanse of predator-dense habitat in the adjacent Italian Slough and south Delta at large. The waterways and adjacent habitat in the south Delta is heavily altered (channelized, armored banks, lack of fish cover) and support populations of non-native predatory fish, including striped bass and largemouth bass (Henderson et al. 2023) which prey on native species. Therefore, predation risk to special-status fish species in the region would not be expected to increase with the addition of this new side channel habitat.

Also, the water velocities entering and exiting the project site are designed to be low. The inlet and outlet structures have been specifically designed to reduce turbulence and to avoid creating hiding spots for predators. As described in the *Project Description*, pumping rates will be adjusted as the tides change to ensure natural tidal flux through the Project Site, and limit any unnatural flows that may attract predators or restrict native fish species from leaving the project site. Velocities coming into the demonstration project through the box culverts will be 0.03 feet per second (fps) during flood tides, and velocities leaving the demonstration project during ebb tides will be 0.003 fps during ebb tides. In addition, studies will be implemented as part of the testing program for the Proposed Project to further examine the effect of predation (see *Biological Considerations* section above).

## Food Availability

Phytoplankton and zooplankton are the base of the foodweb supporting Delta smelt and juvenile salmonids in the south Delta (ICF 2023). Loss of zooplankton from the water column as a result of Proposed Project operations would represent a reduction in available prey for delta smelt and other planktivorous fish and macroinvertebrates inhabiting the adjacent Italian Slough. Given the very small size (1,600 ft<sup>2</sup>) of the infiltration gallery and the low diversion rate (maximum 2.23 cfs), it is unlikely a significant amount of phytoplankton or zooplankton would be removed by the Proposed Project. Also, any phytoplankton or zooplankton not lost in the infiltration gallery media would be returned to Italian Slough through the diversion pipeline. In addition, studies will be implemented as part of the testing program for the Proposed Project to further examine the effect of Project on food availability (see *Biological Considerations* section above).

With implementation of Mitigation Measures BIO-6 and BIO-7, potential impacts to special-status fish species would be less than significant with mitigation.

### **Mitigation Measure BIO-7: Fish Salvage and Relocation Plan**

A fish salvage and relocation plan for fish recovered during dewatering in the August to October window shall be developed and submitted to NMFS, CDFW, and USFWS for approval. The approved plan shall be implemented prior to dewatering to prevent fish

stranding during dewatering. The plan will outline methods and procedures for rescue and relocation including:

- Salvage and relocation activities shall be conducted by Qualified Biologists approved by NMFS, CDFW, and USFWS.
- Salvage methods including seining, dipnetting, and electrofishing, shall be implemented in a way that minimizes fish stress and mortality.
- Any pumps used to dewater the infiltration gallery shall be equipped with appropriate-sized screens as approved by NMFS, CDFW, and USFWS.

**Significance After Mitigation:** Implementation of Mitigation Measures BIO-6 and BIO-7 would require all in-water maintenance activities to occur during a protective work window of August 1<sup>st</sup> through October 31<sup>st</sup>, and also require rescue and relocation of fish during dewatering events. Overall, with implementation of Mitigation Measures BIO-6 and BIO-7, Project operations would not cause a substantial adverse effect, either directly or through habitat modifications, on special status fish and this impact would be **less than significant with mitigation**.

b) **Less than Significant.**

**Critical Habitat**

The aquatic portions of the Proposed Project area are designated as critical habitat for Delta smelt. While there may be a short-term increase in turbidity for one day during construction, this will occur during the August to October work window when listed species are not in the south Delta. The implementation of Mitigation Measure BIO-2 and the best management practices described in Section 2.3.10 would avoid significant impacts and reduce the level of impact on critical habitat to less-than-significant levels. Furthermore, after completion of the Proposed Project, the ecological function of aquatic habitat will return to the existing condition and thus not appreciably diminish the quality of the critical habitat.

**Essential Fish Habitat**

The Proposed Project area falls within Essential Fish Habitat (EFH), as defined in the MSA, for multiple species of commercially important fish managed under one of the federal fisheries management plans (FMPs):

- **Pacific Salmon FMP:** The Pacific Salmon FMP is designed to protect habitat for commercially-important salmonid species.

Impacts to EFH would be similar to those described above under *Critical Habitat*. These impacts include the temporary impairment of water quality. As with effects to critical habitat, with the implementation of the BMPs and mitigation measures described above, overall effects of Proposed Project implementation on EFH are expected to be less than significant.

**Other Habitat**

Wetlands in the study area are also identified as sensitive natural communities. Impacts on wetlands are discussed under checklist item c, below; there is no riparian habitat within the study area. Thus, there is no impact to riparian habitat under this criterion.



- c) **Less than Significant with Mitigation Incorporated.** The Project Site supports protected waters of the U.S. as defined in Section 404 of the CWA and State jurisdictional waters. Italian Slough and the emergent wetlands are potential waters of the U.S. and waters of the State, and are expected to be subject to U.S. Army Corps of Engineers' (USACE) jurisdiction under Sections 404 and 401 of the CWA, protection under the Porter-Cologne Act, and California Fish and Game Code Section 1600 et seq. Compliance with these regulations requires that permits be obtained from the USACE, Regional Water Quality Control Board, and CDFW prior to any introduction of fill material as a result of Proposed Project construction; however this is not anticipated. Section 404 and 401 CWA permits generally require mitigation to offset losses of waters of the U.S., in accordance with Executive Order 11990, which is intended to result in no net loss of wetland functions or values.

**Figures BIO-1 and BIO-2** depict an overview of potentially jurisdictional features within the Project Site and Proposed Project impacts on those jurisdictional areas, respectively. Permanent impacts on waters of the U.S. include those impacts that result in the loss of the aquatic resources or conversion of aquatic resources to other types for at least one year or more, such as the installation of hardscape (e.g., concrete, rip-rap). Based on the Proposed Project design and the limits of potential USACE jurisdiction, Proposed Project implementation would avoid all permanent impacts to waters of the U.S. and State and CDFW-regulated area protected under Section 1602 of the California Fish and Game Code. Construction of the infiltration gallery will remain entirely outside of the legal boundaries of these aquatic features.

Temporary impacts correspond to areas disturbed during Proposed Project construction for less than one year. 0.009 acres of temporary impact would occur to emergent wetland. Following construction, temporary impacts on aquatic resources would be restored according to the requirements of applicable state and federal permits, as described in **Mitigation Measure BIO-8**.

Any exposure of bare soil, contamination of stormwater, and potential introduction of pollutants during Proposed Project construction could impair water quality within Italian Slough. Stormwater and water quality best management practices (BMPs), such as wattles, silt fence, and other stormwater protection measures as described Section 2.3.10 as required by the Section 401 Water Quality Certification and National Pollutant Discharge Elimination System permit would reduce the impact to **less than significant with mitigation**.

Proposed Project operation would not impact waters of the U.S. or State or CDFW-regulated area beyond the areas affected during Proposed Project construction. The Proposed Project would temporarily re-route some of the water of Italian Slough through the infiltration gallery and back into Italian Slough directly or through the adjacent wetland. This process would not significantly dewater any portion of the channel. This process would not change the function or affect the habitat within the channel. Overall, the Proposed Project will not result in any loss of waters or wetlands, and is designed to benefit the species that use the channel as habitat. Therefore, no operational impacts to waters of U.S., waters of the State, or CDFW-regulated area would occur, and the Proposed Project's operational impact would be **less than significant**.

**Mitigation Measure BIO-8: Habitat Restoration and Monitoring**

Prior to construction, SVWRA shall obtain all required environmental permits, and adhere to the conditions of each. Depending on Proposed Project impacts to aquatic resources, these may include Clean Water Act Water Quality Certification for federal and state jurisdictional wetlands (Section 401), permits for federal jurisdictional wetlands (Section 404), and CDFW Lake and Streambed Alteration Agreement.

If required, the applicant shall submit a Restoration Plan (Plan) to CDFW for review and written approval at least 30 days prior to the completion of Proposed Project activities. The Plan shall detail compensation for permanent impacts to wetland habitat in the form of restoration or enhancement of habitat on-site, or off-site as close to the Project Site as possible. The plan shall also describe the onsite restoration of temporary impacts to wetland habitat. The Plan shall also include monitoring and success criteria. The Plan shall be implemented within the same calendar year as the completion of Proposed Project activities unless otherwise approved in writing by CDFW.

**Significance After Mitigation:** Implementation of stormwater protection measures and BMPs as described in Section 2.3.10 would protect the waters and wetlands from temporary water quality impacts. Overall, with implementation of these measures, the Proposed Project would not cause 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, and this impact would be **less than significant with mitigation**.

- d) **Less than Significant with Mitigation Incorporated.** The upland portion of the Project Site is part of a large grazing allotment east of Byron Highway and is not likely to be used as a movement corridor by terrestrial species. Construction of the demonstration project on upland portions of the study area would have no impact on wildlife movement corridors. There are no known nursery sites on or in the vicinity of the Project Site. Proposed Project construction may have a temporary impact on animal movement through the Project Site, but this short-term impact would be less than significant because wildlife movement impacts would be confined to work (daytime) hours over the course of 24 months. The short duration and infrequent timing of operational maintenance would not interfere with wildlife movement during Proposed Project operation. Based on the information above, the Proposed Project would not substantially interfere with the movement of wildlife species, established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites and the construction and operational impact would be **less than significant**. However, the Proposed Project may interfere with the movement of native resident or migratory fish species and their associated migration corridors, a potentially significant impact.

The Project Site is located along Italian Slough, which may provide habitat for many common and special-status aquatic species, particularly Delta smelt, longfin smelt, steelhead, and green sturgeon. However, aquatic habitat in the Project Site consists of a heavily altered (channelized, armored banks, lack of fish cover), relatively deep, high velocity channel, with silt and sand substrate. Therefore, the current state of habitat is considered low quality and carries a high risk of predation, due to the presence of non-native predatory fish, such as striped bass and largemouth bass.





SOURCE: Esri, 2024; ESA, 2024

Coordinate System: State Plane  
California Zone III FIPS 0404 (US Feet)  
Projection: Lambert Conformal Conic  
Datum: North American 1983  
Vertical Datum: N/A

- Survey Area (13.72 acres)
- + Map Reference Point
- Sampling Data Points (DP)**
- Upland
- ◆ Wetland

- Wetlands (1.519 acres)**
- Fresh Emergent Wetland (1.519 acres)
- Waters (1.401 acres)**
- Perennial Stream (1.401 acres)

Fish Friendly Demonstration Project

**Figure BIO-1**  
Delineated Aquatic Resources



Delineated by: Jiemin Guo  
Mapping by: Eryn Pimentel  
Created on: 11/19/2024





SOURCE: Esri, 2024; ESA, 2024

Fish Friendly Demonstration Project

Coordinate System: State Plane  
California Zone III FIPS 0404 (US Feet)  
Projection: Lambert Conformal Conic  
Datum: North American 1983  
Vertical Datum: N/A

- Survey Area (13.72 acres)
- 
- Site Plan

**Sampling Data Points (DP)**

Upland

Wetland

**Wetlands (1.519 acres)**

Fresh Emergent Wetland (1.519 acres)

**Waters (1.401 acres)**

Perennial Stream (1.401 acres)

Temporary Impacts (0.009 acres)

**Figure BIO-2**  
Project Impacts to Aquatic Resources



Delineated by: Jiemin Guo  
Mapping by: Eryn Pimentel  
Created on: 11/19/2024



Furthermore, the location of the Proposed Project is at the very interior of the Delta at a “dead end” and no direct connection to migratory routes to the Central Delta and San Francisco Bay. If fish species traveled this far, they would have to back track in order to reconnect with normal migration pathways.

In addition, the box culverts at the infiltration gallery inlets/outlets are designed to operate at low velocities, limiting any risk of fish being stranded within the infiltration gallery. As described in the *Project Description*, flows through the demonstration project are designed to oscillate with the tides, with flows moving into the box culverts during flood tides and out during ebb tides, providing a natural connection with the adjacent Italian Slough habitat, thereby limiting fish stranding or delay of fish movements.

As described in Section 1.7, *Project Monitoring and Maintenance*, the infiltration gallery will be dewatered once annually during the August to October period to examine media fouling and to assess fish assemblages. As discussed above, dewatering would only occur during August 1 through October 31<sup>st</sup> when no listed fish species are expected to be present. Further, **Mitigation Measure BIO-7 (Fish Salvage and Relocation Plan)** will be implemented to minimize potential impacts to fish from dewatering.

**Significance After Mitigation:** Implementation of Mitigation Measure BIO-7 would minimize potential impacts to stranded fish during dewatering. Overall, the Proposed Project would not cause a substantial adverse effect on the movement of any native resident or migratory fish or wildlife species, and this impact would be **less than significant with mitigation**.

- e) **Less than Significant with Mitigation Incorporated.** The Contra Costa County 2045 General Plan includes several policies that pertain to protected biological resources. Impacts BIO-1 through BIO-7 discuss potential impacts of Proposed Project construction that could affect special-status species, and protected wetlands and other waters of the U.S. and/or State, and provide mitigation measures to reduce the significance of Proposed Project construction and operation on these biological resources to a *less-than-significant* level. Without the implementation of the respective mitigation measures, Proposed Project construction could conflict with the General Plan’s policies, and may have a significant effect on these resources. Therefore, with the implementation of these mitigation measures (BIO-1 through BIO-7), Proposed Project construction and operation would not conflict with the County’s General Plan.

Article 816-6 of the Contra Costa County Municipal Code requires a Tree Removal Permit from the City for the removal of protected trees. As indicated in Chapter 2, *Project Description*, no trees would be removed as part of the Proposed Project. It is therefore assumed that the Proposed Project would not be required to obtain a Tree Removal Permit. Based on the information in this analysis, Proposed Project construction and operation would be consistent with the General Plan and the County Municipal Code, and the impact would be **less than significant with mitigation**.

Mitigation: Mitigation Measures BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, and BIO-7 (refer to Impact BIO-1)

**Significance After Mitigation:** Implementation of **Mitigation Measures BIO-1 through BIO-7** would require construction contractors to complete worker awareness training and for qualified biologists to conduct pre-construction for special status species. The measures also requires exclusion fencing for the special-status amphibians and reptiles. Overall, with implementation of Mitigation Measures BIO-1 through BIO-7, the Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, and this impact would be **less than significant with mitigation**.

- f) **No Impact.** The Project Site is not located within the inventory area of the ECCC HCP/NCCP but not within the permit area. Thus, the Proposed Project does not qualify for coverage under the ECC HCP/NCCP. Therefore, there would be no impact to the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan from Proposed Project construction or operation.

**Mitigation:** None required.

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## 2.3.5 Cultural Resources

| <i>Issues (and Supporting Information Sources):</i>                                                           | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less Than<br/>Significant with<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| <b>V. CULTURAL RESOURCES —</b> Would the project:                                                             |                                               |                                                                       |                                             |                                     |
| a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?      | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| c) Disturb any human remains, including those interred outside of dedicated cemeteries?                       | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |

This section relies on the information and findings presented in the Project's cultural resources technical report:

- *Fish Friendly Diversion Demonstration Project, Contra Costa County, California: Archaeological and Architectural Resources Inventory Report* (Carlton and Hoffman 2024)

The technical report included an overview of the environmental, ethnographic, and historic background of the Project Site, with an emphasis on aspects related to human occupation. More detailed information regarding the results of the cultural resources study can be found in the report (see Confidential **Appendix B**).

## Environmental Setting

### Background Research

In March 2024, ESA requested a cultural resources records search for the Proposed Project from staff at the Northwest Information Center (NWIC) at Sonoma State University. The study area for the records search was the Project Site with a 0.5-mile buffer. The NWIC records search indicates that six cultural resources have been previously recorded within 0.5-mile of the Project Site; none of these was recorded within or adjacent to the Project Site. Two of these are architectural resources, consisting of the Italian Slough Levee (P-07-004507) and the Clifton Court Forebay (P-07-003122), and the other four previously recorded resources are indigenous archaeological resources, consisting of one site with a burial and artifacts (P-07-000413), one site with artifacts (P-07-000085), one isolate (P-07-004508), and one undescribed resource (P-07-000086).

The Italian Slough Levee (P-07-004507) does not appear to have been previously evaluated for eligibility for listing in the California Register of Historical Resources (California Register). The Clifton Court Forebay (P-07-003122) was previously recommended California Register-eligible as a contributor to the California Aqueduct. None of the four archaeological resources previously recorded within 0.5-mile of the Project Site appear to have been previously evaluated for California Register-eligibility.

The NWIC has record of 46 previous cultural resources documents/reports associated with 19 projects that covered areas within 0.5-mile of the Project Site. Of these, four projects covered a portion of the Project Site and included field surveys. The previous studies for projects outside the Project Site were mostly associated with water infrastructure and facilities improvement, maintenance, and management, as well as utility relocation and removal, and road improvement.



## **Map and Aerial Photography Research**

ESA conducted a review of the following sources of historic maps and aerial photography: Library of Congress (<https://www.loc.gov/>); David Rumsey Historical Map Collection ([www.davidrumsey.com](http://www.davidrumsey.com)); U.S. Geological Survey (USGS) TopoView (<https://ngmdb.usgs.gov/topoview/>); University of California Santa Barbara's FrameFinder database ([https://mil.library.ucsb.edu/ap\\_indexes/FrameFinder/](https://mil.library.ucsb.edu/ap_indexes/FrameFinder/)), and the Online Archive of California (<https://oac.cdlib.org/>). The historic map and photography review focused on the Project Site and vicinity.

The historic map and aerial photography review revealed that the Project Site historically experienced moderate disturbance, including water inundation, erosion, agriculture, and grazing activities. A 1914 USGS topographic map shows the Project Site as undeveloped land to the west of the Italian Slough and southeast of the Byron Hot Springs railroad station (USGS 1914). Historic aerial imagery from 1939 shows the Project Site as undeveloped land with a wetland area stretching generally north to south through its center (Fairchild Aerial Surveys, 1939). By 1940, the Clifton Court Road was bordering the Project Site on the south side, according to a USGS topographical map (USGS 1940). Historic aerial imagery from 1950 shows the Project Site as wetland and a north-south unpaved road bordering the western edge of the Project Site (Aero Exploration Company 1950). The Project Site appears heavily disturbed in historic aerials from the mid-1950s to mid-1960s; the disturbance appears to be the result of water and erosion, especially in the northern portion and around the wetland area (Aero Exploration Company 1950; Cartwright and Company 1958; Cartwright Aerial Surveys 1965). The Project Site continues to be depicted as undeveloped on a 1978 USGS topographic map, which depicts the pumping station to the northeast of the Project Site, the Clifton Court Forebay to the east of the Project Site, the California Aqueduct to the south of the Project Site, and the Delta Fish Protective Facility to the southeast of the Project Site (USGS 1978). The 1987 aerial imagery continues to show the Project Site as undeveloped but disturbed by erosion and the continued presence of the wetland area (USGS 1987).

## **Ethnographic Literature Research**

ESA's review of ethnographic literature revealed that the territory of the Bolbones of the Northern Valley Yokuts included the Project Site and vicinity, specifically along Old River (Cook 1955). According to Cook (1955:57), this large group "occupied the sloughs of the lower San Joaquin west of Stockton" and likely consisted of eight villages and 1,500 people. The village of Pescadero, which was situated between Byron and Bethany, is approximately 5 miles southeast of the Project Site. It was described as both the "key village" and as "the most important rancheria of the area and probably...more populous than any other" within the Bolbones tribal complex (Cook 1955:58). However, the ethnographic accounts reviewed date to the early 20th century and, given the rapid decimation of Northern Valley Yokuts soon after 19th-century Euroamerican settlement in the area, the relative few Native American settlements described in the vicinity of the Project Site should not be taken as definitive evidence of an absence of other villages or lack of use of the area.

## **Field Survey**

In October 2024, ESA conducted a pedestrian surface survey of all accessible portions of the Project Site. Intensive pedestrian methods were used during the survey, consisting of walking the ground surface in parallel transects no greater than 15 meters apart and inspecting the ground surface for evidence of cultural material.

Of the 13.7-acre Project Site, 11.1 acres was covered in the pedestrian survey, as 1.2 acres in the central portion of the Project Site was inaccessible due to dense California bulrush and inundated areas. Additionally, 1.4 acres of the Project Site is within a river. As such, 2.6 acres of the Project Site were not surveyed. In the 11.6-acre portion of the Project Site that was surveyed, ground surface visibility was good, ranging from 60 to 85 percent. ESA did not observe any cultural resources in the Project Site (i.e., cultural material 45 years of age or older) during the survey.

### ***Archaeological Sensitivity Analysis***

Sensitivity considers both pre-contact and historic land use, as well as historic and modern changes that may have previously impacted archaeological resources. Archaeological sensitivity assessments include an analysis of the overall Project Site for the potential to contain archaeological resources, independent of construction plans and planned Project-related ground disturbance. A sensitivity assessment is then combined with an analysis of planned Project-related ground disturbance to determine the potential to encounter archaeological resources during construction soil disturbance. An analysis of the potential to encounter archaeological resources combines the sensitivity assessment with the planned extent and depth of anticipated ground disturbance. For example, in portions of the Project Site with a moderate or high sensitivity for archaeological resources, if there is no planned ground disturbance, then the overall potential to encounter archaeological resources is low.

The analysis of indigenous archaeological sensitivity is based on several factors: the archaeological sensitivity of geologic formations that underlie the Project Site; the archaeological sensitivity of soils in the Project Site; the Project Site's proximity to water sources; and the presence of recorded indigenous archaeological resources in the Project Site and vicinity. The latter factor may not be a reliable measure of archaeological sensitivity when little or no archaeological field studies have been conducted in the Project Site and vicinity.

The Project Site is adjacent to a natural freshwater creek, which runs along its east edge and is approximately 0.2-mile north of the original Brushy Creek channel. These sources of freshwater would have been amenable to pre-contact occupation, resulting in an overall sensitivity of the general area for pre-contact archaeological resources. The surficial geology of the Project Site consists of Latest Holocene alluvial fan deposits (Delattre et al. 2023). Soils mapped in the Project Site consist of Solano series loams, which have a typical depth of up to 62 inches (USDA 2024) and are presumably of Latest Holocene to historic age due to the Latest Holocene age of the area's underlying geology.

Based on the age of the surficial geological formation underlying the Project Site and soils within the Project Site, and proximity to several natural freshwater bodies that would have been amenable to pre-contact use, the potential for buried pre-contact archaeological deposits in undisturbed or minimally disturbed portions of the Project Site is high (Rosenthal and Meyer 2007). This is supported by the presence of human burials at nearby P-07-000413 (Bouey et al. 1992). Conversely, the Latest Holocene age of the Project Site's underlying surficial geologic formation and soils suggest that any potential pre-contact archaeological resources in the Project Site would likely be buried, if in an undisturbed context. However, the historic and modern ground disturbance, mostly from agricultural and levee construction-related activities, may have exposed such deposits and brought them to a surficial context; this is the case in nearby pre-contact archaeological sites P-07-000085 and P-07-000413 and archaeological isolate P-07-004508, where surficial artifacts were recorded in agricultural fields (West 1990; Bouey et al. 1992;

Martin et al. 2009). Therefore, the Project Site's overall sensitivity for surficial pre-contact archaeological resources is also high.

The previously recorded historic-era archaeological resources and architectural resources in the vicinity of the Project Site are associated with the development of the California State Water Project and levee systems. Analysis of historic aerial imagery and topographic maps did not identify any previously unrecorded historic-era structures or features that may have been present in the Project Site (Fairchild Aerial Surveys 1939; Aero Exploration Company 1950; Cartwright and Company 1958; Cartwright Aerial Surveys 1965; USGS 1987). In considering that these resources are surficial structures that were constructed between the late 19th and mid-20th centuries, and the undeveloped and disturbed nature of the Project Site, the Project Site's sensitivity for historic-era archaeological resources, whether subsurface or surficial, is low. Per aerial imagery, the Project Site has experienced disturbances stemming from natural processes over time (i.e., erosion, inundation, vegetation encroachment). Additionally, present-day disturbances observed during ESA's survey of the Project Site in October 2024 included off-road vehicle use, bioturbation, and cattle grazing. Therefore, this analysis concludes that the Project Site has a high sensitivity for pre-contact archaeological resources (both buried and surficial), and low sensitivity for historic-era archaeological resources.

### ***Native American Correspondence***

ESA contacted the California Native American Heritage Commission (NAHC) on October 2, 2024, in request of a search of the NAHC's Sacred Lands File (SLF) and a list of Native American representatives who may have interest in the Project. The NAHC replied to ESA's SLF and Native American contacts request on October 7, 2024, in which they stated that the SLF has no record of sacred sites in the Project Site.

### ***Summary***

Through background research, outreach to the NAHC, and a pedestrian survey, no cultural resources were identified in or adjacent to the Project Site, though the Project Site was assessed to have a high sensitivity for pre-contact archaeological resources (both buried and surficial), and low sensitivity for historic-era archaeological resources.

### ***Discussion***

- a) **No Impact.** The following discussion focuses on architectural resources. Archaeological resources, including archaeological resources that are potentially historical resources according to *CEQA Guidelines* Section 15064.5, are addressed under question b, below.

Through a records search, background research, and field survey, no architectural resources, including any that may qualify as historical resources, as defined in *CEQA Guidelines* Section 15064.5, were identified in or adjacent to the Project Site. As such, the Proposed Project is not anticipated to impact any historical resources.

- b) **Less than significant.** This section discusses archaeological resources, both as historical resources according to *CEQA Guidelines* Section 15064.5, as well as unique archaeological resources, as defined in PRC Section 21083.2(g).

Through a records search, background research, and field survey, no archaeological resources, including any that may qualify as historical resources, as defined in *CEQA Guidelines* Section 15064.5 or as unique archaeological resources, as defined in PRC Section 21083.2(g), were identified in or adjacent to the Project Site. As such, the Proposed Project is not anticipated to impact any archaeological resources.

Because the Proposed Project includes ground-disturbing activities, there is the potential for the discovery of buried archaeological resources during construction. In the unlikely event that archaeological resources are identified during Proposed Project construction, SVWRA would comply with PRC Section 21083.2(i) as well as *Contra Costa County 2045 General Plan* Policy COS-P10.6, and COS-P11.9, which require the lead agency to: make provisions for archaeological resources accidentally discovered during construction; and avoid impacts on Native American archaeological resources when possible and, if not feasible, mitigated to the maximum extent feasible. SVWRA would be required to make an immediate evaluation by a qualified archaeologist, and if the find is determined to be an historical resource, as defined in *CEQA Guidelines* Section 15064.5, or a unique archaeological resource, as defined in PRC Section 21083.2(g), then it must be avoided. If avoidance is not feasible, the resource must be recovered and treated accordingly. Construction would be allowed in other areas while the archaeological mitigation takes place. With compliance with existing regulations, the potential impact related to the accidental discovery of archaeological resources would be less than significant.

- c) **Less than significant.** Through a records search, background research, field survey, and correspondence with the NAHC, no human remains have been observed or are known to exist in the Project Site. Also, the land use designations for the Project Site do not include cemetery uses, and no known human remains exist within the Project Site. Therefore, the Proposed Project is not anticipated to disturb any human remains.

Because the Proposed Project would involve ground-disturbing activities, it is possible that such actions could unearth, expose, or disturb previously unknown human remains. In the unlikely event that human remains are encountered during Proposed Project construction, SVWRA would comply with CGC Section 27460 *et seq.* and *Contra Costa County 2045 General Plan* Policy COS-P11.11, which require ground-disturbing activities to halt until the County Coroner can determine whether the remains are subject to the provisions of CGS Section 27491 or any other related provisions of law concerning investigation of the circumstances, manner, and cause of death, and the required recommendations concerning the treatment and disposition of the human remains have been made. Pursuant to California Health and Safety Code Section 7050.5, the Coroner shall make a determination within 48 hours of notification of the discovery of the human remains. If the Coroner determines that the remains are not subject to their authority and recognizes or has reason to believe that they are those of a Native American, the Coroner shall contact the NAHC within 24 hours. With compliance with existing regulations, the potential impact related to the accidental discovery of human remains would be less than significant.

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## 2.3.6 Energy

| <i>Issues (and Supporting Information Sources):</i>                                                                                                                               | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i>         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|--------------------------|
| <b>VI. ENERGY —</b> Would the project:                                                                                                                                            |                                       |                                                           |                                     |                          |
| a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?                                                                                     | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

## Environmental Setting

Consistent with Public Resources Code Section 21100(b)(3), this impact analysis evaluates the potential for construction, operation, and maintenance of the Proposed Project to result in a substantial increase in energy demand and wasteful use of energy. The impact analysis is informed by Appendix G of the State CEQA Guidelines. The potential impacts are analyzed based on an evaluation of whether construction energy use estimates for the Proposed Project would be considered excessive, wasteful, or inefficient.

## Discussion

- a) **Less than Significant.** During construction of the Proposed Project, fuel consumption would result from the use of construction tools and equipment, truck trips to haul material, and construction workers' commutes to and from the Project Site. Construction of the Proposed Project is anticipated to last for 2 months.

Construction activities and corresponding fuel energy consumption would be temporary and localized, as the use of diesel fuel and heavy-duty equipment would not be a long-term condition of the Proposed Project. In addition, the Proposed Project has no unusual characteristics that would require using construction equipment or haul vehicles that would be less energy efficient than equipment and vehicles used at similar construction sites elsewhere in California.

In conclusion, construction-related fuel consumption by the Proposed Project would not result in inefficient, wasteful, or unnecessary energy use compared with other construction sites in the region. This impact would be less than significant.

Once construction is complete, operational emissions would be minimal and related to periodic maintenance, cleaning and biological surveys. Because the Proposed Project's operational impacts on energy resources would be driven primarily by limited maintenance activities, energy use would be negligible. This impact would be less than significant.

- b) **Less than Significant.** The transportation sector is a major end user of energy in California, accounting for approximately 43 percent of the state's total energy consumption in 2022 (U.S. Energy Information Administration 2022). Energy is also consumed in connection with construction and maintenance of transportation infrastructure, such as streets, highways, freeways, rail lines, and airport runways. In 2023, California's vehicles consumed more than 13 billion gallons of gasoline and in 2023 California consumed more than 3.5 billion gallons of diesel (CEC 2023).

Existing standards for transportation energy are promulgated through the regulation of fuel refineries and products, such as the Low Carbon Fuel Standard, which mandated a 10 percent reduction in the non-biogenic carbon content of vehicle fuels by 2020. In 2018, the Board approved amendments to the regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030 in-line with California's 2030 GHG emission reduction target enacted through SB 32, adding new crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector. Other regulatory programs with emissions and fuel efficiency standards have been established by the U.S. Environmental Protection Agency (EPA) and the CARB, such as Pavley II/Low Emission Vehicle III from California's Advanced Clean Cars Program and the Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation. CARB has set a goal of 5 million Zero Emission Vehicles on the road by the year 2030 (CARB 2021). Further, construction sites need to comply with state requirements designed to minimize idling and associated emissions, which also minimizes fuel use. Specifically, idling of commercial vehicles and off-road equipment is limited to five minutes in accordance with the Commercial Motor Vehicle Idling Regulation and the Off-Road Regulation (California Code of Regulations Title 13, Section 2485).

Contra Costa County has not implemented energy action plans. The Proposed Project is consistent with the state goals and would not impede progress toward achieving these goals.

The Proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency or impede progress toward achieving any goals and targets. This impact would be less than significant.

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## 2.3.7 Geology and Soils

| <i>Issues (and Supporting Information Sources):</i>                                                                                                                                                                                                                                    | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i>                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|-------------------------------------|
| <b>VII. GEOLOGY AND SOILS —</b> Would the project:                                                                                                                                                                                                                                     |                                       |                                                           |                                     |                                     |
| a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:                                                                                                                                                         |                                       |                                                           |                                     |                                     |
| i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| ii) Strong seismic ground shaking?                                                                                                                                                                                                                                                     | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| iii) Seismic-related ground failure, including liquefaction?                                                                                                                                                                                                                           | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| iv) Landslides?                                                                                                                                                                                                                                                                        | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b) Result in substantial soil erosion or the loss of topsoil?                                                                                                                                                                                                                          | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?                                                    | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?                                                                                                                    | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?                                                                                                   | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?                                                                                                                                                                                | <input type="checkbox"/>              | <input checked="" type="checkbox"/>                       | <input type="checkbox"/>            | <input type="checkbox"/>            |

## Environmental Setting

Contra Costa County is primarily within the Coast Ranges geomorphic province of California; however, the Proposed Project is within the Great Valley geomorphic province. The Coast Ranges geomorphic province lies approximately 2 miles to the west. The Great Valley province includes the area known as the Great Central Valley of California, which extends approximately 400 miles north to south and 50 miles east to west. The Great Central Valley is encompassed by the Coast Ranges (metamorphic), the Klamath Ranges (metamorphic), the Cascade Range (volcanic), and the Sierra Nevada (granitic and metamorphic). The majority of rocks and deposits found within the province are sedimentary. According to the U.S. Geological Survey, sedimentary rocks are formed from preexisting rocks or pieces of once-living organisms. They form from deposits that accumulate on the earth's surface. Sedimentary rocks often have distinctive layering or bedding.

Contra Costa County is in a region of high seismicity. Five major faults run through the County including the Calaveras, Concord-Green Valley, Greenville, Hayward and Mount Diablo faults. The Greenville



Fault is the closest of these faults to the Project Site. The Greenville Fault is in the eastern Bay Area in Contra Costa and Alameda Counties. This dextral strike-slip fault zone borders the eastern side of Livermore Valley and is considered to be part of the larger San Andreas fault system in the central Coast Ranges. The fault zone extends from northwest of Livermore Valley along the Marsh Creek and Clayton faults toward Clayton Valley.

The Great Valley Fault is located approximately 2.5 miles to the west of the Project Site. This fault has a 33 percent chance of an earthquake over 6.7 magnitude in the next 30 years (WGCEP 2015). The Project Site is in an area designated by Contra Costa County as having a high earthquake shaking hazard threat for severe shaking (Contra Costa County 2024).

The soil on the Project Site is composed primarily of Solano loam, strongly alkali, and a small percentage of Solano loam (NRCS 2025). These soils are somewhat poorly drained; very slow or slow runoff; very slow permeability and moderate susceptibility to erosion.

Slope failures, commonly referred to as landslides, include many phenomena that involve the downslope displacement and movement of material, triggered by either static forces (i.e., gravity) or dynamic forces (i.e., earthquakes). Exposed rock slopes undergo rockfalls, rockslides, or rock avalanches, while soil slopes experience shallow soil slides, rapid debris flows, and deep-seated rotational slides. The Contra Costa County General Plan determined that Project Site is not within a landslide seismic hazard zone (Contra Costa County 2024).

Liquefaction is the process in which the soil is transformed to a fluid form during intense and prolonged ground shaking. The Contra Costa County General Plan determined that Project Site is within a liquefaction seismic hazard zone; however, it also determined that the liquefaction susceptibility is low (Contra Costa County 2024).

Expansive soils can undergo significant volume change (shrink and swell) as their soil moisture content varies. Soil moisture content can change as a result of many factors, including perched groundwater, landscape irrigation, rainfall, and utility leakage. The soils in the Project Site have a moderate shrink-swell potential.

Subsidence occurs when a large land area settles as a result of oversaturation or extensive withdrawal of groundwater, oil, or natural gas. No areas of substantial subsidence have been identified near the Project Site.

## Discussion

- a.i) **No Impact.** The Project Site is not located within an Alquist-Priolo earthquake fault zone. Therefore, no impact related to rupture of a known earthquake fault would occur.
- a.ii) **Less than Significant.** Earthquakes associated with the active faults in the Project area may cause strong ground shaking at the Project Site. Movement on the Great Valley Fault could result in a maximum credible earthquake of 7.5 (WGCEP 2015). The region of the Great Valley Fault closest to the Project Site is estimated to have an approximately 0.01 percent chance of a Mw 7.0 or greater earthquake over the next 30 years (WGCEP 2015).

The Proposed Project would be constructed to industry standards to protect against potential adverse geological impacts of seismic activity and other site-specific soils and geology constraints, including compliance with the California Building Code and American Society of Civil Engineers standards. With compliance with these standards, the impact related to seismic shaking would be less than significant.

- a.iii, iv) **No Impact.** As discussed previously, the Project Site is not known to be susceptible to landslides or liquefaction. In addition, the Proposed Project would be subject to compliance with the California Building Code and American Society of Civil Engineers standards. Therefore, no impact would occur.
- b) **Less than Significant.** Soils at the Project Site have the potential for erosion; however, earthmoving and grading activities during construction of the Proposed Project have the potential to cause erosion. Routine Project operations and maintenance activities are not anticipated to result in substantial soil erosion or loss of topsoil. Construction would be required to adhere to best management practices (BMPs) associated with the National Pollutant Discharge Elimination System (NPDES) Construction General Permit for Discharges of Stormwater Associated with Construction Activities, also known as the Construction General Permit, to control sediment in stormwater runoff from the proposed Project Site (see checklist item a in, *Hydrology and Water Quality*). Therefore, impacts from the construction of the Proposed Project related to soil erosion would be less than significant.
- c, d) **Less than Significant.** As described previously, the soils at the Project Site are not known to have liquefaction potential or shrink-swell potential. Therefore, no impact on life or property would occur.
- e) **No Impact.** The Proposed Project would not include the use of septic tanks or alternative wastewater disposal systems. Therefore, no impact would occur.
- f) **Less than Significant with Mitigation Incorporated.** Paleontological resources are the fossilized evidence of past life found in the geologic record. Despite the tremendous volume of sedimentary rock deposits preserved worldwide, and the enormous number of organisms that have lived through time, the preservation of plant or animal remains as fossils is extremely rare. Because of the infrequency of fossil preservation, fossils—particularly vertebrate fossils—are considered nonrenewable resources. Because of their rarity and the scientific information they can provide, fossils are highly significant records of ancient life.

Rock formations that are considered paleontologically sensitive are those rock units that have yielded significant vertebrate or invertebrate fossil remains (SVP 2010). Contra Costa County is underlain by a number of distinct geologic rock units (i.e., formations) with varying paleontological sensitivities. According to the U.S. Geological Survey (Contra Costa County 2024), 24 percent of the County is underlain by quaternary alluvium and marine deposits of the Pleistocene to Holocene eras, which generally have lower paleontological sensitivity due to their young age. If any previously unrecorded paleontological resources were encountered during construction of the Proposed Project and any were found to be a unique paleontological resource, any impact of the Proposed Project on the resource could be potentially significant. Any such

potentially significant impacts would be reduced to a less-than-significant level by implementing **Mitigation Measures GEO-1 and GEO-2.**

**Mitigation Measures**

**Mitigation Measure GEO-1: Train Construction Workers Regarding Paleontological Resources.**

A paleontological resources sensitivity training will be presented to Proposed Project construction workers before the start of ground-disturbing activities (e.g., vegetation removal, pavement removal) in conjunction with the. The training session shall focus on recognition of the types of paleontological resources that could be encountered within the Project Site and the procedures to follow if they are found. SVWRA shall retain documentation demonstrating that construction personnel have attended the training.

**Mitigation Measure GEO-2: Implement Appropriate Treatment Measures in Case of a Potential Fossil Discovery.**

If construction or other Project personnel discover any potential fossils during construction, regardless of the depth of work or location, work at the discovery location shall cease within a 50-foot radius of the discovery until the qualified paleontologist has assessed the discovery and recommended the appropriate treatment. If the find is deemed significant, it shall be salvaged following the standards of the SVP (SVP 2010) and curated with a certified repository.

**References**

Contra Costa County. 2024. Contra Costa County 2045 General Plan. Available: <https://www.contracosta.ca.gov/4732/General-Plan>. Accessed December 5, 2024.

Working Group on California Earthquake Probabilities (WGCEP). 2015. The Third California Earthquake Rupture Forecast (UCERF3): Output from Google Earth file with fault probabilities.

**2.3.8 Greenhouse Gas Emissions**

| <i>Issues (and Supporting Information Sources):</i>                                                                              | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i>         |
|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|--------------------------|
| <b>VIII. GREENHOUSE GAS EMISSIONS —</b> Would the project:                                                                       |                                       |                                                           |                                     |                          |
| a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?      | <input type="checkbox"/>              | <input checked="" type="checkbox"/>                       | <input type="checkbox"/>            | <input type="checkbox"/> |
| b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | <input type="checkbox"/>              | <input checked="" type="checkbox"/>                       | <input type="checkbox"/>            | <input type="checkbox"/> |

**Discussion**

a, b) **Less than Significant with Mitigation Incorporated.** Construction of the Proposed Project would include excavation, grading, earthmoving, movement of spoils, installation of pipelines and an infiltration gallery. Typical construction equipment would include excavators, drainpipe trencher/installer, graders, bulldozers, dump trucks, and loaders. Total GHG emissions from

Proposed Project construction amortized over a 30-year period would be below 100 metric tons of carbon dioxide equivalent per year. Construction of the Proposed Project would not result in a cumulatively considerable increase in GHG emissions and this impact would be less than significant. However, to be consistent with the intent of Contra Costa County's Climate Action Plan (CAP), available Best Performance Standards would be implemented as part of **Mitigation Measure GHG-1** to further minimize this impact.

**Mitigation Measure GHG-1:** SVWRA and/or its contractor shall implement the following best performance standards for construction emissions (AEP 2016):

- (1) Use alternatively fueled vehicles and equipment, including electrification as well as alternative fuels where reasonably available and certified for use in construction equipment and vehicles (e.g., biodiesel blends, renewable diesel).
- (2) Reduce worker trips through organized ride sharing, where appropriate.
- (3) Use local sources of construction materials when economically feasible.

Operation of the Proposed Project would be minimal as the Proposed Project entails an infiltration gallery that would examine both biological and engineering characteristics of the system to ensure that the design is effective for the project's intended purposes and to learn from the systems performance and operations to further improve designs. As previously discussed in *Air Quality*, Proposed Project construction and operation would be below thresholds established by BAAQMD. The Proposed Project has been found to be consistent with the Contra Costa County General Plan and the Contra Costa County CAP. Therefore, these impacts would be less than significant.

## References

Association of Environmental Professionals (AEP). 2016. *Final White Paper Beyond 2020 and Newhall, A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*. October 18, 2016. Page 36.

### 2.3.9 Hazards and Hazardous Materials

| <i>Issues (and Supporting Information Sources):</i>                                                                                                                                             | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i>                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|-------------------------------------|
| <b>IX. HAZARDS AND HAZARDOUS MATERIALS —</b><br>Would the project:                                                                                                                              |                                       |                                                           |                                     |                                     |
| a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?                                                         | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?                                 | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

| <b>Issues (and Supporting Information Sources):</b>                                                                                                                                                                                                                                 | <b>Potentially Significant Impact</b> | <b>Less Than Significant with Mitigation Incorporated</b> | <b>Less Than Significant Impact</b> | <b>No Impact</b>                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|-------------------------------------|
| d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?                                                      | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area? | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?                                                                                                                                                           | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?                                                                                                                                            | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

## Environmental Setting

The Project Site is located in Contra Costa County on a parcel zoned for grazing and is near Clifton Court Forebay. No schools are located within 1 mile of the Project Site. The Project Site is in an area with land used for agriculture, industrial uses, marina and scattered rural residences.

## Hazardous Materials

Materials and waste may be considered hazardous if they are poisonous (toxic), can be ignited by open flame (ignitable), corrode other materials (corrosive), or react violently, explode, or generate vapors when mixed with water (reactive). The term *hazardous material* is defined in law as any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment (California Health and Safety Code, Section 25501[o]). In some cases, past uses can result in spills or leaks of hazardous materials to the ground, resulting in soil and groundwater contamination. The use, storage, transportation, and disposal of hazardous materials are subject to numerous federal, state, and local laws and regulations.

Information about hazardous materials sites on the Project Site was collected by reviewing the California Environmental Protection Agency's Cortese List data resources and the State Water Resources Control Board's GeoTracker list. The Cortese List data resources provide information regarding facilities or sites identified as meeting the requirements for inclusion on the Cortese List. The Cortese List is updated at least annually, in compliance with California regulations (California Government Code Section 65964.6[a][4]), and includes federal Superfund sites, state response sites, non-operating hazardous waste sites, voluntary cleanup sites, and school cleanup sites. The GeoTracker list shows underground storage tanks. Based on a review of the Cortese List conducted in January 2025, no listed open sites are located within 1 mile of the Project Site (DTSC 2023).

## Fire Suppression

The Project Site is located within a Local Responsibility Area where local fire protection districts and fire departments are charged with fire protection. The Project Site is in an area designated as non-very high fire hazard safety zone (CAL FIRE 2009).

## Airports

The nearest airport to the Project Site is the Byron Airport, approximately 1.1 miles to the southwest.

## Discussion

- a, b) **Less than Significant.** The Proposed Project's construction equipment and materials would include fuels, oils and lubricants, cement, and concrete, which are all commonly used in construction. The routine use or an accidental spill of hazardous materials used in construction could result in inadvertent releases, which could adversely affect construction workers, the public, and the environment.

Proposed Project construction activities would be required to comply with numerous regulations to ensure that construction-related fuels and other hazardous materials are transported, used, stored, and disposed of safely to protect worker safety, and to reduce the potential for such fuels or other hazardous materials to be released into the environment, including stormwater and downstream receiving water bodies. Contractors would be required to prepare and implement hazardous-materials business plans that would require proper use of hazardous materials during construction and storage of such materials in appropriate containers with secondary containment, as needed, to contain a potential release.

In addition, construction contractors would be required to acquire coverage under the National Pollutant Discharge Elimination System (NPDES) General Stormwater Permit, which requires the preparation and implementation of a storm water pollution prevention plan (SWPPP) for construction activities. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, and equipment and fuel storage; describe protocols for responding immediately to spills; and describe best management practices (BMPs) for controlling site run-on and runoff. Details regarding BMPs designed to minimize erosion are discussed in Section 2.3.10, *Hydrology and Water Quality*. Construction would be required to adhere to BMPs associated with the NPDES Construction General Permit for Discharges of Stormwater Associated with Construction Activities, also known as the Construction General Permit, to control sediment in stormwater runoff from the Project Site.

Lastly, the transportation of hazardous materials would be regulated by the U.S. Department of Transportation, the California Department of Transportation, and the California Highway Patrol. Together, federal and state agencies determine driver-training requirements, load-labeling procedures, and container specifications designed to minimize the risk of an accidental release.

During operations, after construction of the Proposed Project has been completed, maintenance, cleaning and biological surveys would be conducted as necessary and could require household cleaning supplies, fuels, oils, and/or lubricants. The Proposed Project would be required to comply with the numerous laws and regulations discussed above that govern transportation, use, handling, and disposal of hazardous materials, which would limit the potential for creation of hazardous conditions due to the use or accidental release of hazardous materials. As a result, this impact would be less than significant.

- c) **No Impact.** No schools are located within one-quarter mile of the proposed Project Site. Therefore, no impact on schools would occur.
- d) **No Impact.** As discussed previously, based on a review of the Cortese List conducted in January 2025, no listed active sites are located within 1 mile of the Project Site (DTSC 2025). Therefore, no impact related to being located on a listed hazardous materials site would occur.
- e) **Less than Significant.** The Project Site is located approximately 1.1 miles to the northeast of the Byron Airport, a public airport. The Project Site is located outside of the noise contours as delineated in the Contra Costa County Airport Land Use Compatibility Plan (2000). Therefore, the Proposed Project would not expose people working in the Project Site to excessive noise levels, and impacts would be less than significant.
- f) **No Impact.** The construction activity and the staging of equipment and materials for the Proposed Project would occur on the Project Site, which would not require road closures or lane restrictions. Therefore, no impact on emergency response and evacuation plans would occur.
- g) **Less than Significant.** The Project Site is adjacent to lands occupied by grazing lands and agriculture. The vegetation and land use types have a low potential for wildland fires and the Proposed Project is not expected to expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Proposed Project activities would be contained within the boundaries of the Project Site and would not impair emergency response access on roadways or to areas within or adjacent to the Project Site. Therefore, this impact would be less than significant.

References

California Department of Forestry and Fire Protection (CAL FIRE). 2009. Very High Fire Hazard Severity Zones in Local Responsibility Area. January 7, 2009.

California Department of Toxic Substances Control (DTSC). 2025. DTSC’s Hazardous Waste and Substances Site List—Site Cleanup (Cortese List). Available: <https://calepa.ca.gov/sitecleanup/corteselist/>. Accessed January 14, 2025.

2.3.10 Hydrology and Water Quality

| <i>Issues (and Supporting Information Sources):</i>                                                                                                                                   | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i>         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|--------------------------|
| <b>X. HYDROLOGY AND WATER QUALITY —</b><br>Would the project:                                                                                                                         |                                       |                                                           |                                     |                          |
| a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?                                            | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

| <b>Issues (and Supporting Information Sources):</b>                                                                                                                                                                    | <b>Potentially<br/>Significant<br/>Impact</b> | <b>Less Than<br/>Significant with<br/>Mitigation<br/>Incorporated</b> | <b>Less Than<br/>Significant<br/>Impact</b> | <b>No Impact</b>         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------|--------------------------|
| c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: |                                               |                                                                       |                                             |                          |
| i) result in substantial erosion or siltation on- or off-site;                                                                                                                                                         | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |
| ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;                                                                                             | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |
| 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                             | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |
| iv) impede or redirect flood flows?                                                                                                                                                                                    | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |
| d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?                                                                                                                    | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |
| e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?                                                                                                | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |

## Environmental Setting

### Surface Water Hydrology

Contra Costa County is bounded by San Francisco Bay and San Pablo Bay to the west, by Suisun Bay and the San Joaquin River to the north, the Old River to the east and Alameda County to the south. Water from the urbanized western portion of the county drains directly to San Francisco Bay or San Pablo Bay, while the northern and eastern portions of the county drain into Suisun Bay and the Delta river channels, eventually flowing into San Francisco Bay or San Pablo Bay. The south-central portion of the county is within the Alameda Creek drainage basin; this area's water drains south to Alameda Creek, then west to San Francisco Bay (Contra Costa County 2024).

### Brushy Creek Watershed

Brushy Creek watershed is located in the south-eastern portion of Contra Costa County, bordering Alameda and San Joaquin Counties. Due to the rainshadow effect of Mount Diablo, average rainfall in the upper watershed averages approximately 20 inches per year, and falls to 10 inches or less in the lower parts of the watershed.

### Water Quality

Surface water quality in the region is generally considered good. Water bodies nearby the Proposed Project include Old River (San Joaquin River to Clifton Court Forebay; in Delta Waterways, central portion) listed as Section 303(d) impaired for manganese, oxygen, dissolved, indicator bacteria, specific conductivity, chloroform; and the California Aqueduct (outside Delta Waterways to Panoche Creek) listed as Section 303(d) impaired for chloroform, total trihalomethane (TTHM), dichlorobromomethane (EPA 2024).



## ***Groundwater Hydrology and Water Quality***

Eight groundwater basins are in Contra Costa County. The Proposed Project is within the East Contra Costa Basin. The East Contra Costa groundwater subbasin is in the eastern portion of Contra Costa County and is characterized as a medium priority basin by DWR. Eight local agencies that overlay the basin have collaborated to develop a GSP. The agencies are the Cities of Antioch and Brentwood, Bryon Bethany Irrigation District, Contra Costa County, Contra Costa Water District (CCWD), Diablo Water District, the Town of Discovery Bay Community Services District, and East Contra Costa Irrigation District. The East Contra Costa Subbasin GSP was submitted to DWR in October 2021 and provides sustainability goals and management principles to protect all beneficial uses and users of groundwater in the subbasin. The groundwater basin does not show any signs of over-pumping; however, its ranking as a medium priority basin is based on the importance of groundwater as a source of supply for domestic and agricultural uses. In addition, there are many disadvantaged communities that rely on groundwater as the sole source of supply.

## ***Flood Control and Flood Management Facilities***

The Federal Emergency Management Agency (FEMA) designates floodplain zones on Flood Insurance Rate Maps (FIRMs) to assist cities and counties in mitigating flooding hazards through land use planning. FEMA also outlines specific regulations for any construction within a 100-year floodplain. The 100-year floodplain is defined as an area that has a 1 percent chance of being inundated during a 12-month period. The Proposed Project is within a 100-year floodplain.

## **Discussion**

- a) **Less than Significant.** Construction of the Proposed Project would involve the use of heavy equipment, such as excavation, grading, earthmoving, movement of spoils, installation of pipelines and an infiltration gallery. Even though soil erosion potential on the Project Site is generally moderate, construction activities have the potential to increase rates of erosion, which could increase turbidity in downstream receiving waters. In addition, the use of heavy machinery during construction would have the potential to result in an accidental release of fuels, oils, solvents, hydraulic fluid, and other construction-related fluids to the environment, thereby degrading water quality.

As described previously, soils at the Project Site have moderate potential for erosion; however, earthmoving and grading activities during construction have the potential to cause erosion. Routine Project operations and maintenance activities are not anticipated to result in substantial soil erosion or loss of topsoil.

SVWRA or its contractors would be required to obtain a National Pollutant Discharge Elimination System (NPDES) Construction General Permit for Discharges of Stormwater Associated with Construction Activities (Construction General Permit) from the Central Valley Regional Water Quality Control Board before initiating ground-disturbing activities. Among the permit's conditions would be preparation and implementation of a storm water pollution prevention plan (SWPPP) that would identify and require implementation of best management practices (BMPs) to prevent sediment and other construction-related compounds (e.g., fuel, oil) from entering stormwater runoff. Compliance with the NPDES Construction General Permit,

including the implementation of BMPs described in the SWPPP, would ensure that the proposed Project would avoid and/or minimize the potential impact of soil erosion or the loss of topsoil during construction. Therefore, this impact would be less than significant.

Routine operation and maintenance activities for the proposed Project would include periodic maintenance, cleaning and biological surveys. There would be no significant increase in sediment or other potential pollutants discharged into receiving waters. As a result, impacts on water quality from the Proposed Project's operation and maintenance activities would be less than significant.

- c.i-iv) **Less than Significant.** The Proposed Project would construct an infiltration gallery that would examine both biological and engineering characteristics of the system to ensure that the design is effective for the project's intended purposes and to learn from the systems performance and operations to further improve designs. Once constructed, the Proposed Project would divert water from Italian Slough through an unscreened box culvert, pass water through the infiltration gallery via gravity flow into a vault, before being pumped from the collection facility through a pipe and re-routed back into Italian Slough directly or through the adjacent wetland. No water consumption would occur as a result of the Proposed Project. The Proposed Project would not increase the amount of water in nor result in a loss of water to Italian Slough, but would, rather, pass water through the test facility as part of the Proposed Project's examination of biological and engineering characteristics and return it to the Slough. Therefore, this impact would be less than significant.
- d) **Less than Significant.** The Proposed Project would include an infiltration gallery that would examine both biological and engineering characteristics of the system to ensure that the design is effective for the project's intended purposes and to learn from the systems performance and operations to further improve designs. It is likely that a temporary storage and office building (approx. 400 square feet) will be constructed on-site or a transportable building will be delivered to the site. To avoid potential contamination of soil, surface water or groundwater, fuel will be stored off-site and delivered to the site for refueling. Once constructed, routine operation and maintenance activities for the Proposed Project would include periodic maintenance, cleaning and biological surveys and only a limited quantity of supplies would be stored on site. Therefore, this impact would be less than significant.
- e) **Less than Significant.** As described previously under checklist items a) and b), the Proposed Project would comply with the NPDES Construction General Permit, including the implementation of BMPs described in the SWPPP to prevent water quality pollutants such as silt, sediment, hazardous materials, and construction-related fluids from entering receiving waters. Implementing the Proposed Project would result in the addition of impervious surfaces from construction of the infiltration gallery; however, the Proposed Project would pump water from the collection facility through a pipe and re-routed it back into Italian Slough directly or through the adjacent wetland. No water consumption would occur as a result of the Proposed Project and new impervious surfaces would be relatively minimal in relation to the surrounding area. Therefore, this impact would be less than significant.

References

Contra Costa County. 2024. Contra Costa County 2045 General Plan. Available: <https://www.contracosta.ca.gov/4732/General-Plan>. Accessed December 5, 2024.

U.S. Environmental Protection Agency (EPA). 2024. Final 2024 California Integrated Report (Clean Water Act Section 303(d) List/305(b) Report). Approved by EPA December 13, 2024. Available: [https://www.waterboards.ca.gov/water\\_issues/programs/water\\_quality\\_assessment/2024-integrated-report.html](https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2024-integrated-report.html). Accessed January 15, 2024.

2.3.11 Noise

| <i>Issues (and Supporting Information Sources):</i>                                                                                                                                                                                                                                                       | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i>         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|--------------------------|
| <b>XIII. NOISE</b> — Would the project result in:                                                                                                                                                                                                                                                         |                                       |                                                           |                                     |                          |
| a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?                                                         | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Generation of excessive groundborne vibration or groundborne noise levels?                                                                                                                                                                                                                             | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Environmental Setting

Sound is mechanical energy transmitted by pressure waves through a medium such as air, while noise is defined as unwanted sound. Sound pressure level is measured in decibels (dB), with 0 dB corresponding roughly to the threshold of human hearing and 120–140 dB corresponding to the threshold of pain.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, during assessments of potential noise impacts, sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hertz<sup>3</sup> and above 5,000 Hertz in a manner corresponding to the human ear’s decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as *A-weighting* and is expressed in units of A-weighted decibels (dBA).<sup>4</sup>

Effects of Noise on People

The effects of noise on people fall into three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction.

<sup>3</sup> Hertz is a unit of frequency equivalent to one cycle per second.

<sup>4</sup> All noise levels reported herein reflect A-weighted decibels unless otherwise stated.

- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants generally experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation exists in individual thresholds of annoyance; different tolerances to noise tend to develop based on individuals' past experiences with noise.

Thus, an important way to predict a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise levels, the following relationships occur:

- In carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference when the change in noise is perceived but does not cause a human response.
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected.
- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

The human ear perceives sound in a nonlinear fashion; hence, the decibel scale was developed. Because the decibel scale is nonlinear, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

## Noise Attenuation

Stationary "point" sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of 6 to 7.5 dBA per doubling of distance from the source, depending on environmental conditions (e.g., atmospheric conditions and noise barriers, either vegetative or manufactured). Widely distributed noises, such as a large industrial facility spread over many acres or a street with moving vehicles (a "line" source), would typically attenuate at a lower rate, approximately 3 to 4.5 dBA per doubling of distance from the source (also depending on environmental conditions) (Caltrans 2013). Noise from large construction sites would have characteristics of both point and line sources, so attenuation would generally range between 4.5 and 7.5 dBA per doubling of distance.

## Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Several different methods are used to quantify vibration (FTA 2018):

- *Peak particle velocity* (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings.
- The *root mean square* (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal.
- Decibel notation, expressed as *vibration decibels* (VdB), is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.

Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration.

## Existing Ambient Noise Environment

The noise environment in the area surrounding the Project Site is characterized by highway noise, rural roadways, rural agricultural noise, recreational watercraft noise, and scattered residences. It includes high-volume traffic noise from passenger vehicles, large trucks, boats and recreational watercraft. The ambient noise environment in the vicinity of the Project Site was estimated using a relationship between population density and ambient noise that was determined during a research program by the EPA. The agency estimated that residents of rural or other non-urban areas are exposed to outdoor ambient noise levels ranging from 35 to 50 dBA  $L_{dn}$ <sup>5</sup> (EPA 1974). Because the area surrounding the Project Site can be categorized as a rural or other non-urban area, it is assumed that ambient noise levels would range between 35 and 50 dBA  $L_{dn}$ .

## Sensitive Receptors

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication; physiological and psychological stress; and hearing loss. Given these effects, some land uses are considered more sensitive to ambient noise levels than others. In general, residences, schools, hotels, hospitals, and nursing homes are considered to be the most sensitive to noise. Commercial and industrial uses are considered the least noise-sensitive. Sensitive receptor land uses in the vicinity of the Project Site include several residences in the vicinity of the Project Site including one residence approximately 300 feet to the southwest (as part of a marina business), one residence approximately 750 feet to the southeast and one residence approximately 400 feet to the northeast.

## Discussion

- a) **Less than Significant.** The County does not have specific limits or thresholds for construction noise. Therefore, the FTA construction noise criterion of 80 dBA Leq (8hr) is used in this

<sup>5</sup> Also abbreviated "DNL,"  $L_{dn}$  is a 24-hour day and night A-weighted noise exposure level that accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10 p.m. and 7 a.m. is weighted (penalized) by adding 10 dB to take into account the greater annoyance of nighttime noises.

analysis to assess construction noise impacts at sensitive receptors. Construction of the Proposed Project would be limited to weekdays and non-holidays to the hours set forth in the General Plan Policy HS-P14.7. The hours would be from 8:00 a.m. to 5:00 p.m. when construction occurs within 1,000 feet of a noise sensitive receptor; and 7:00 a.m. to 6:00 p.m. when construction occurs at distances greater than 1,000 feet from the nearest noise-sensitive receptor. Compliance with the Health and Safety Element policy would limit the Proposed Project's construction noise to a level determined to be acceptable by Contra Costa County. Therefore, the noise impact of Proposed Project construction activity would be less than significant.

On-site construction activities would only occur within Contra Costa County's daytime hours and would not violate the County's General Plan Policy HS-P14.7, and when the existing ambient noise level is at its highest (e.g., traffic noise); no nighttime hours as defined by the Contra Costa County General Plan Policy HS-P14.7 would occur, and the activities would be limited in duration. This impact would be less than significant.

The Project Site is located in a rural area adjacent to land that is zoned for grazing land. In the Project area, high-volume traffic noise from large trucks, passenger vehicles, and recreational watercraft is normal.

Once constructed, the Proposed Project include an infiltration gallery that would examine both biological and engineering characteristics of the system to ensure that the design is effective for the project's intended purposes and to learn from the systems performance and operations to further improve designs. Regular monitoring and maintenance would be completed by staff.

In the Project area, existing conditions include ambient noise from high-volume traffic noise from large trucks, passenger vehicles, and recreational watercraft. Operation of the Proposed Project would not involve noise that would differ from what is currently experienced under existing conditions. Consequently, the Proposed Project is not expected to result in any permanent substantial noise increases relative to existing conditions, nor would noise levels generated by Proposed Project operation and maintenance activities exceed Contra Costa County's General Plan Policy HS-P14.7 at the nearest sensitive receptor. Therefore, this impact would be less than significant.

- b) **Less than Significant.** Operation of the Proposed Project would not include any activities that would generate significant levels of vibration. Therefore, it is not anticipated that Proposed Project operation would expose the nearest sensitive receptor or structure to vibration levels that would result in annoyance. For this reason, the following analysis of the Proposed Project's vibration impacts evaluates only the effects of on-site construction activities.

For adverse human reaction, the analysis applies the "strongly perceptible" threshold of 0.9 inch per second (in/sec) PPV for transient sources. For risk of architectural damage to historic buildings and structures, the analysis applies a threshold of 0.12 in/sec PPV (Caltrans 2013). A threshold of 0.3 in/sec PPV is used to assess damage risk for all other buildings. There are no historic structures in the vicinity of the Project Site that could be adversely affected by vibration related to Proposed Project construction.

Construction of the Proposed Project would involve the use of excavators, drainpipe trencher/installer, graders, bulldozers, dump trucks, and loaders. The use of bulldozers would be expected to generate the highest vibration levels during construction. Vibration levels of bulldozers are typically 0.089 in/sec PPV at 25 feet, which is typical for a wide range of soils. Under typical propagation conditions, vibration levels at 175 feet would be approximately 0.0048 in/sec PPV, which is well below the Federal Transit Administration’s threshold of 0.20 in/sec PPV for building damage and 72 VdB for human annoyance. Therefore, this impact would be less than significant.

- c) **Less than Significant.** The Project Site is located approximately 1.1 miles to the northeast of the Byron Airport, a public airport. The Project Site is located outside of the noise contours as delineated in the Contra Costa County Airport Land Use Compatibility Plan (2000). Therefore, the Proposed Project would not expose people working in the Project area to excessive noise levels, and impacts would be less than significant.

References

Contra Costa County. 2004. Contra Costa County Airport Land Use Compatibility Plan. September 13, 2004.

2.3.12 Transportation

| <i>Issues (and Supporting Information Sources):</i>                                                                                                              | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i>         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|--------------------------|
| <b>XVII. TRANSPORTATION —</b> Would the project:                                                                                                                 |                                       |                                                           |                                     |                          |
| a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?           | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?                                                          | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Result in inadequate emergency access?                                                                                                                        | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Environmental Setting

Highways

The Project Site is located approximately 4.5 miles south of State Route 4, which is the primary east-west corridor across Contra Costa County.

County Roadways/Traffic Types

Byron Highway is located at the end of Clifton Court Road, approximately .40 miles west of the Project Site. Byron Highway is considered a route of regional significance for the County (Contra Costa County 2024b).

## Discussion

- a) **Less than Significant.** Construction of the Proposed Project would temporarily generate increases in vehicle trips by workers and vehicles on area roadways. There could be a minimal increase in truck trips for construction; however, given the scale of the Proposed Project and the length of the construction period, the capacity of local roads used to access the Project Site would not likely be substantially reduced. Proposed Project operation would require a similar a minimal amount of workers. Because the increase in traffic during construction and operation would be minimal, there would be no conflict with programs, plans or policies addressing the circulation system. Therefore, this impact would be less than significant.
- b) **Less than Significant.** Section 15064.3 of the State CEQA Guidelines establishes specific considerations for evaluating a project's transportation impacts. The State CEQA Guidelines identify vehicle miles traveled (VMT)—the amount and distance of automobile travel attributable to a project—as the most appropriate measure of transportation impacts. Other relevant considerations may include the effects of the project on transit and nonmotorized travel. Construction of the proposed Project would last approximately 2 months and would use existing construction crews. Operation of the Proposed Project would not add a substantial amount of VMT to the Project area. Therefore, this impact would be less than significant.
- c) **Less than Significant.** Trucks accessing the Project Site would use SR-4 and local rural roadways. Based on the low number of anticipated construction trips relative to traffic volumes on local roadways and their limited duration, this impact of Proposed Project construction would be less than significant.

Construction of the Proposed Project would not result in new design features on roads in the area. Further, the Proposed Project would not result in in potential traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways, given the intermittent and temporary nature of construction activities. Therefore, this impact would be less than significant.

- d) **Less than Significant.** Temporary construction staging would not block or interfere with emergency response vehicles as staging would occur on the within the Project Site. Increases in traffic volumes on local roadways providing access to the Project Site could cause intermittent and temporary slowdowns in traffic flow during construction, although worker trips associated with Proposed Project operation are not expected to cause access on local roadways to deteriorate. For these reasons, the Proposed Project would not result in inadequate emergency access, and this impact would be less than significant.

## References

Contra Costa County. 2024b. *Contra Costa County 2045 General Plan and Climate Action Plan Draft EIR*. Available: <https://envisioncontracosta2040.org/wp-content/uploads/2024/02/Contra-Costa-County-General-Plan-and-CAP-EIR.pdf>. Accessed January 8, 2025.



## 2.3.13 Tribal Cultural Resources

| <i>Issues (and Supporting Information Sources):</i>                                                                                                                                                                                                                                                                                                                                                                       | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less Than<br/>Significant with<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------|--------------------------|
| <b>XVIII. TRIBAL CULTURAL RESOURCES —</b>                                                                                                                                                                                                                                                                                                                                                                                 |                                               |                                                                       |                                             |                          |
| a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources 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:                            |                                               |                                                                       |                                             |                          |
| i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or                                                                                                                                                                                                                            | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |
| ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |

### Environmental Setting

See the *Cultural Resources* section, above, for a summary of the CHRIS records search, background research, and field survey efforts for cultural resources, which informs the tribal cultural resources analysis.

### Background Research

In March 2024, ESA requested a cultural resources records search for the Project from staff at the NWIC at Sonoma State University. The study area for the records search was the Project Site with a 0.5-mile buffer. The NWIC records search indicates that six cultural resources have been previously recorded within 0.5-mile of the Project Site; none of these was recorded within or adjacent to the Project Site. Four of these previously recorded resources are indigenous archaeological resources, consisting of one site with a burial and artifacts (P-07-000413), one site with artifacts (P-07-000085), one isolate (P-07-004508), and one undescribed resource (P-07-000086). None of the four archaeological resources previously recorded within 0.5-mile of the Project Site appear to have been previously evaluated for California Register-eligibility.

The NWIC has record of 46 previous cultural resources documents/reports associated with 19 projects that covered areas within 0.5-mile of the Project Site. Of these, four projects covered a portion of the Project Site and included field surveys. The previous studies for projects outside the Project Site were mostly associated with water infrastructure and facilities improvement, maintenance, and management, as well as utility relocation and removal, and road improvement.

### Ethnographic Literature Research

ESA's review of ethnographic literature revealed that the territory of the Bolbones of the Northern Valley Yokuts included the Project Site and vicinity, specifically along Old River (Cook, 1955). According to

Cook (1955:57), this large group “occupied the sloughs of the lower San Joaquin west of Stockton” and likely consisted of eight villages and 1,500 people. The village of Pescadero, which was situated between Byron and Bethany, is approximately 5 miles southeast of the Project Site. It was described as both the “key village” and as “the most important rancharia of the area and probably...more populous than any other” within the Bolbones tribal complex (Cook, 1955:58). However, the ethnographic accounts reviewed date to the early 20th century and, given the rapid decimation of Northern Valley Yokuts soon after 19th-century Euroamerican settlement in the area, the relative few Native American settlements described in the vicinity of the Project Site should not be taken as definitive evidence of an absence of other villages or lack of use of the area.

### ***Native American Correspondence***

ESA contacted the NAHC on October 2, 2024, in request of a search of the NAHC’s SLF and a list of Native American representatives who may have interest in the Project. The NAHC replied to ESA’s SLF and Native American contacts request on October 7, 2024, in which they stated that the SLF has no record of sacred sites in the Project Site.

No California Native American Tribes have formally requested to be notified of SVWRA projects, pursuant to PRC Section 21080.3 (Assembly Bill 52); therefore, no Tribal consultation pursuant to PRC Section 21080.3 was required for the Project. The NAHC correspondence is included as an attachment to the Project’s cultural resources technical report, available in (see Confidential **Appendix B**).

### ***Field Survey***

In October 2024, ESA conducted a pedestrian surface survey of all accessible portions of the Project Site. Intensive pedestrian methods were used during the survey, consisting of walking the ground surface in parallel transects no greater than 15 meters apart and inspecting the ground surface for evidence of cultural material.

Of the 13.7-acre Project Site, 11.1 acres was covered in the pedestrian survey, as 1.2 acres in the central portion of the Project Site was inaccessible due to dense California bulrush and inundated areas. Additionally, 1.4 acres of the Project Site is within a river. As such, 2.6 acres of the Project Site were not surveyed. In the 11.6-acre portion of the Project Site that was surveyed, ground surface visibility was good, ranging from 60 to 85 percent. ESA did not observe any cultural resources in the Project Site (i.e., cultural material 45 years of age or older) during the survey.

### ***Summary of Cultural Resources Identified***

Through background research, NAHC correspondence, and a field survey conducted for the Project, no tribal cultural resources that could potentially be impacted by the Project were identified.

### ***Discussion***

- a.i, ii) **Less than Significant.** Through a records search, background research, a field survey, and correspondence with the NAHC, no tribal cultural resources have been identified that would be potentially impacted by the Proposed Project. Therefore, the Proposed Project is not anticipated to impact any tribal cultural resources.

Because the Proposed Project would involve ground-disturbing activities, it is possible that such actions could unearth, expose, or disturb previously unknown archaeological resources or human remains.

In the unlikely event that archaeological resources are identified during Proposed Project construction, SVWRA would comply with PRC Section 21083.2(i) as well as *Contra Costa County 2045 General Plan* Policy COS-P10.6, COS-P11.9, and COS-P11.10, which require the lead agency to: make provisions for archaeological resources accidentally discovered during construction; avoid impacts on Native American archaeological resources when possible and, if not feasible, mitigated to the maximum extent feasible; and consult with California Native American Tribes when developing mitigation measures to avoid or minimize impacts on tribal cultural resources. SVWRA would be required to consult with California Native American Tribes and, if the find is determined to be a tribal cultural resource, as defined in PRC Section 21074(a), develop mitigation measures with California Native American Tribes to avoid or minimize impacts on the tribal cultural resource.

In the unlikely event that human remains are encountered during Proposed Project construction, SVWRA and/or its contractor would comply with CGC Section 27460 *et seq.* and *Contra Costa County 2045 General Plan* Policy COS-P11.9, COS-P11.10, and COS-P11.11, which require the lead agency to: halt ground-disturbing activities to halt until the County Coroner can determine whether the remains are subject to the provisions of CGS Section 27491 or any other related provisions of law concerning investigation of the circumstances, manner, and cause of death, and the required recommendations concerning the treatment and disposition of the human remains have been made; avoid impacts on Native American archaeological resources when possible and, if not feasible, mitigated to the maximum extent feasible; and consult with California Native American Tribes when developing mitigation measures to avoid or minimize impacts on tribal cultural resources. Pursuant to California Health and Safety Code Section 7050.5, the Coroner shall make a determination within 48 hours of notification of the discovery of the human remains. If the Coroner determines that the remains are not subject to their authority and recognizes or has reason to believe that they are those of a Native American, the Coroner shall contact the NAHC within 24 hours. With compliance with existing regulations, the potential impact related to the accidental discovery of archaeological resources or human remains that could qualify as tribal cultural resources would be less than significant.

## References

Contra Costa County. 2024. *Contra Costa County 2045 General Plan*. November 5.

Cook, Sherburne F. 1955. *The Aboriginal Population of the San Joaquin Valley, California*. University of California Anthropological Records, No. 16(2):31–74, Berkeley, CA.

## 2.3.14 Utilities and Service Systems

| <i>Issues (and Supporting Information Sources):</i>                                                                                                                                                                                                                                  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i>         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|--------------------------|
| <b>XIX. UTILITIES AND SERVICE SYSTEMS —</b> Would the project:                                                                                                                                                                                                                       |                                       |                                                           |                                     |                          |
| a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?                                                                                                                            | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?                                                    | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?                                                                                              | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?                                                                                                                                                                   | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Environmental Setting

Wastewater services in Contra Costa County are provided through 20 agencies: 7 cities and 13 sanitary districts. Rural areas rely on on-site wastewater treatment systems (OWTS).

The County oversees solid waste management for about half of the unincorporated population, including the Project Site. There are six transfer stations and two landfills in Contra Costa County. The Keller Canyon Landfill is at 901 Bailey Road in unincorporated Contra Costa County near Pittsburg and Bay Point. It is owned and operated by Republic Services and has been in operation since 1992. The landfill is permitted to receive up to 3,500 tons of waste per day, has a remaining capacity of approximately 63 million cubic yards, and is estimated to close by 2050 (CalRecycle 2025).

Two energy providers, Marin Clean Energy (MCE) and Pacific Gas and Electric Company (PG&E) serve the Project area. PG&E provides distribution of electrical services to the County, while MCE provides the electrical commodity for its customers. MCE works in conjunction with PG&E to provide electricity to consumers through the use of PG&E's distribution infrastructure and network.

### Discussion

- a-d) **Less than Significant.** The Proposed Project would serve as a temporary test facility. The Proposed Project would include an infiltration gallery that would examine both biological and engineering characteristics of the system to ensure that the design is effective for the project's intended purposes and to learn from the systems performance and operations to further improve designs, the effects of which are analyzed throughout this document. The Proposed Project would include a new power line to deliver power to the Project Site. The Proposed Project would not include or require the relocation or construction of new or expanded wastewater treatment or stormwater drainage, natural gas, or telecommunications facilities. Construction of the Proposed

Project would comply with all wastewater requirements of the Central Valley Regional Water Quality Control Board (see Section 2.3.10, *Hydrology and Water Quality*, for more information), as well as all federal, state, and local statutes and regulations related to solid waste. Therefore, these impacts would be less than significant.

- e) **Less than Significant.** The Proposed Project would generate minimal waste during temporary construction activities. Construction of the Proposed Project would generate solid waste from building materials, and general waste. All solid waste collected at the Project Site would be brought to the transfer stations in Brentwood or Pittsburg, before being transferred to the Keller Canyon Landfill. The Keller Canyon Landfill is well below its maximum permitted capacity of 75,018,280 cubic yards, with 63,408,410 cubic yards remaining capacity (CalRecycle 2025). Construction waste generated by the Proposed Project is not anticipated to cause the disposal site to exceed its maximum permitted disposal volume. The Proposed Project would generate a relatively small amount of solid waste per day, as compared to the permitted daily capacity at the Keller Canyon Landfill; therefore, the landfill would have sufficient capacity to accept solid waste generated by the Proposed Project. Therefore, this impact would be less than significant.

## References

California Department of Resources Recycling and Recovery (CalRecycle). 2025. SWIS Facility/Site Details: Keller Canyon Landfill (07-AA-0032). Available: <https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/4407?siteID=228>. Accessed January 7, 2025.

## 2.3.15 Wildfire

| <i>Issues (and Supporting Information Sources):</i>                                                                                                                                                                                                                | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i>                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|-------------------------------------|
| <b>XX. WILDFIRE</b> — If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:                                                                                                             |                                       |                                                           |                                     |                                     |
| a) Substantially impair an adopted emergency response plan or emergency evacuation plan?                                                                                                                                                                           | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 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?                                                       | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 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? | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 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?                                                                            | <input type="checkbox"/>              | <input type="checkbox"/>                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

## Environmental Setting

The Project Site is located within a Local Responsibility Area where local fire protection districts and fire departments are charged with fire protection. The Project Site is in an area designated as non-very high fire hazard safety zone (CALFIRE 2009).

## Discussion

- a) **Less than Significant.** The Project Site is adjacent to lands occupied by grazing lands and agriculture. The vegetation and land use types have a low potential for wildland fires and the Proposed Project is not expected to expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Proposed Project activities would be contained within the boundaries of the Project Site and would not impair emergency response access on roadways or to areas within or adjacent to the Project Site. Therefore, this impact would be less than significant.
- b) **Less than Significant.** The Proposed Project would clear and excavate the Project Site as part of the construction activities. Removing vegetation would lower on-site fuel sources for wildfires. The Proposed Project would not exacerbate wildfire risks that would expose on-site employees to pollutants or uncontrolled wildfires. This impact would be less than significant.
- c) **Less than Significant.** The Proposed Project would involve a 2.5-acre footprint that would include the construction of a temporary test facility that would be powered by electricity. Given the low wildfire potential because of the grazing lands surrounding the Project Site and the limited size of the temporary test facility, the Proposed Project is not expected to result in temporary or ongoing impacts to the environment from the installation or maintenance of infrastructure that would exacerbate wildfire risks. This impact would be less than significant.
- d) **No Impact.** The Proposed Project would serve as a temporary test facility. The Proposed Project would include an infiltration gallery that would examine both biological and engineering characteristics of the system to ensure that the design is effective for the project's intended purposes and to learn from the systems performance and operations to further improve designs. The Project Site is relatively flat and does not have a high risk for wildfire. Therefore, the Proposed Project would not expose people or structures to risks of downstream flooding or landslide as a result of runoff, post-fire slope instability, or drainage changes, and no impact would occur.

## References

California Department of Forestry and Fire Protection (CAL FIRE). 2009. Very High Fire Hazard Severity Zones in Local Responsibility Area. January 7, 2009.

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## 2.3.16 Mandatory Findings of Significance

| <i>Issues (and Supporting Information Sources):</i>                                                                                                                                                                                                                                                                                                                                                                                                                                  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i>         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------|--------------------------|
| <b>XXI. MANDATORY FINDINGS OF SIGNIFICANCE —</b>                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                       |                                                           |                                     |                          |
| 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, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | <input type="checkbox"/>              | <input checked="" type="checkbox"/>                       | <input type="checkbox"/>            | <input type="checkbox"/> |
| b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?                                                                                                                                       | <input type="checkbox"/>              | <input checked="" type="checkbox"/>                       | <input type="checkbox"/>            | <input type="checkbox"/> |
| c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/>              | <input checked="" type="checkbox"/>                       | <input type="checkbox"/>            | <input type="checkbox"/> |

### Discussion

- a) **Less than Significant with Mitigation Incorporated.** As described in the preceding impact discussions, the impacts related to the potential of the Proposed Project to substantially degrade the environment would be less than significant with incorporated mitigation measures. As described in this initial study, the Proposed Project has the potential for impacts related to air quality, biological resources, energy and greenhouse gas emissions. However, these impacts would be avoided or reduced to a less-than-significant level with the incorporation of avoidance and mitigation measures discussed in each section.
- b) **Less than Significant with Mitigation Incorporated.** This section provides a description of other actions in the area and a discussion of the cumulative impacts of those projects, in combination with the previously identified effects of the Proposed Project. State CEQA Guidelines Section 15355 states that "cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts":
- (a) The individual effects may be changes resulting from a single project or a number of separate projects.
  - (b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

The past, present, and reasonably foreseeable future conditions of the Project Site and vicinity were considered for the cumulative analysis.

**Aesthetics.** Completion of the Proposed Project would result in some visual changes to the Project Site from the construction and operation of an infiltration gallery, channels, vault and reservoir in order to evaluate the biological and engineering performance of an alternative approach to diverting water in an estuarine system. The Proposed Project would be consistent with the rural nature and agricultural uses of the existing setting. Further, these changes would be surrounded by parcels currently in use for grazing, agriculture, industrial and recreation and would not be easily visible from the adjacent area. At the end of the Proposed Project, the land will be revegetated and returned to its pre-Project condition. Therefore, cumulative impacts on aesthetics would be less than significant.

**Air Quality and Greenhouse Gas Emissions.** A number of individual projects in the vicinity of the Proposed Project may be under construction simultaneously with the Proposed Project. Depending on construction schedules and actual implementation of projects in and around Contra Costa County, generation of fugitive dust and pollutant emissions during construction may result in short-term air pollutants, which would contribute to short-term cumulative impacts on air quality. However, each individual project would be subject to BAAQMD's rules, regulations, and other mitigation requirements during construction. For cumulative impacts on air quality and greenhouse gas emissions, see Sections 2.3.3 *Air Quality*, and 2.3.8 *Greenhouse Gas Emissions*, above. The thresholds used consider the contributions of other projects in the air basin. Additionally, greenhouse gas emissions are considered cumulative in nature because it is unlikely that a single project would contribute significantly to climate change.

**Biological Resources, Cultural Resources, Tribal Cultural Resources, Geology and Soils, and Hazards and Hazardous Materials.** The Proposed Project's impacts for these environmental issues would be limited to the Project Site, and any significant impacts would be reduced to a less-than-significant level by implementing proposed mitigation measures. Thus, the Proposed Project would not contribute to cumulative impacts for these topics.

**Energy.** Construction of the Proposed Project would result in fuel consumption from the use of construction tools and equipment, truck trips to haul materials, and vehicle trips by construction workers commuting to and from the Project Site. This impact would be temporary and localized. Operational energy impacts would be relatively minimal and related to pumps and maintenance, cleaning and biological surveys. Construction-related fuel consumption by the Proposed Project would not result in inefficient, wasteful, or unnecessary energy use compared with other construction sites in the region.

**Hydrology and Water Quality.** Implementing the Proposed Project would result in an increase of impervious surfaces added; however, the increase would be relatively minimal and would not result in large amounts of stormwater. The Proposed Project would not increase the amount or rate of stormwater, or require increased stormwater drainage capacity. Construction contractors would be required to acquire coverage under the NPDES General Stormwater Permit, which requires the preparation and implementation of a SWPPP for construction activities. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, and equipment and fuel storage; describe protocols for responding immediately to spills; and describe best



management practices for controlling site run-on and runoff. Therefore, cumulative impacts would be less than significant.

**Land Use and Land Use Planning.** The Proposed Project would have no impact on land use and land use planning; therefore, it would not contribute to cumulative land use issues.

**Mineral Resources.** The Proposed Project would have no impact on mineral resources and thus would not contribute to cumulative impacts.

**Noise.** The Proposed Project's noise impacts are anticipated to be minor and the Proposed Project would comply with the noise standards in the Health and Safety Element of the Contra Costa County General Plan. Operation of the Proposed Project would not result in a substantial permanent increase in ambient noise levels in the Proposed Project vicinity above levels existing without the Proposed Project. Thus, cumulative noise impacts would be less than significant.

**Population and Housing.** The Proposed Project would have no impact on population growth in the area because it would not include any new residential or commercial development. The Proposed Project also would not result in temporary employment during construction and would not result in the permanent creation of a significant number of new jobs that would induce substantial population growth. Therefore, cumulative population and housing impacts would be less than significant.

**Public Services.** No commercial or residential development is proposed as part of the Proposed Project; therefore, the Proposed Project would not increase demands on fire protection or police services, nor would it affect the response time of these services. Therefore, cumulative public services impacts would be less than significant.

**Recreation.** The Proposed Project would have no impact on recreation and thus would not contribute to cumulative impacts.

**Transportation.** For cumulative impacts, see Section 2.3.12, *Transportation*.

**Utilities and Service Systems.** The Proposed Project does not include and would not require the relocation or construction of new or expanded wastewater treatment or stormwater drainage, natural gas, or telecommunications facilities. The Proposed Project also would not require stormwater treatment. Therefore, cumulative impacts related to utilities and service systems would be less than significant.

The analyses in this draft initial study/mitigated negative declaration found that the Proposed Project and associated activities would have the potential to result in impacts on the environment in the areas of biological resources and greenhouse gas emissions. However, these potential impacts would be reduced to a less-than-significant level with implementation of the mitigation measures included in this document, and most impacts would be temporary (i.e., would occur only during construction). Other future projects proposed in the region and vicinity may increase the impacts identified herein, or the Proposed Project may contribute to other impacts. However, the Proposed Project is not anticipated to contribute substantially to any one impact, and the

Proposed Project's impacts are not anticipated to be cumulatively considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of future projects. Thus, this impact would be less than significant with mitigation incorporated.

- c) **Less than Significant with Mitigation Incorporated.** The Proposed Project would not result in any substantial adverse effects on human beings, either directly or indirectly, because each potentially significant impact can be reduced to a less-than-significant level with the implementation of the mitigation measures provided in this document. No other substantial adverse effects on human beings are anticipated as a result of the Proposed Project, resulting in a less-than-significant impact with mitigation incorporated.
-

# Appendix A

## **Species Lists**





## CNPS Rare Plant Inventory

### Search Results

40 matches found. Click on scientific name for details

Search Criteria: , [CRPR](#) is one of [1A:1B:2A:2B] , [9-Quad](#) include

[3712176:3712174:3712175:3712185:3712186:3712184:3712164:3712165:3712166]

| ▲ SCIENTIFIC NAME                                     | COMMON NAME               | FAMILY         | LIFEFORM                   | BLOOMING PERIOD | FED LIST | STATE LIST | GLOBAL RANK | STATE RANK | CA RARE PLANT RANK | CA ENDEMIC |
|-------------------------------------------------------|---------------------------|----------------|----------------------------|-----------------|----------|------------|-------------|------------|--------------------|------------|
| <i>Amsinckia grandiflora</i>                          | large-flowered fiddleneck | Boraginaceae   | annual herb                | (Mar)Apr-May    | FE       | CE         | G1          | S1         | 1B.1               | Yes        |
| <i>Arctostaphylos manzanita</i> ssp. <i>laevigata</i> | Contra Costa manzanita    | Ericaceae      | perennial evergreen shrub  | Jan-Mar(Apr)    | None     | None       | G5T2        | S2         | 1B.2               | Yes        |
| <i>Astragalus tener</i> var. <i>tener</i>             | alkali milk-vetch         | Fabaceae       | annual herb                | Mar-Jun         | None     | None       | G2T1        | S1         | 1B.2               | Yes        |
| <i>Atriplex cordulata</i> var. <i>cordulata</i>       | heartscale                | Chenopodiaceae | annual herb                | Apr-Oct         | None     | None       | G3T2        | S2         | 1B.2               | Yes        |
| <i>Atriplex depressa</i>                              | brittlescale              | Chenopodiaceae | annual herb                | Apr-Oct         | None     | None       | G2          | S2         | 1B.2               | Yes        |
| <i>Atriplex minuscula</i>                             | lesser saltscale          | Chenopodiaceae | annual herb                | May-Oct         | None     | None       | G2          | S2         | 1B.1               | Yes        |
| <i>Balsamorhiza macrolepis</i>                        | big-scale balsamroot      | Asteraceae     | perennial herb             | Mar-Jun         | None     | None       | G2          | S2         | 1B.2               | Yes        |
| <i>Blepharizonia plumosa</i>                          | big tarplant              | Asteraceae     | annual herb                | Jul-Oct         | None     | None       | G1G2        | S1S2       | 1B.1               | Yes        |
| <i>Calochortus pulchellus</i>                         | Mt. Diablo fairy-lantern  | Liliaceae      | perennial bulbiferous herb | Apr-Jun         | None     | None       | G2          | S2         | 1B.2               | Yes        |
| <i>Carex comosa</i>                                   | bristly sedge             | Cyperaceae     | perennial rhizomatous herb | May-Sep         | None     | None       | G5          | S2         | 2B.1               |            |

|                                                      |                                  |                |                                       |                   |      |      |        |     |      |     |
|------------------------------------------------------|----------------------------------|----------------|---------------------------------------|-------------------|------|------|--------|-----|------|-----|
| <i>Caulanthus lemmonii</i>                           | Lemmon's jewelflower             | Brassicaceae   | annual herb                           | Feb-May           | None | None | G3     | S3  | 1B.2 | Yes |
| <i>Centromadia parryi</i> ssp. <i>congdonii</i>      | Congdon's tarplant               | Asteraceae     | annual herb                           | (Apr)May-Oct(Nov) | None | None | G3T2   | S2  | 1B.1 | Yes |
| <i>Chloropyron molle</i> ssp. <i>hispidum</i>        | hispid salty bird's-beak         | Orobanchaceae  | annual herb (hemiparasitic)           | Jun-Sep           | None | None | G2T1   | S1  | 1B.1 | Yes |
| <i>Chloropyron palmatum</i>                          | palmate-bracted bird's-beak      | Orobanchaceae  | annual herb (hemiparasitic)           | May-Oct           | FE   | CE   | G1     | S1  | 1B.1 | Yes |
| <i>Cicuta maculata</i> var. <i>bolanderi</i>         | Bolander's water-hemlock         | Apiaceae       | perennial herb                        | Jul-Sep           | None | None | G5T4T5 | S2? | 2B.1 |     |
| <i>Deinandra bacigalupii</i>                         | Livermore tarplant               | Asteraceae     | annual herb                           | Jun-Oct           | None | CE   | G1     | S1  | 1B.1 | Yes |
| <i>Delphinium californicum</i> ssp. <i>interius</i>  | Hospital Canyon larkspur         | Ranunculaceae  | perennial herb                        | Apr-Jun           | None | None | G3T3   | S3  | 1B.2 | Yes |
| <i>Delphinium recurvatum</i>                         | recurved larkspur                | Ranunculaceae  | perennial herb                        | Mar-Jun           | None | None | G2?    | S2  | 1B.2 | Yes |
| <i>Eryngium racemosum</i>                            | Delta button-celery              | Apiaceae       | annual/perennial herb                 | (May)Jun-Oct      | None | CE   | G1     | S1  | 1B.1 | Yes |
| <i>Eryngium spinosepalum</i>                         | spiny-sepaed button-celery       | Apiaceae       | annual/perennial herb                 | Apr-Jun           | None | None | G2     | S2  | 1B.2 | Yes |
| <i>Erysimum capitatum</i> var. <i>angustatum</i>     | Contra Costa wallflower          | Brassicaceae   | perennial herb                        | Mar-Jul           | FE   | CE   | G5T1   | S1  | 1B.1 | Yes |
| <i>Eschscholzia rhombipetala</i>                     | diamond-petaled California poppy | Papaveraceae   | annual herb                           | Mar-Apr           | None | None | G1     | S1  | 1B.1 | Yes |
| <i>Extriplex joaquinana</i>                          | San Joaquin spearscale           | Chenopodiaceae | annual herb                           | Apr-Oct           | None | None | G2     | S2  | 1B.2 | Yes |
| <i>Hesperolinon breweri</i>                          | Brewer's western flax            | Linaceae       | annual herb                           | May-Jul           | None | None | G2     | S2  | 1B.2 | Yes |
| <i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i> | woolly rose-mallow               | Malvaceae      | perennial rhizomatous herb (emergent) | Jun-Sep           | None | None | G5T3   | S3  | 1B.2 | Yes |

|                                                      |                                |                  |                              |                  |      |      |        |      |      |     |
|------------------------------------------------------|--------------------------------|------------------|------------------------------|------------------|------|------|--------|------|------|-----|
| <i>Lathyrus jepsonii</i> var. <i>jepsonii</i>        | Delta tule pea                 | Fabaceae         | perennial herb               | May-Jul(Aug-Sep) | None | None | G5T2   | S2   | 1B.2 | Yes |
| <i>Lilaeopsis masonii</i>                            | Mason's lilaeopsis             | Apiaceae         | perennial rhizomatous herb   | Apr-Nov          | None | CR   | G2     | S2   | 1B.1 | Yes |
| <i>Limosella australis</i>                           | Delta mudwort                  | Scrophulariaceae | perennial stoloniferous herb | May-Aug          | None | None | G5     | S2   | 2B.1 |     |
| <i>Madia radiata</i>                                 | showy golden madia             | Asteraceae       | annual herb                  | Mar-May          | None | None | G3     | S3   | 1B.1 | Yes |
| <i>Navarretia nigelliformis</i> ssp. <i>radians</i>  | shining navarretia             | Polemoniaceae    | annual herb                  | (Mar)Apr-Jul     | None | None | G4T2T3 | S2S3 | 1B.2 | Yes |
| <i>Oenothera deltoides</i> ssp. <i>howellii</i>      | Antioch Dunes evening-primrose | Onagraceae       | perennial herb               | Mar-Sep          | FE   | CE   | G5T1   | S1   | 1B.1 | Yes |
| <i>Plagiobothrys glaber</i>                          | hairless popcornflower         | Boraginaceae     | annual herb                  | Mar-May          | None | None | GX     | SX   | 1A   | Yes |
| <i>Puccinellia simplex</i>                           | California alkali grass        | Poaceae          | annual herb                  | Mar-May          | None | None | G2     | S2   | 1B.2 |     |
| <i>Ravenella exigua</i>                              | chaparral harebell             | Campanulaceae    | annual herb                  | May-Jun          | None | None | G2     | S2   | 1B.2 | Yes |
| <i>Scutellaria galericulata</i>                      | marsh skullcap                 | Lamiaceae        | perennial rhizomatous herb   | Jun-Sep          | None | None | G5     | S2   | 2B.2 |     |
| <i>Senecio aphanactis</i>                            | chaparral ragwort              | Asteraceae       | annual herb                  | Jan-Apr(May)     | None | None | G3     | S2   | 1B.2 |     |
| <i>Spergularia macrotheca</i> var. <i>longistyla</i> | long-styled sand-spurrey       | Caryophyllaceae  | perennial herb               | Feb-May          | None | None | G5T2   | S2   | 1B.2 | Yes |
| <i>Symphyotrichum lentum</i>                         | Suisun Marsh aster             | Asteraceae       | perennial rhizomatous herb   | (Apr)May-Nov     | None | None | G2     | S2   | 1B.2 | Yes |
| <i>Trifolium hydrophilum</i>                         | saline clover                  | Fabaceae         | annual herb                  | Apr-Jun          | None | None | G2     | S2   | 1B.2 | Yes |
| <i>Tropidocarpum capparideum</i>                     | caper-fruited tropidocarpum    | Brassicaceae     | annual herb                  | Mar-Apr          | None | None | G1     | S1   | 1B.1 | Yes |

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Suggested Citation:

California Native Plant Society, Rare Plant Program. 2025. Rare Plant Inventory (online edition, v9.5.1). Website <https://www.rareplants.cnps.org> [accessed 12 March 2025].

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# Selected Elements by Element Code

## California Department of Fish and Wildlife

### California Natural Diversity Database



**Query Criteria:** Quad<span style='color:Red'> IS </span>(Clifton Court Forebay (3712175)<span style='color:Red'> OR </span>Tracy (3712164)<span style='color:Red'> OR </span>Byron Hot Springs (3712176)<span style='color:Red'> OR </span>Woodward Island (3712185)<span style='color:Red'> OR </span>Holt (3712184)<span style='color:Red'> OR </span>Altamont (3712166)<span style='color:Red'> OR </span>Midway (3712165)<span style='color:Red'> OR </span>Brentwood (3712186)<span style='color:Red'> OR </span>Union Island (3712174))

| Element Code | Species                                                                                              | Federal Status      | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|--------------|------------------------------------------------------------------------------------------------------|---------------------|--------------|-------------|------------|--------------------------------|
| AAAAA01181   | <b><i>Ambystoma californiense</i> pop. 1</b><br>California tiger salamander - central California DPS | Threatened          | Threatened   | G2G3T3      | S3         | WL                             |
| AAABF02020   | <b><i>Spea hammondi</i></b><br>western spadefoot                                                     | Proposed Threatened | None         | G2G3        | S3S4       | SSC                            |
| AAABH01022   | <b><i>Rana draytonii</i></b><br>California red-legged frog                                           | Threatened          | None         | G2G3        | S2S3       | SSC                            |
| AAABH01054   | <b><i>Rana boylei</i> pop. 4</b><br>foothill yellow-legged frog - central coast DPS                  | Threatened          | Endangered   | G3T2        | S2         |                                |
| ABNGA04010   | <b><i>Ardea herodias</i></b><br>great blue heron                                                     | None                | None         | G5          | S4         |                                |
| ABNKC06010   | <b><i>Elanus leucurus</i></b><br>white-tailed kite                                                   | None                | None         | G5          | S3S4       | FP                             |
| ABNKC11011   | <b><i>Circus hudsonius</i></b><br>northern harrier                                                   | None                | None         | G5          | S3         | SSC                            |
| ABNKC12040   | <b><i>Accipiter cooperii</i></b><br>Cooper's hawk                                                    | None                | None         | G5          | S4         | WL                             |
| ABNKC19070   | <b><i>Buteo swainsoni</i></b><br>Swainson's hawk                                                     | None                | Threatened   | G5          | S4         |                                |
| ABNKC19120   | <b><i>Buteo regalis</i></b><br>ferruginous hawk                                                      | None                | None         | G4          | S3S4       | WL                             |
| ABNKC22010   | <b><i>Aquila chrysaetos</i></b><br>golden eagle                                                      | None                | None         | G5          | S3         | FP                             |
| ABNKD06090   | <b><i>Falco mexicanus</i></b><br>prairie falcon                                                      | None                | None         | G5          | S4         | WL                             |
| ABNME03041   | <b><i>Laterallus jamaicensis coturniculus</i></b><br>California black rail                           | None                | Threatened   | G3T1        | S2         | FP                             |
| ABNSB10010   | <b><i>Athene cunicularia</i></b><br>burrowing owl                                                    | None                | None         | G4          | S2         | SSC                            |
| ABNSB13040   | <b><i>Asio flammeus</i></b><br>short-eared owl                                                       | None                | None         | G5          | S2         | SSC                            |
| ABPAT02011   | <b><i>Eremophila alpestris actia</i></b><br>California horned lark                                   | None                | None         | G5T4Q       | S4         | WL                             |
| ABPBR01030   | <b><i>Lanius ludovicianus</i></b><br>loggerhead shrike                                               | None                | None         | G4          | S4         | SSC                            |
| ABPBW01114   | <b><i>Vireo bellii pusillus</i></b><br>least Bell's vireo                                            | Endangered          | Endangered   | G5T2        | S3         |                                |
| ABPBXA0020   | <b><i>Ammodramus savannarum</i></b><br>grasshopper sparrow                                           | None                | None         | G5          | S3         | SSC                            |



Selected Elements by Element Code  
California Department of Fish and Wildlife  
California Natural Diversity Database



| Element Code | Species                                                                      | Federal Status         | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|--------------|------------------------------------------------------------------------------|------------------------|--------------|-------------|------------|--------------------------------|
| ABPBXA3013   | <b>Melospiza melodia pop. 1</b><br>song sparrow ("Modesto" population)       | None                   | None         | G5T3?Q      | S3?        | SSC                            |
| ABPBXB0020   | <b>Agelaius tricolor</b><br>tricolored blackbird                             | None                   | Threatened   | G1G2        | S2         | SSC                            |
| AFCAA01031   | <b>Acipenser medirostris pop. 1</b><br>green sturgeon - southern DPS         | Threatened             | None         | G2T1        | S1         |                                |
| AFCHA0209K   | <b>Oncorhynchus mykiss irideus pop. 11</b><br>steelhead - Central Valley DPS | Threatened             | None         | G5T2Q       | S2         |                                |
| AFCHB01040   | <b>Hypomesus transpacificus</b><br>Delta smelt                               | Threatened             | Endangered   | G1          | S1         |                                |
| AFCHB03010   | <b>Spirinchus thaleichthys</b><br>longfin smelt                              | Proposed<br>Endangered | Threatened   | G5          | S1         |                                |
| AFCHB04010   | <b>Thaleichthys pacificus</b><br>eulachon                                    | Threatened             | None         | G5          | S1         |                                |
| AMACC05032   | <b>Lasiurus cinereus</b><br>hoary bat                                        | None                   | None         | G3G4        | S4         |                                |
| AMACC08010   | <b>Corynorhinus townsendii</b><br>Townsend's big-eared bat                   | None                   | None         | G4          | S2         | SSC                            |
| AMACC10010   | <b>Antrozous pallidus</b><br>pallid bat                                      | None                   | None         | G4          | S3         | SSC                            |
| AMACD02011   | <b>Eumops perotis californicus</b><br>western mastiff bat                    | None                   | None         | G4G5T4      | S3S4       | SSC                            |
| AMAEB01021   | <b>Sylvilagus bachmani riparius</b><br>riparian brush rabbit                 | Endangered             | Endangered   | G5T1        | S2         |                                |
| AMAFD01060   | <b>Perognathus inornatus</b><br>San Joaquin pocket mouse                     | None                   | None         | G2G3        | S2S3       |                                |
| AMAJA03041   | <b>Vulpes macrotis mutica</b><br>San Joaquin kit fox                         | Endangered             | Threatened   | G4T2        | S3         |                                |
| AMAJF04010   | <b>Taxidea taxus</b><br>American badger                                      | None                   | None         | G5          | S3         | SSC                            |
| ARAAD02030   | <b>Emys marmorata</b><br>western pond turtle                                 | Proposed<br>Threatened | None         | G3G4        | S3         | SSC                            |
| ARACC01020   | <b>Anniella pulchra</b><br>Northern California legless lizard                | None                   | None         | G3          | S2S3       | SSC                            |
| ARACF12100   | <b>Phrynosoma blainvillii</b><br>coast horned lizard                         | None                   | None         | G4          | S4         | SSC                            |
| ARADB01017   | <b>Arizona elegans occidentalis</b><br>California glossy snake               | None                   | None         | G5T2        | S2         | SSC                            |
| ARADB21021   | <b>Masticophis flagellum ruddocki</b><br>San Joaquin coachwhip               | None                   | None         | G5T2T3      | S3         | SSC                            |
| ARADB21031   | <b>Masticophis lateralis euryxanthus</b><br>Alameda whipsnake                | Threatened             | Threatened   | G4T2        | S2         |                                |



Selected Elements by Element Code  
California Department of Fish and Wildlife  
California Natural Diversity Database



| Element Code | Species                                                                                          | Federal Status | State Status            | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|--------------|--------------------------------------------------------------------------------------------------|----------------|-------------------------|-------------|------------|--------------------------------|
| ARADB36150   | <b><i>Thamnophis gigas</i></b><br>giant gartersnake                                              | Threatened     | Threatened              | G2          | S2         |                                |
| CTT36210CA   | <b><i>Valley Sink Scrub</i></b><br>Valley Sink Scrub                                             | None           | None                    | G1          | S1.1       |                                |
| CTT42110CA   | <b><i>Valley Needlegrass Grassland</i></b><br>Valley Needlegrass Grassland                       | None           | None                    | G3          | S3.1       |                                |
| CTT44120CA   | <b><i>Northern Claypan Vernal Pool</i></b><br>Northern Claypan Vernal Pool                       | None           | None                    | G1          | S1.1       |                                |
| CTT45310CA   | <b><i>Alkali Meadow</i></b><br>Alkali Meadow                                                     | None           | None                    | G3          | S2.1       |                                |
| CTT45320CA   | <b><i>Alkali Seep</i></b><br>Alkali Seep                                                         | None           | None                    | G3          | S2.1       |                                |
| CTT52310CA   | <b><i>Cismontane Alkali Marsh</i></b><br>Cismontane Alkali Marsh                                 | None           | None                    | G1          | S1.1       |                                |
| CTT52410CA   | <b><i>Coastal and Valley Freshwater Marsh</i></b><br>Coastal and Valley Freshwater Marsh         | None           | None                    | G3          | S2.1       |                                |
| CTT61430CA   | <b><i>Great Valley Valley Oak Riparian Forest</i></b><br>Great Valley Valley Oak Riparian Forest | None           | None                    | G1          | S1.1       |                                |
| CTT62100CA   | <b><i>Sycamore Alluvial Woodland</i></b><br>Sycamore Alluvial Woodland                           | None           | None                    | G1          | S1.1       |                                |
| ICBRA03020   | <b><i>Branchinecta longiantenna</i></b><br>longhorn fairy shrimp                                 | Endangered     | None                    | G2          | S2         |                                |
| ICBRA03030   | <b><i>Branchinecta lynchi</i></b><br>vernal pool fairy shrimp                                    | Threatened     | None                    | G3          | S3         |                                |
| ICBRA03150   | <b><i>Branchinecta mesoallensis</i></b><br>midvalley fairy shrimp                                | None           | None                    | G2          | S2S3       |                                |
| ICBRA06010   | <b><i>Lindieriella occidentalis</i></b><br>California lindieriella                               | None           | None                    | G2G3        | S2S3       |                                |
| IICOL38030   | <b><i>Hygrotus curvipes</i></b><br>curved-foot hygrotus diving beetle                            | None           | None                    | G2          | S2         |                                |
| IICOL48011   | <b><i>Desmocerus californicus dimorphus</i></b><br>valley elderberry longhorn beetle             | Threatened     | None                    | G3T3        | S3         |                                |
| IICOL4C030   | <b><i>Lytta molesta</i></b><br>molestan blister beetle                                           | None           | None                    | G2          | S2         |                                |
| IIHYM01031   | <b><i>Perdita scitula antiochensis</i></b><br>Antioch andrenid bee                               | None           | None                    | G1T1        | S2         |                                |
| IIHYM24252   | <b><i>Bombus occidentalis</i></b><br>western bumble bee                                          | None           | Candidate<br>Endangered | G3          | S1         |                                |
| IIHYM24480   | <b><i>Bombus crotchii</i></b><br>Crotch's bumble bee                                             | None           | Candidate<br>Endangered | G2          | S2         |                                |
| IMBIV19010   | <b><i>Gonidea angulata</i></b><br>western ridged mussel                                          | None           | None                    | G3          | S2         |                                |



Selected Elements by Element Code  
California Department of Fish and Wildlife  
California Natural Diversity Database



| Element Code | Species                                                                          | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|--------------|----------------------------------------------------------------------------------|----------------|--------------|-------------|------------|--------------------------------|
| PDAP10M051   | <i>Cicuta maculata</i> var. <i>bolanderi</i><br>Bolander's water-hemlock         | None           | None         | G5T4T5      | S2?        | 2B.1                           |
| PDAP10Z0S0   | <i>Eryngium racemosum</i><br>Delta button-celery                                 | None           | Endangered   | G1          | S1         | 1B.1                           |
| PDAP10Z0Y0   | <i>Eryngium spinosepalum</i><br>spiny-sepaed button-celery                       | None           | None         | G2          | S2         | 1B.2                           |
| PDAP119030   | <i>Lilaeopsis masonii</i><br>Mason's lilaeopsis                                  | None           | Rare         | G2          | S2         | 1B.1                           |
| PDAST11061   | <i>Balsamorhiza macrolepis</i><br>big-scale balsamroot                           | None           | None         | G2          | S2         | 1B.2                           |
| PDAST1C011   | <i>Blepharizonia plumosa</i><br>big tarplant                                     | None           | None         | G1G2        | S1S2       | 1B.1                           |
| PDAST4R0P1   | <i>Centromadia parryi</i> ssp. <i>congdonii</i><br>Congdon's tarplant            | None           | None         | G3T2        | S2         | 1B.1                           |
| PDAST4R0V0   | <i>Deinandra bacigalupii</i><br>Livermore tarplant                               | None           | Endangered   | G1          | S1         | 1B.1                           |
| PDAST650E0   | <i>Madia radiata</i><br>showy golden madia                                       | None           | None         | G3          | S3         | 1B.1                           |
| PDAST8H060   | <i>Senecio aphanactis</i><br>chaparral ragwort                                   | None           | None         | G3          | S2         | 2B.2                           |
| PDASTE8470   | <i>Symphotrichum lentum</i><br>Suisun Marsh aster                                | None           | None         | G2          | S2         | 1B.2                           |
| PDBOR01050   | <i>Amsinckia grandiflora</i><br>large-flowered fiddleneck                        | Endangered     | Endangered   | G1          | S1         | 1B.1                           |
| PDBOR0V0B0   | <i>Plagiobothrys glaber</i><br>hairless popcornflower                            | None           | None         | GX          | SX         | 1A                             |
| PDBRA0M0E0   | <i>Caulanthus lemmonii</i><br>Lemmon's jewelflower                               | None           | None         | G3          | S3         | 1B.2                           |
| PDBRA2R010   | <i>Tropidocarpum capparideum</i><br>caper-fruited tropidocarpum                  | None           | None         | G1          | S1         | 1B.1                           |
| PDCAM020A0   | <i>Ravenella exigua</i><br>chaparral harebell                                    | None           | None         | G2          | S2         | 1B.2                           |
| PDCAR0W062   | <i>Spergularia macrotheca</i> var. <i>longistyla</i><br>long-styled sand-spurrey | None           | None         | G5T2        | S2         | 1B.2                           |
| PDCHE040B0   | <i>Atriplex cordulata</i> var. <i>cordulata</i><br>heartscale                    | None           | None         | G3T2        | S2         | 1B.2                           |
| PDCHE041F3   | <i>Extriplex joaquinana</i><br>San Joaquin spearscale                            | None           | None         | G2          | S2         | 1B.2                           |
| PDCHE042L0   | <i>Atriplex depressa</i><br>brittlescale                                         | None           | None         | G2          | S2         | 1B.2                           |
| PDCHE042M0   | <i>Atriplex minuscula</i><br>lesser saltscale                                    | None           | None         | G2          | S2         | 1B.1                           |



Selected Elements by Element Code  
California Department of Fish and Wildlife  
California Natural Diversity Database



| Element Code | Species                                                                           | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|--------------|-----------------------------------------------------------------------------------|----------------|--------------|-------------|------------|--------------------------------|
| PDERI04273   | <i>Arctostaphylos manzanita</i> ssp. <i>laevigata</i><br>Contra Costa manzanita   | None           | None         | G5T2        | S2         | 1B.2                           |
| PDFAB0F8R1   | <i>Astragalus tener</i> var. <i>tener</i><br>alkali milk-vetch                    | None           | None         | G2T1        | S1         | 1B.2                           |
| PDFAB250D2   | <i>Lathyrus jepsonii</i> var. <i>jepsonii</i><br>Delta tule pea                   | None           | None         | G5T2        | S2         | 1B.2                           |
| PDFAB400R5   | <i>Trifolium hydrophilum</i><br>saline clover                                     | None           | None         | G2          | S2         | 1B.2                           |
| PDLAM1U0J0   | <i>Scutellaria galericulata</i><br>marsh skullcap                                 | None           | None         | G5          | S2         | 2B.2                           |
| PDLIN01030   | <i>Hesperolinon breweri</i><br>Brewer's western flax                              | None           | None         | G2          | S2         | 1B.2                           |
| PDMAL0H0R3   | <i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i><br>woolly rose-mallow        | None           | None         | G5T3        | S3         | 1B.2                           |
| PDONA0C0B4   | <i>Oenothera deltoides</i> ssp. <i>howellii</i><br>Antioch Dunes evening-primrose | Endangered     | Endangered   | G5T1        | S1         | 1B.1                           |
| PDPAP0A0D0   | <i>Eschscholzia rhombipetala</i><br>diamond-petaled California poppy              | None           | None         | G1          | S1         | 1B.1                           |
| PDPLM0C0J2   | <i>Navarretia nigelliformis</i> ssp. <i>radians</i><br>shining navarretia         | None           | None         | G4T2        | S2         | 1B.2                           |
| PDRAN0B0A2   | <i>Delphinium californicum</i> ssp. <i>interius</i><br>Hospital Canyon larkspur   | None           | None         | G3T3        | S3         | 1B.2                           |
| PDRAN0B1J0   | <i>Delphinium recurvatum</i><br>recurved larkspur                                 | None           | None         | G2?         | S2?        | 1B.2                           |
| PDSCR0J0D1   | <i>Chloropyron molle</i> ssp. <i>hispidum</i><br>hispid salty bird's-beak         | None           | None         | G2T1        | S1         | 1B.1                           |
| PDSCR0J0J0   | <i>Chloropyron palmatum</i><br>palmate-bracted bird's-beak                        | Endangered     | Endangered   | G1          | S1         | 1B.1                           |
| PDSCR10030   | <i>Limosella australis</i><br>Delta mudwort                                       | None           | None         | G4G5        | S2         | 2B.1                           |
| PMCYP032Y0   | <i>Carex comosa</i><br>bristly sedge                                              | None           | None         | G5          | S2         | 2B.1                           |
| PMLIL0D160   | <i>Calochortus pulchellus</i><br>Mt. Diablo fairy-lantern                         | None           | None         | G2          | S2         | 1B.2                           |
| PMLILOV010   | <i>Fritillaria agrestis</i><br>stinkbells                                         | None           | None         | G3          | S3         | 4.2                            |
| PMPOA53110   | <i>Puccinellia simplex</i><br>California alkali grass                             | None           | None         | G2          | S2         | 1B.2                           |

Record Count: 101





## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
San Francisco Bay-Delta Fish And Wildlife  
650 Capitol Mall  
Suite 8-300  
Sacramento, CA 95814  
Phone: (916) 930-5603 Fax: (916) 930-5654



In Reply Refer To:

04/01/2024 21:26:46 UTC

Project Code: 2024-0071054

Project Name: Clifton Court Forebay Road Property

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)).

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: <https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

**Migratory Birds:** In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see [Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service \(fws.gov\)](#).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.



Attachment(s):

- Official Species List

## OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**San Francisco Bay-Delta Fish And Wildlife**

650 Capitol Mall

Suite 8-300

Sacramento, CA 95814

(916) 930-5603

## PROJECT SUMMARY

Project Code: 2024-0071054  
Project Name: Clifton Court Forebay Road Property  
Project Type: Dam - Maintenance/Modification  
Project Description: Bio survey  
Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@37.84232575,-121.600520625,14z>



Counties: Contra Costa County, California

## ENDANGERED SPECIES ACT SPECIES

There is a total of 14 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [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.

## MAMMALS

| NAME                                                                                                                                                                                                                         | STATUS     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| San Joaquin Kit Fox <i>Vulpes macrotis mutica</i><br>No critical habitat has been designated for this species.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/2873">https://ecos.fws.gov/ecp/species/2873</a> | Endangered |

## BIRDS

| NAME                                                                                                                                                                                                                                                                                                                                                          | STATUS     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| California Condor <i>Gymnogyps californianus</i><br>Population: U.S.A. only, except where listed as an experimental population<br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/8193">https://ecos.fws.gov/ecp/species/8193</a> | Endangered |

## REPTILES

| NAME                                                                                                                                                                                                                                                                                                       | STATUS     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Alameda Whipsnake (=striped Racer) <i>Masticophis lateralis euryxanthus</i><br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/5524">https://ecos.fws.gov/ecp/species/5524</a> | Threatened |

## AMPHIBIANS

| NAME                                                                                                                                                                                                                                                                                                                             | STATUS                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| California Red-legged Frog <i>Rana draytonii</i><br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/2891">https://ecos.fws.gov/ecp/species/2891</a>                                                  | Threatened             |
| California Tiger Salamander <i>Ambystoma californiense</i><br>Population: U.S.A. (Central CA DPS)<br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/2076">https://ecos.fws.gov/ecp/species/2076</a> | Threatened             |
| Western Spadefoot <i>Spea hammondi</i><br>No critical habitat has been designated for this species.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/5425">https://ecos.fws.gov/ecp/species/5425</a>                                                                                                                | Proposed<br>Threatened |

## FISHES

| NAME                                                                                                                                                                                                                                                               | STATUS                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Longfin Smelt <i>Spirinchus thaleichthys</i><br>Population: San Francisco Bay-Delta DPS<br>No critical habitat has been designated for this species.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/9011">https://ecos.fws.gov/ecp/species/9011</a> | Proposed<br>Endangered |

## INSECTS

| NAME                                                                                                                                                                                                                                                                                                             | STATUS     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Monarch Butterfly</b> <i>Danaus plexippus</i><br>No critical habitat has been designated for this species.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>                                                                                      | Candidate  |
| <b>Valley Elderberry Longhorn Beetle</b> <i>Desmocerus californicus dimorphus</i><br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/7850">https://ecos.fws.gov/ecp/species/7850</a> | Threatened |

## CRUSTACEANS

| NAME                                                                                                                                                                                                                                                                                           | STATUS     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Conservancy Fairy Shrimp</b> <i>Branchinecta conservatio</i><br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/8246">https://ecos.fws.gov/ecp/species/8246</a> | Endangered |
| <b>Longhorn Fairy Shrimp</b> <i>Branchinecta longiantenna</i><br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/4294">https://ecos.fws.gov/ecp/species/4294</a>   | Endangered |
| <b>Vernal Pool Fairy Shrimp</b> <i>Branchinecta lynchi</i><br>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/498">https://ecos.fws.gov/ecp/species/498</a>                | Threatened |
| <b>Vernal Pool Tadpole Shrimp</b> <i>Lepidurus packardii</i><br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/2246">https://ecos.fws.gov/ecp/species/2246</a>    | Endangered |

## FLOWERING PLANTS

| NAME                                                                                                                                                                                                                                                                                         | STATUS     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Large-flowered Fiddleneck</b> <i>Amsinckia grandiflora</i><br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/5558">https://ecos.fws.gov/ecp/species/5558</a> | Endangered |

## CRITICAL HABITATS

There are 2 critical habitats wholly or partially within your project area under this office's jurisdiction.

| NAME                                                                                                                                                                                                                                                                                                                                                                 | STATUS |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| <b>Delta Smelt</b> <i>Hypomesus transpacificus</i><br>For information on why this critical habitat appears for your project, even though Delta Smelt is not on the list of potentially affected species at this location, contact the local field office.<br><a href="https://ecos.fws.gov/ecp/species/321#crithab">https://ecos.fws.gov/ecp/species/321#crithab</a> | Final  |
| <b>Vernal Pool Fairy Shrimp</b> <i>Branchinecta lynchi</i><br><a href="https://ecos.fws.gov/ecp/species/498#crithab">https://ecos.fws.gov/ecp/species/498#crithab</a>                                                                                                                                                                                                | Final  |

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Appendix B  
**Archaeological and Architectural  
Resources Inventory Report  
(Confidential)**





## Appendix C

### **Experimental Evaluation of a Gravel Infiltration Gallery in Preventing Larval Fish Entrainment**



**Experimental Evaluation of a Gravel Infiltration Gallery  
in Preventing Larval Fish Entrainment**

**Technical Report  
Prepared for South Valley Water Resources Authority  
by Hanson Environmental Inc.**

**February 2022**

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### Abstract

A gravel infiltration gallery has been identified as a potential intake structure having small pore size openings and sufficiently low approach velocities to potentially be effective in excluding larval, juvenile, and larger fish from the risk of entrainment losses. A series of laboratory tests were conducted using larval Delta Smelt (*Hypomesus transpacificus*) to provide empirical information on the relationship between the loading rate on a gravel infiltration gallery (Lpm/m<sup>2</sup>; gpm/ft<sup>2</sup>) and entrainment mortality of larval Delta Smelt. Results of these tests detected no significant difference in survival between an active gravel bed (loading rate of 21 Lpm/m<sup>2</sup>; 0.4 gpm/ft<sup>2</sup>) and static control over a 3-hour test duration. As filter loading rates increased from 21 to 116 Lpm/m<sup>2</sup> (0.4 to 2.2 gpm/ft<sup>2</sup>) the survival rate of larval Delta Smelt declined significantly. Results of these studies provide the first empirical information on the relationship between gravel bed loading rates and losses of larval fish.

Results of these tests provide evidence that a gravel infiltration gallery can function as an effective water intake structure designed to reduce and avoid adverse effects of entrainment losses of larval and juvenile fish. With conventional intake screens seasonal reductions in diversion rates are used to reduce entrainment risk but result in direct reductions to water supplies and supply reliability. The ability to prevent fishery losses because of water diversion operations would directly reduce incidental take of listed fish and other aquatic species, reduce the need for regulatory controls and restrictions on water project operations, and improve water supply reliability.

### Introduction

The Sacramento-San Joaquin Bay-Delta Estuary supports a diverse community of resident and migratory fish including six species that have been listed for protection under the California or federal Endangered Species Acts. Over the past several decades these and other fish have experienced substantial declines in their abundance (Baxter *et al.* 2010, USFWS 2008, NMFS 2009). Entrainment mortality in intakes that divert surface water from the rivers and estuaries located throughout the world, has been identified as one of the factors contributing to the decline in fish abundance, particularly for the early larval and juvenile life stages (Grimaldo *et al.* 2009). The bays and estuaries serve as a larval and juvenile rearing habitat, the migration pathway between rivers and coastal marine waters, as well as spawning and foraging habitat. The rivers and estuaries are also used extensively as a source of water to meet municipal, industrial, and agricultural demands. For example, Herren and Kawasaki (2001) estimated that there are over 1,800 water diversion intakes exist in the Bay-Delta, the majority of which are unscreened. Many of the larger water diversions have been equipped with positive barrier fish screens, however, conventional intake screens have shown only limited success in excluding larval fish from entrainment (Hanson *et al.* 1977, McLaren and Tuttle 2000, Taft 2000). Tenera (2013) estimated annual entrainment of larval kelpfish through the 9.5 mm (3/8 inch) intake screens at the Diablo Canyon Nuclear Power Station to be approximately 91 and 122 million fish in two years of study. Kelso and Milburn (1979) estimated entrainment by once-through cooling on the Great Lakes exceeded 1 billion fish. Tests with fine-mesh screens (e.g., 1 mm mesh) have

excluded larval fish (Weisberg et al. 1987, Normandeau 2009)) but have had limited application in part as a result operations and maintenance issues. The co-occurrence of early life stages of fish with the extensive number of water diversions results in an increased risk of entrainment into the diversions and increased levels of mortality for larval and juvenile fish. Restrictions on water diversion operations to reduce entrainment losses has directly resulted in adverse economic and water supply impacts (Gentner 2010).

Several studies have been conducted to assess the relationship between larval fish length and exclusion from entrainment by fish screens having various mesh size openings (Zeitoun *et al.* 1981, Schneeberger and Jude 1981, Weisberg *et al.* 1987, Heuer and Tomljanovich 1978, and Normandeau 2009). These studies have shown that fish screens having a smaller mesh opening effectively exclude smaller larval fish. Based on results of these studies it was estimated that a 1.75 mm fish screen would be effective (typically 95-99% or greater exclusion) in excluding smelt larvae having a length greater than 12-15 mm and larger. However, smaller larval fish would continue to be at risk of entrainment losses.

Larval and juvenile Delta Smelt (*Hypomesus transpacificus*) have been identified as one of the most sensitive fish species and life stages vulnerable to entrainment because of their planktonic larvae, small size and weak swimming performance (Swanson *et al.* 2001, Swanson *et al.* 1998, Young *et al.* 2010). Currently, no conventional intake screening technology has been identified that would be completely effective in preventing larval Delta Smelt and other fish from entrainment. A gravel infiltration gallery or subsurface intake well has been identified as a potential intake structure having small pore size openings and sufficiently low approach velocities to potentially be effective in excluding larval, juvenile, and larger fish from the risk of entrainment losses (Hanson et al. 1977, Waterreuse Association 2011). No information is available, however, on the effectiveness of a gravel bedded infiltration system in reducing the risk of entrainment of larval Delta Smelt or other fish. In this research we experimentally tested the effectiveness of a small-scale gravel bed to determine its effectiveness in excluding larval Delta Smelt from entrainment. We hypothesized that the gravel bed would be effective if the proportion of freely swimming individuals at the completion of an experimental test period (3 hours) was not significantly different between the treatment and static control. The alternative hypothesis was that the numbers of test organisms would be significantly lower in the treatment than in the static control, indicating that the gravel bed was not effective in avoiding or preventing entrainment losses.

## Methods

Two identical small-scale experimental gravel infiltration gallery systems were constructed for use in these tests (Figure 1). The two experimental systems, constructed of Plexiglas, were 61 cm wide, 107 cm high, and 20 cm deep (24 X 42 X 8 in) resulting in a total volume of 0.13 m<sup>3</sup> (4.67 ft<sup>3</sup>). A simulated infiltration gallery was constructed 15 cm (6 in) above the bottom of each test container having a substrate composed of rounded river gravel approximately 64 mm (0.25 in) in diameter. Pumps were used in combination with perforated pipe placed under the infiltration gallery to provide the regulated flow rate. A rotameter (Blue-White F-440) was placed on each pump discharge to regulate and

document flow rates passing through the gravel substrate. A ball valve was located between the pump intake and the rotameter to allow for small changes of flow if needed. Water within the test chamber was re-circulated to the test chamber surface using a flow baffle to provide uniformity of flows and avoid discharge turbulence and potential effects of water currents on the behavioral responses of test animals. The experimental infiltration galleries were shielded using Visqueen to avoid disturbance by observers during the test. Light levels were controlled and standardized.

The water supply was ambient water withdrawn from the Bay-Delta or California Aqueduct in Byron, California. Water was filtered to reduce suspended sediments prior to testing to allow increased visibility. Water quality measurements were routinely made. Water temperature was maintained within  $\pm 2^\circ \text{C}$  of the holding tank ( $<16^\circ \text{C}$ ). Air conditioners reduced temperature variation. Aeration maintained dissolved oxygen concentrations within a range of 7.0 – 12.0 mg/L.

The infiltration gallery surface-loading rate (downward flow rate) was regulated to provide test conditions that included loading rates ranging from 21 to 116 Lpm/m<sup>2</sup> (0.4 to 2.2 gpm/ft<sup>2</sup>), which are equivalent to approach velocities to the gravel substrate of 0.025 to 0.15 cm/sec (0.00084 to 0.0048 ft/sec). These approach velocity rates are more than one order of magnitude slower than a conventional intake screen with an approach velocity of 6.1 cm/sec (0.2 ft/sec) designed to protect Delta Smelt (CDFG 2000). The tests were conducted in two identical test chambers identified as the treatment (active pumping at the prescribed gravel bed loading rate and approach velocity) and static control determined by random numbers for each test pair.

Delta Smelt were produced in the UC Davis Fish Conservation and Culture Laboratory (FCCL); no wild Delta Smelt were used to avoid incidental take. The study plan, experimental design, and Delta Smelt handling protocols were reviewed and approved by the University of California, Davis Institutional Animal Care and Use Committee (IACUC) prior to initiating experimental testing ((Protocol #19303). Larval smelt were euthanized at the completion of each test using MS-222.

Delta Smelt ranged, on average, from 6.5 to 22.5 mm in length (approximately 3-56 post days hatched; pdh). Delta Smelt were transferred (water to water transfer) from culture tanks to the test chambers for acclimation. Test organisms were held a minimum of 2 hours to recover from transportation and handling stress prior to testing. Pre-test mortality was monitored during acclimation and test organisms were not used if mortality exceeded 10%.

Typically, 10-15 larval Delta Smelt were introduced into the test and control chambers under static conditions. All tests were conducted under dark conditions. At completion of the test period the number of larval smelt freely swimming in the test and control chambers was recorded. Larval smelt were removed from the two test chambers, counted, length was measured, and testing conditions were repeated using a new group of larval smelt. The experimental conditions for each treatment (gravel bed loading rate) were replicated with the goal to provide a sample size of 100 larval smelt under each test condition. Static control tests were performed simultaneously with each active test (each

test series included one static control and one active test conducted simultaneously). Statistical analyses of differences between the treatment and control response were tested using paired T-tests.

## Results and Discussion

Results of infiltration gallery testing using larval Delta Smelt over a 3-hour test duration are summarized in Table 1. The indices of survival between the treatment and control were not significantly different for tests at filter loading rates of 21 or 37 Lpm/m<sup>2</sup> (0.4 or 0.7 gpm/ft<sup>2</sup>) ( $P>0.05$ ). As filter loading rates increased up to 116 Lpm/m<sup>2</sup> (2.2 gpm/ft<sup>2</sup>) the indices of survival declined significantly (Figure 2). Based on these results we concluded that the gravel filter was effective in reducing and avoiding mortality of larval Delta Smelt at filter rates of 37 Lpm/m<sup>2</sup> (0.7 gpm/ft<sup>2</sup>) or less while effectiveness declined substantially as filter loading rates increased above 37 Lpm/m<sup>2</sup> (0.7 gpm/ft<sup>2</sup>).

Results of the testing conducted at a gravel bed loading rate of 21 and 37 Lpm/m<sup>2</sup> (0.4 and 0.7 gpm/ft<sup>2</sup>) detected no statistically significant difference in the response of larval Delta Smelt exposed to the static control and treatment test conditions. Based on these results we concluded that larval Delta Smelt were not differentially entrained into the gravel substrate when exposed to a gravel bed loading rate of 21 Lpm/m<sup>2</sup> (0.4 gpm/ft<sup>2</sup>) over a 3-hour test duration. Results were similar for a filter loading rate of 21 Lpm/m<sup>2</sup> (0.4 gpm/ft<sup>2</sup>) over a 6-hour duration (unpublished data). Survival of larval Delta Smelt less than 12 mm declined significantly as filter bed loading rates increased.

Survival of larger Delta Smelt (mean length 22.5 mm) tested at a loading rate of 116 Lpm/m<sup>2</sup> (2.2 gpm/ft<sup>2</sup>) over a 3-hour period increased significantly compared to smaller smelt (mean length 11.7 mm) showing evidence of effect of fish size (and presumably increased swimming performance capability) on the survival indices.

A series of exploratory tests were conducted using other fish species at two gravel bed loading rates 21 and 32 Lpm/m<sup>2</sup> (0.4 and 0.6 gpm/ft<sup>2</sup>) and exposure durations of 3 to 24 hours. Fish species included larval/juvenile life stages of Striped Bass (*Morone saxatilis*), Golden Shiner (*Notemigonus crysoleucas*), Rosy Red Minnow (*Pimephales promelas*), Channel Catfish (*Ictalurus punctatus*), Carp (*Cyprinus carpio*), and White Sturgeon (*Acipenser transmontanus*). Results showed 100% survival in all control and treatment replicates (no significant difference was detected between the number of freely swimming fish;  $P>0.05$ ). The observed 100% survival in the treatment and control tests for all replicate tests demonstrated that the infiltration system was highly effective in preventing juvenile fish entrainment even over a long duration of exposure.

Results of these studies have demonstrated the potential effectiveness of a gravel infiltration gallery in reducing or avoiding entrainment losses of larval and juvenile fish at surface water diversions. The results of this investigation are based on the use of 6.4 mm (0.25 in) rounded gravel as the filter substrate under controlled laboratory test conditions. Although no tests were conducted to evaluate the effect of substrate size on the response of larval Delta Smelt in these studies, we hypothesize that exclusion of smaller organisms may be improved by using smaller gravel or sand as the infiltration gallery substrate. However,



using a smaller substrate may also result in faster fine sediment accumulation and greater maintenance requirements. Changing the substrate size, however, would also be expected to change the hydraulic performance (e.g., unit water production for a given gravel bed loading rate) and thereby alter the size and cleaning frequency of an infiltration gallery to achieve a desired diversion flow rate. Increasing the gravel bed loading rate would result in a smaller gravel bed surface area (footprint) to achieve a given diversion rate, when compared to a gravel bed with a lower loading rate. In these tests with larval Delta Smelt, however, survival declined significantly as filter bed loading rate increased (Figure 2). Optimization of a gravel bed design is expected to require additional species- and size-specific testing. Further hydrodynamic testing under actual sediment loading conditions to assess the effects of substrate size on long-term operational performance of an infiltration gallery would help further develop and refine the proof of concept.

Although results of these tests are promising further engineering tests of the long-term hydraulic performance of a gravel bedded infiltration gallery under actual sediment loading, tidal, and hydrodynamic conditions is needed to advance the concept. One of the major concerns with long-term operations of a gravel bedded intake system in areas where suspended sediment loads can be high, bed load transport of sand and other sediment occurs, and where biofouling occurs, the substrate medium would be plugged over relatively short periods of operation which would reduce gravel bed porosity and capacity and increase maintenance requirements.

Given the extremely slow approach velocities and low gravel bed loading rates, the surface area and size of a gravel infiltration gallery and the associated land availability and cost are concerns. Placement of a gravel bedded intake structure that would reduce the risk of fish losses may be most successful if the gravel bed could be in an open channel where there is free channel and tidal flow across the substrate surface. Further beneficial design features would be to reduce the number of structures associated with the gravel bed to reduce areas of predator accumulation while maintaining the ability to isolate and dewater sections of the gravel bed for periodic cleaning and maintenance. Further, the design and sizing of a gravel bed intake system can be optimized for a specific water diversion capacity based on a balance between the approach velocity and gravel bed loading rate, gravel bed porosity and substrate size, rate of gravel bed plugging and duration of operations before required maintenance and bed cleaning, and other factors such as local current velocities, suspended and bed load transport, gravel bed scour, channel area and configuration.

In the past, the capital, operating and maintenance costs associated with using a gravel infiltration gallery as a water intake structure to avoid fish entrainment was cost prohibitive. Under current conditions, however, the cost of water supplies has increased substantially while water supply reliability for conventional intake systems has declined as a result of increased regulation and operational restrictions designed to provide protection of listed fish from entrainment mortality. Given these new considerations and conditions, the application of gravel bed technology for use as a water supply intake structure in environmentally sensitive areas such as the Bay-Delta Estuary may be a cost-effective alternative to conventional intake screening when seasonal restrictions on diversion operations to protect larval and juvenile fish from entrainment losses are considered.

## Acknowledgements

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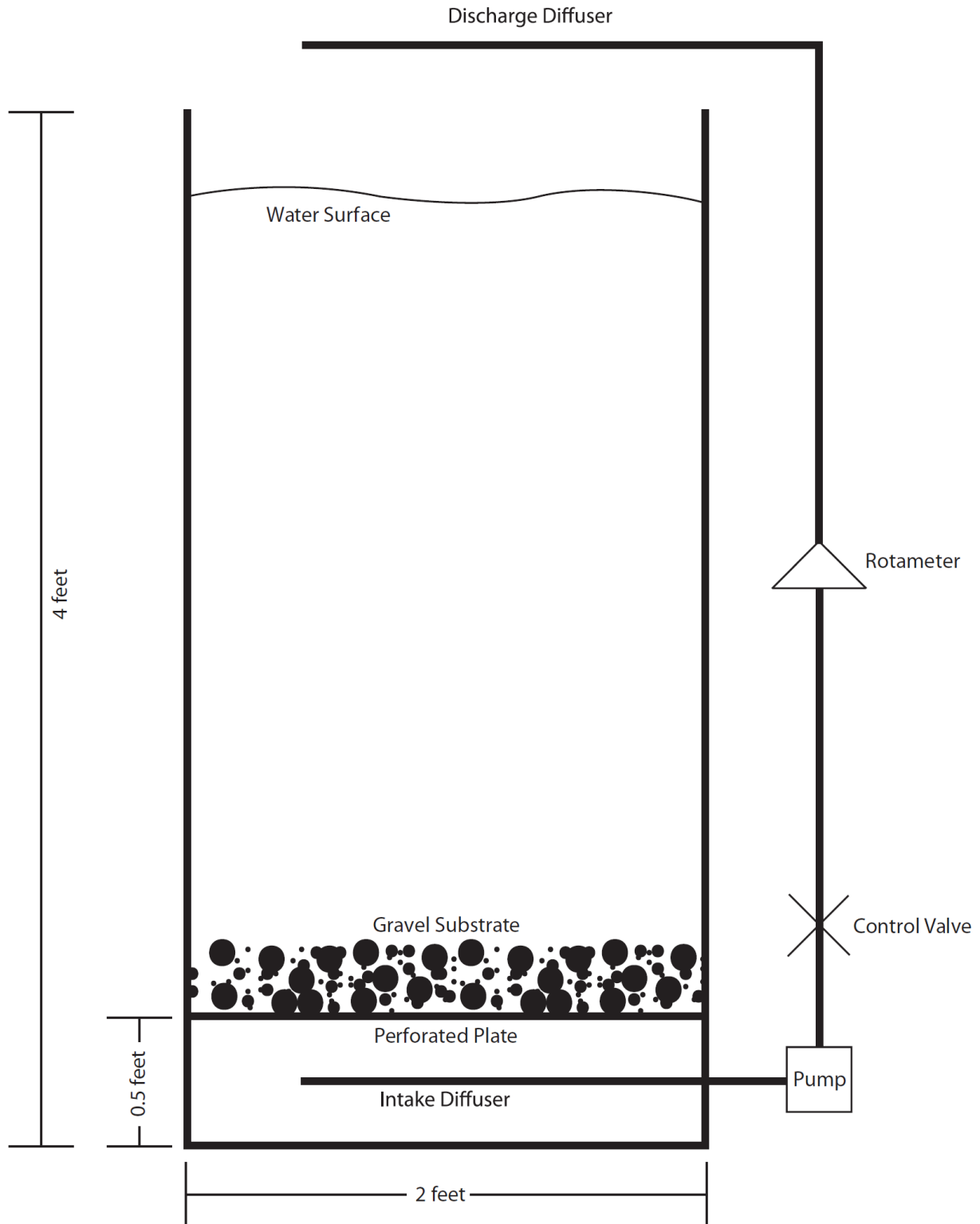
# Larval Fish Entrainment

1 **Table 1.** Summary of infiltration gallery test results for larval delta smelt

| Summary of infiltration gallery test results for larval Delta Smelt. |                     |                       |                |                   |                                   |            |                   |                   |
|----------------------------------------------------------------------|---------------------|-----------------------|----------------|-------------------|-----------------------------------|------------|-------------------|-------------------|
| Lpm/m <sup>2</sup>                                                   | gpm/ft <sup>2</sup> | Year                  | Test Condition | Total # Initiated | Total # Alive at end of 3 hr test | % Survival | Average size (mm) | Average age (pdh) |
| 21                                                                   | 0.4                 | 2014                  | Control        | 150               | 99                                | 66%        | 8.3               | 13                |
|                                                                      |                     |                       | Test           | 150               | 99                                | 66%        |                   |                   |
|                                                                      |                     | 2016                  | Control        | 40                | 39                                | 98%        | 8.6               | 11                |
|                                                                      |                     |                       | Test           | 40                | 37                                | 93%        |                   |                   |
|                                                                      |                     | Combined Final Totals | Control        | 190               | 138                               | 73%        |                   |                   |
|                                                                      |                     |                       | Test           | 190               | 136                               | 72%        |                   |                   |
| 37                                                                   | 0.7                 | 2014                  | Control        | 125               | 58                                | 46%        | 16.9              | 54                |
|                                                                      |                     |                       | Test           | 125               | 47                                | 38%        |                   |                   |
|                                                                      |                     | 2016                  | Lab Control    | 100               | 99                                | 99%        | 6.5               | 3                 |
|                                                                      |                     |                       | Test           | 100               | 97                                | 97%        |                   |                   |
|                                                                      |                     | Combined Final Totals | Control        | 225               | 157                               | 70%        |                   |                   |
|                                                                      |                     |                       | Test           | 225               | 144                               | 64%        |                   |                   |
| 58                                                                   | 1.1                 | 2016                  | Control        | 100               | 98                                | 98%        | 8.1               | 11                |
|                                                                      |                     |                       | Test           | 100               | 78                                | 78%        |                   |                   |
| 79                                                                   | 1.5                 | 2016                  | Lab Control    | 100               | 94                                | 94%        | 9.3               | 16                |
|                                                                      |                     |                       | Test           | 100               | 64                                | 64%        |                   |                   |
| 100                                                                  | 1.9                 | 2016                  | Control        | 100               | 97                                | 97%        | 10                | 18                |
|                                                                      |                     |                       | Test           | 100               | 46                                | 46%        |                   |                   |
| 116                                                                  | 2.2                 | 2016                  | Control        | 100               | 94                                | 94%        | 11.7              | 23                |
|                                                                      |                     |                       | Test           | 100               | 37                                | 37%        |                   |                   |
| 116                                                                  | 2.2                 | 2016                  | Control        | 100               | 98                                | 98%        | 22.5              | 56                |
|                                                                      |                     |                       | Test           | 100               | 83                                | 83%        |                   |                   |

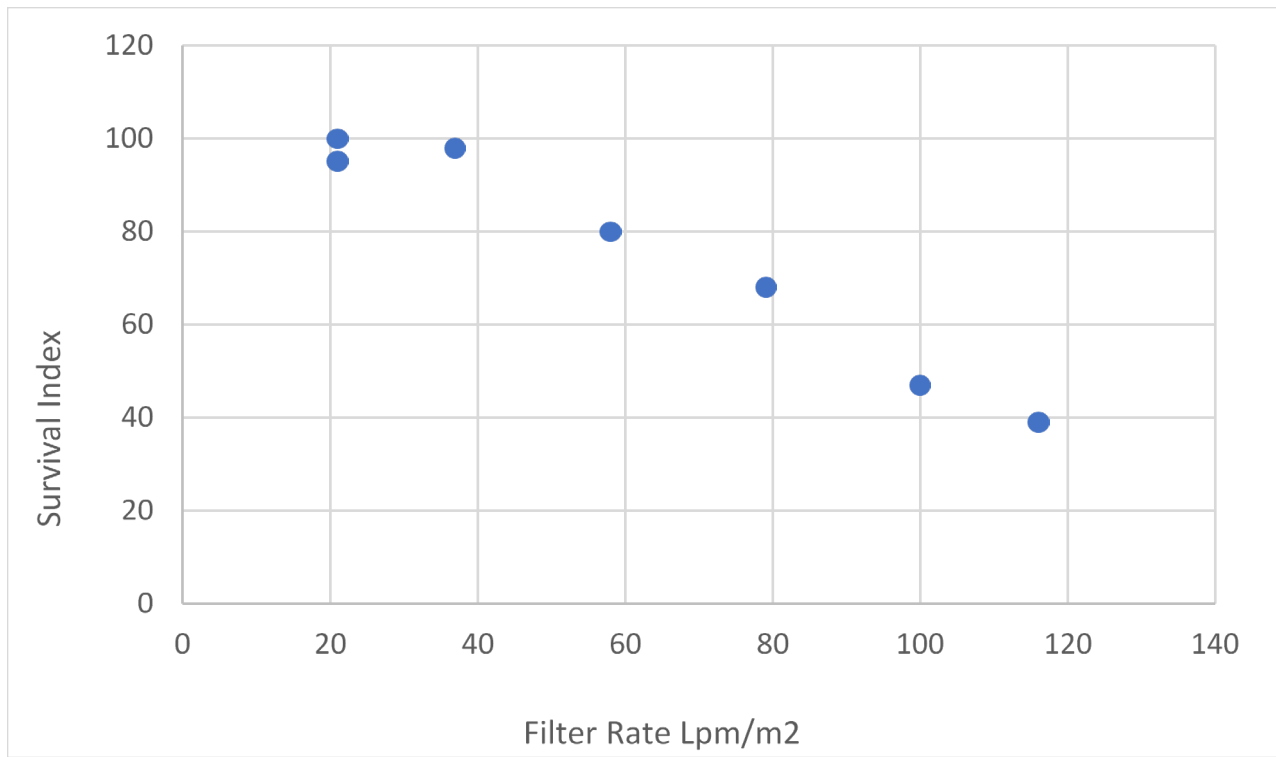
2

## Larval Fish Entrainment



**Figure 1.** Experimental gravel infiltration bed test chamber.

6



7

8 **Figure 2.** Relationship between filter loading rate and larval Delta Smelt survival index

9 Relationship between filter loading rate and larval Delta Smelt survival index