Lower Alameda Creek Fish Passage Restoration in Flood Control District Zone 5, Cities of Fremont and Union City, California

DRAFT

Initial Study with Mitigated Negative Declaration/
Environmental Assessment

&

U.S. Army Corps of Engineers San Francisco District
450 Golden Gate, San Francisco CA 94965

January 30, 2020

Prepared by

Alameda County Flood Control & Water Conservation District
399 Elmhurst Street
Hayward, California 94544-1395
&
Hanson Environmental, Inc.,
446 Green View Court
Walnut Creek, CA 94596

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DRAFT
MITIGATED NEGATIVE DECLARATION

Alameda Flood Control & Water Conservation District (Lead Agency)
State Clearinghouse #

Project Name: Lower Alameda Creek Fish Passage Restoration in Flood Control District Zone 5, Cities of Fremont and Union City, California.

Project Location and Description: The Proposed Project extends approximately 5.6 miles (29,730 feet) within the Army Corps of Engineers (USACE) Flood Control Channel between the BART Weir fish ladder upstream to 600 feet below the Union Pacific Railroad (UPPR) crossing downstream in Flood Control District Zone 5, Cities of Fremont and Union City, California

The Alameda County Flood Control and Water Conservation District (ACFCD) proposes to implement the following restoration activities in Lower Alameda Creek (Proposed Project) in the existing Army Corps of Engineers (USACE) constructed Flood Control Channel.

The proposed Project involves: Optimization of the existing low flow channel within the 230 feet wide flood control channel from the scour pool immediately downstream of the BART Weir to about 600 feet downstream of the UPRR crossing; modification of the RD2/Larinier fishway concrete structure; modification of existing grade control structures; modification of bridges footings in the channel; modification of UPRR bridge footing in the channel; protect PGE gas main channel crossing upstream of UPRR; installation of a new modified grade control structure; install boulders to improve habitat; and plant native shrubs and grasses on the configured channel terrace between the levees. The project is described in greater detail in the attached draft Initial Study/CEQA checklist.

The purpose of this Proposed Project is to remove migratory impediments and improve the migratory corridor below the BART Weir to allow Central California Coast steelhead and other fish movement within the flood control channel to access upstream spawning grounds. The Project will also facilitate sediment transport downstream and thereby reduce maintenance desilting frequency of the flood control channel as required under the Corp's O&M manual.

Lead Agency: Alameda County Flood Control & Water Conservation District; 399 Elmhurst Street, Hayward, California 94544

Findings: Based on the attached Initial Study, the Lead Agency has found that: Significant Effects of the Project noted in the attached Initial Study have been eliminated or mitigated so that the potential effects are reduced to insignificant levels.

Mitigation Measures:
Implementation of the relevant avoidance and minimization measures and mitigation for Air Quality, Biological Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Recreation, Transportation and Traffic summarized in Tables 6 and 7 in the Initial Study would reduce potential environmental impacts to less than significant.

FINDINGS AND MITIGATION MEASURES

With the implementation of the best management practices (BMPs) measures outlined above and detailed in the attached draft Initial Study, the Proposed Project will have less-than-significant impacts on the environment.

_____
Signature

****

ISSUANCE OF THIS MITIGATED
NEGATIVE DECLARATION DOES NOT
IMPLY APPROVAL OF THE PROJECT

_____
Environmental Services Manager

****

_____
Date

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ACRONYMS AND ABBREVIATIONS

ABAG/MTC	Association of Bay Area Government/ Metropolitan Transportation Commission
ACFCD	Alameda County Flood Control and Water Conservation District
ACRP	Alameda Creek Recapture Project
ACWD	Alameda County Water District
ADLL	Arroyo de la Laguna
ATCM	Airborne Toxic Control Measure
BAAQMD	Bay Area Air Quality Management District
BCDC	Bay Conservation and Development Commission
BMPs	Best Management Practices
CAA	Clean Air Act
CACI	Clean Air Communities Initiative
CAP	Climate Action Plan
CARB	California Air Resources Board
CARE	Community Air Risk Evaluation
CDFW	California Department of Fish and Wildlife
CDRP	Calavaras Dam Replacement Project
CEQA	California Environmental Quality Act
CFGC	California Fish and Game Code
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CWA	Clean Water Act
DWR	California Department of Water Resources
EA	Environmental Assessment
IS	Initial Study Negative Declaration
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Environmentally Sensitive Area
FCAA	Federal Clean Air Act
FCAAA	Federal Clean Air Act Amendments

FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
FONSI	Finding if No significant Impact
GHG	Greenhouse Gas
HDP	Heritage Documentation Programs
LLCR	Local Levee Critical Repair
LOS	Level of Service
MBTA	Migratory Bird Treaty Act
MLD	Most Likely Descendent
MND	Mitigated Negative Declaration
MOU	Memorandum of Understanding
MMRP	Mitigation, Monitoring and Reporting Plan
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NFIP	National flood Insurance Program
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
ODS	Oliver de Silva
OPR	Governor's Office of Planning and Research
PLC	Programmable Logic Controller
PIT Tag	Passive Integrated Transponder Tag
PM	Particulate Matter
PRBO	Point Reyes Bird Observatory
SBA	South Bay Aqueduct
SFRWQCB	San Francisco Regional Water Quality Control Board
SFPUC	San Francisco Public Utilities Commission
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SMP	Surface Mining Permit
SWP	State Water Project

SWPPP	Stormwater Pollution Prevention Plan
TACs	Toxic Air Contaminants
TMDL	Total Maximum Daily Limit
UACFGP	Upper Alameda Creek Filter Gallery
USACE	U.S. Army Corps of Engineers Operational Division
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VTO	Vallecitos Turnout
WPCP	Water Pollution Control Program
WSE	Water Surface Elevation

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1.0 INTRODUCTION

Alameda County Flood Control and Water Conservation District (ACFCD) is proposing a series of improvements as part of a comprehensive program for fish passage and improved sediment transport in the Alameda Creek Flood Control Channel between the BART Weir upstream and the Union Pacific Railroad (UPRR) Bridge downstream. The Project is intended to enhance steelhead and other fish species access to historic upstream spawning and rearing habitats through the urban reach of the Alameda Creek flood control channel. These improvements will be referred hereafter as "Restoration of Lower Alameda Creek" or "Proposed Project".

1.1 CEQA/NEPA History

ACFCD proposes to enhance the low flow channel within the existing Flood Control Channel and modify existing Grade Control Structures (GC), or sills, and other impediments to fish migration as described below. The proposed project is the outcome of several years of discussion with regulatory agencies to address the fish migration impediments in the lower Alameda Creek by not desilting the entire length of the channel, rather, focusing on modifying the existing sills, optimize the low flow channel for sediment transport and fish passage while ensuring that flood control functions are maintained.

The CEQA IS/MND for the Project was developed to also serve as an Environmental Assessment (EA) for compliance with both NEPA and CEQA. This document was prepared to reflect the Proposed Project scope, engineering design, and construction schedule as a complementary element to the Joint Fish Passage Project for steelhead passage at the BART Weir (under construction) and in consideration of the comments received during the public and agency reviews of the adjacent Joint Fish Ladder project.

1.2 Project Authorization

Historically flooding occurred in the lower reaches of Alameda Creek. To address the flooding issues the federal government authorized funding under Public Law 89-298 (1965 Flood Control Act) for the U.S. Army Corps of Engineers to design and construct the 12-mile reach of flood control conveyance channel and levees between Niles Canyon and San Francisco Bay. The flood control channel was completed in 1972 and was transferred to the Alameda County Flood Control & Water Conservation District (ACFCD) to maintain in accordance with the O&M Manual. The maintenance responsibilities include ensuring channel and levee structural integrity, erosion control, debris and periodic sediment removal from the channel.

Alterations to a federal flood control channel by a non-federal entity are subject to permission from the Chief of Engineers, or his designee, under Section 408 (Title 33 of the United States Code, Section 408 [33 USC 408]) to assure that the alterations would not be injurious to the public. The specific activities that would alter the federal Flood Control Channel Project are described below as part of the Proposed Project description. ACFCD is the local project sponsor and would request authorization from the USACE, under Section 14 of the Rivers and Harbors Act of 1899 (33 USC 408), for modifications proposed.

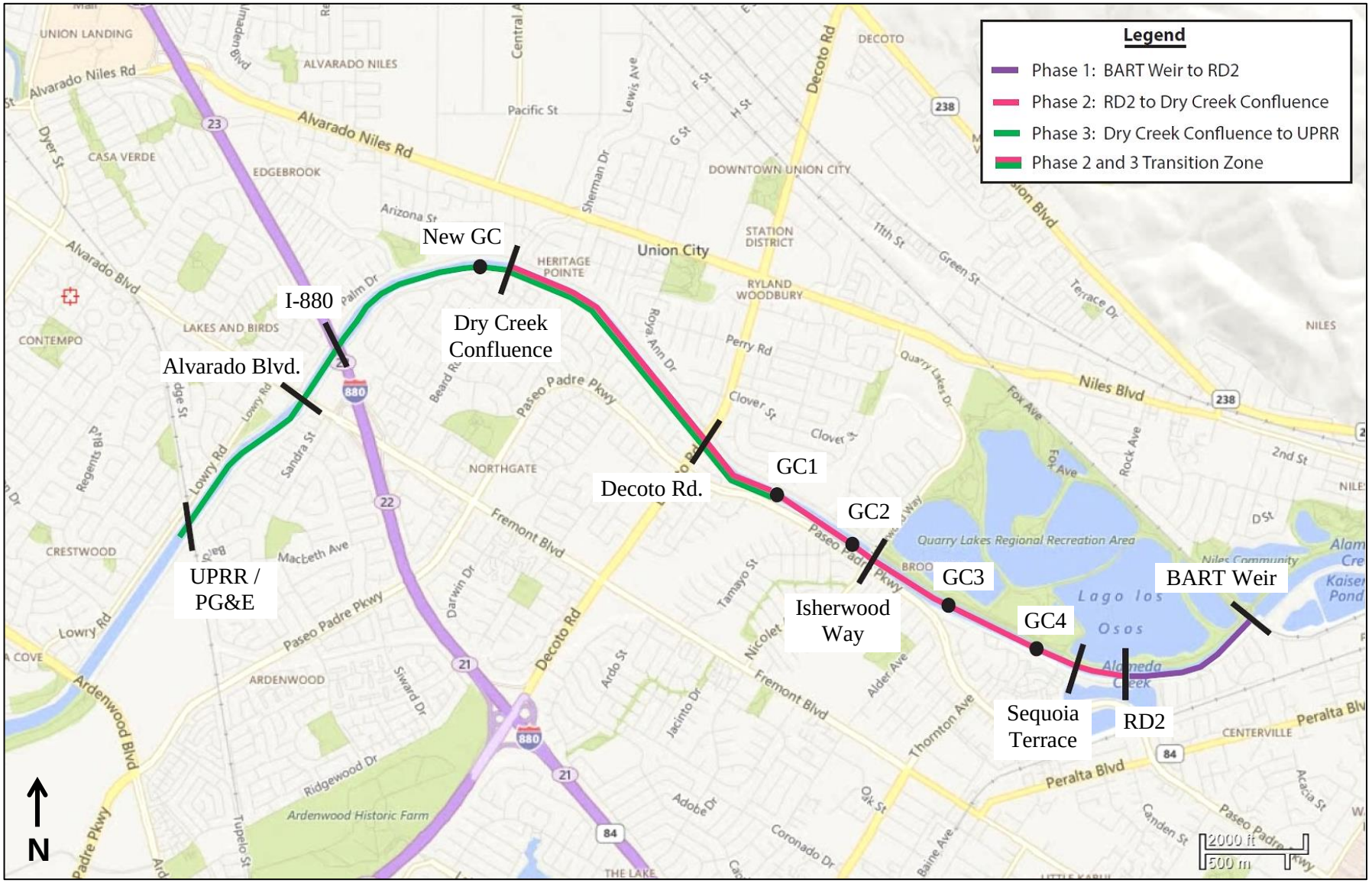
1.3 Purpose of the Environmental Assessment/Initial Study

As part of the Section 408 application process (33 USC 408) with USACE, the ACFCD and USACE have prepared this joint NEPA/CEQA Environmental Assessment and Initial Study (EA/IS) and Mitigated Negative Declaration (MND) to satisfy requirements under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The Section 408 process is a review process whereby the applicant requests USACE approval to modify a locally or federally funded project. Originally enacted as part of the Rivers and Harbors act of 1899, 33 USC 408 requires the secretary of the Army (or the local USACE District) to review and approve proposed modifications. Construction of the proposed Project is an action over and above basic operation and maintenance within the Flood Control Channel; therefore, requires a NEPA level document to support Section 408 approval and Section 404 of the Clean Water Act.

1.4 Description of Restoration Project Elements

The Alameda County Flood Control and Water Conservation District (ACFCD or District) proposes to modify and improve the riverine reach of the Army Corps of Engineers designed and constructed flat bottom Flood Control Channel to provide efficient sediment transport and a more sustainable migratory channel habitat for federally listed threatened California Central Coast (CCC) steelhead fish (Figure 1).

Figure 1. Lower Alameda Creek Project Location Map



a. Low Flow Channel Improvement For Sediment Transport, Flows Conveyance and Fish Passage

The existing meandering low flow channel within the project limits will be enhanced to provide efficient sediment transport and unimpeded movement of fish from San Francisco Bay. The modified grade control structures (including Rubber Dam #2 (RD2) structure), new low flow directional channel at bridge crossings, secured PG&E utility crossing and the new fish ladder at the Rubber Dam #1 (RD1)/BART weir complex (under construction) eliminate barriers to steelhead fish migration to its historic spawning grounds in the upper watershed. To construct, stabilize and maintain the existing low flow channel cross-sectional dimensions, materials excavated from areas of high sediment deposit will be used to backfill existing highly incised areas of the channel invert bottom and braided arms of the low flow channel. The new 24-foot wide low flow channel would generally meander in the center and below the designed invert bottom of the 230-foot wide Alameda Creek.

Table 1. Summary of Hydraulic Geometry of Existing Low-Flow Channel between Decoto Rd. and BART Weir (Dec 2016)

Location	Active Channel Bottom Width	Channel Top Width at Flood plain Elevation	Total Channel Depth
Downstream of GC 3	26.2 to 43.3 ft	38.0 to 66.0 ft	5.0 to 6.7 ft
Upstream of GC 3	43.8 to 58.6 ft	75.7 to 125 ft.	5.0 to 9.1 ft.
Average All Data	38.2 ft.	64.4 ft.	6.6 ft.
Average Downstream GC	**33.0 ft.**	**52.5 ft.**	**5.7 ft.**

The cross-sectional geometry of the proposed low flow channel consists of a 24-foot wide bottom width and 3:1 side slopes (vertical to horizontal). This enhancement will mimic the current naturally established meander and sinuosity. At locations where the low flow channel is close to the levee toe, rock riprap will be used to secure the low flow channel bank in place, or the existing low flow channel will be filled either with rock riprap or with excavated sediment and a new alignment towards the center of the flood control channel will be excavated to connect the up-and downstream segment points of deflection. The undermined levee toe of slope sections will also be armored with rock riprap. Within the modified sediment transport's 24-foot wide bottom width, a fish flow channel with a bottom width of 2 feet by 18 inches deep and top width of 8 feet will be constructed, and it is anticipated that this new active low flow will persist similarly as observed following post construction. The channel segment between Decoto Bridge and Grade Control Structure #3 (GC3) is the reference reach for the low flow Channel design (Figure 2A).

The reconfigured low flow channel within the project limits will have a minimum depth of 24 inches and be able to pass a minimum flow of 3cfs to 40cfs in support of steelhead fish migration as considered during the inter-agency meetings. The entire reach of the channel profile between RD2 and BART Weir will have a decreasing gradient from upstream to downstream with a drop of 3 feet for every 500 feet (Figure 2B). This re-configuration is critical to efficient sediment transport towards the deeper tidal zone further downstream.

Figure 2A. Proposed Low Flow Channel Cross Section

Channel	Bottom Width	Channel Depth	Top Width	Bank Side Slopes	Thalweg Slope	Bankfull Capacity
Low-flow Channel	24 ft.	9 ft.	78 ft.	3H:1V	0.11% to 0.17%	2,000 cfs
Fish Passage Channel	2 ft.	1.5 ft.	8 ft.	2H:1V	0.11% to 0.17%	~11 cfs

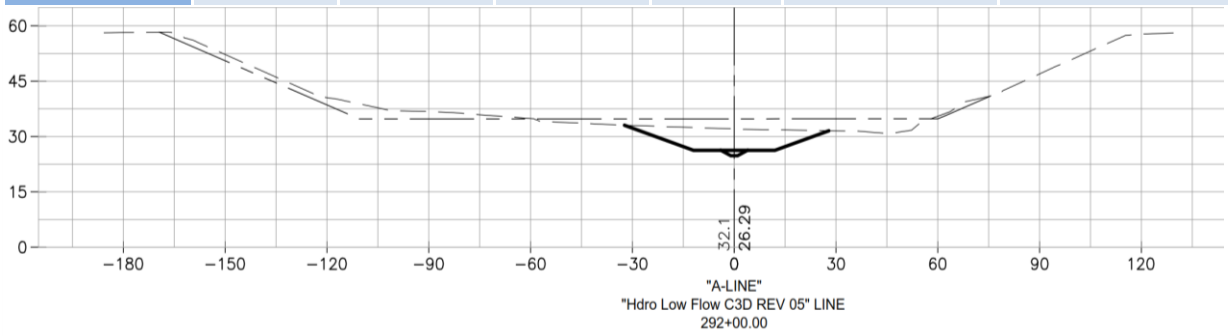
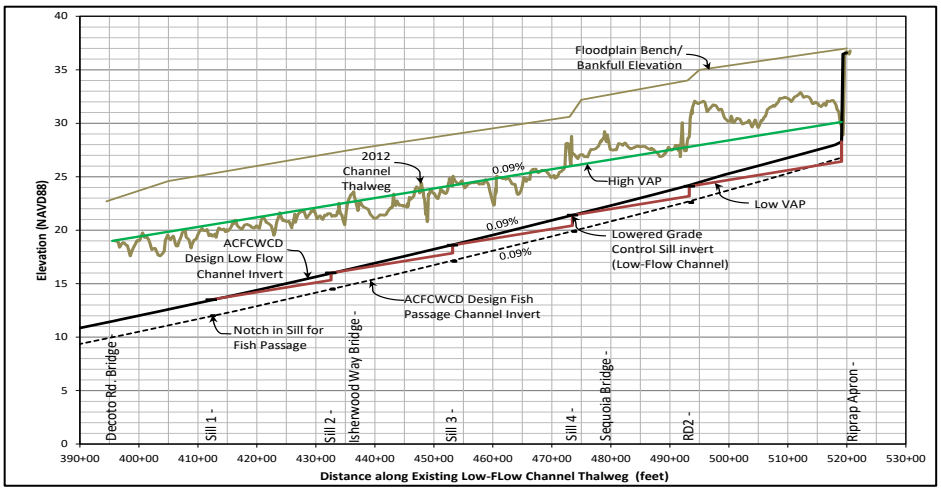


Figure 2B. Low-Flow Channel Thalweg Profile



1.5. Action Area of Restoration of Proposed Project

The Proposed Project upstream limit is the existing scour pool below the BART Weir. The scour pool demarcates the downstream limit of the Alameda County Water District (ACWD) and ACFCD joint fish ladder project under construction. The Proposed Project extends approximately 5.6 miles (29,730 feet) downstream to 600 feet below the Union Pacific Railroad (UPRR) crossing (Figure 1). No construction is proposed beyond the proposed project downstream limits. The Proposed Project will be constructed in multiple phases as described below (Table 2) in order to complete each phase within the permitted in-water work window (June 1-October 31) as funding becomes available.

Table 2. Summary of Project Elements (also see Appendix A)

PROJECT ELEMENT	PROPOSED ACTION
Phase 1: BART Scour Pool (37°34'6.61"N 121°59'20.44"W) to RD2 (37.56'58.74N-121.99'67.40W)	
1.a. Low-Flow Channel Modification	New low-flow channel optimization & alignment
1.b. 600-foot section of south levee	Toe of slope repair
1.c. RD2 Modification	Modify existing notch
Phase 2: RD2 (37.56'58.74N-121.99'67.40W) to Upstream of Dry Creek Confluence (37.57'59.64N -122.02'09.70W°') (Includes 5000-foot over-lapping Zone with Phase 3)	
2.a. Grade Control Structure Modifications	
GC4 (37°34'3.41"N 122° 0'11.01"W)	Notch the concrete structure to contour with modified active channel
GC3 (37°34'11.98"N 122° '33.25"W)	Notch grouted rock Grade control structure to contour with modified active channel
GC2 (37°34'23.09"N 122° '53.73"W)	Notch grouted rock Grade control structure to contour with modified active channel
GC1 (37°34'33.14"N 122° '14.93"W)	Notch grouted rock Grade control structure to contour with modified active channel
2.b. Transportation Crossing Modifications	
Sequoia Terrace	Modify channel corridor underneath bridge
Isherwood Way	Modify channel corridor underneath bridge
2.c. Low-Flow Channel Modification	New low-flow channel optimization & alignment
Phase 3: GC1 (37°34'33.14"N;122° '14.93"W) to UPRR (37.57'59.64N -122.02'09W) (Includes 5000-foot over-lapping Zone with Phase 2)	
3.a. Transportation Crossing Modifications	
Decoto Road	Modify channel corridor underneath bridge
I-880 Freeway	Modify channel corridor underneath bridge
Alvarado Boulevard	Modify channel corridor underneath bridge
Union Pacific Railroad Crossing	Modify channel corridor underneath bridge
3.b. PG&E Utility Crossing	Modify with grouted rock
3.c. New Grade Control Structure	Install new GC downstream of Dry Creek confluence
3.d. Low-Flow Channel Modification	New low-flow channel optimization & alignment

Note: Project elements in Phases 2 and 3 are subject to change depending on available funds.

Phase 1. Scour Pool Downstream of BART Weir (37°34'6.61"N 121°59'20.44"W) to RD2 (37.56'58.74N -121.99'67.40W)

a. **LOW-FLOW CHANNEL:** Optimize and realign the existing low-flow channel for sediment transport by excavating accumulated sediment to create a trapezoidal low flow channel fully contained within the existing Flood Control Channel. The channel would have 3:1 (horizontal to vertical) slopes with top and bottom widths of 78 feet and 24 feet, respectively, and about 10 feet deep. The top elevation of the sediment transport channel will conform to the channel's original designed flat bottom elevation. This sediment transport channel segment horizontal profile will be steepened to assist sediment movement.

Nestled within the sediment transport channel will be a fish passage channel that carries 5cfs minimum flows (Table 8). The proposed fish passage channel top and bottom width and depth dimensions are 8-feet by 2-feet by 1.6 feet.

b. **LEVEE TOE OF SLOPE REPAIR.** Reconstruct an approximately 600-foot section (37°33'56.79"N 121°59'37.00"W to 37°33'58.70"N 121°59'29.96"W) on the outside bend of the eroding south levee toe by excavating and installing rock veins keyed in place to protect against further erosion. Similar installation is shown Figure 3C below.

c. **MODIFICATION OF RD2 (LARINIER FISHWAY) (37°33'57.52"N 121°59'48.35"W).** RD2, a former grouted-rock grade control structure was modified to support flow diversion operations and subsequently modified to install the Larinier fishway (Figure 3B). This 50-foot wide concrete and the remnant grouted rock structure will be modified by demolishing the middle segment similarly as described below under Grade Controls. The modified and reconstructed structure's cross-sectional face will be covered with grouted rock anchored into the channel bottom by two 3-foot wide grouted rock footings spaced 3-feet apart for stability.

Phase 1 is expected to be completed in a single work period. Approximately 33,432 cubic yards of sediment and soil will be excavated from the channel bottom to create the low-flow channel. Approximately 13,044 cubic yards of sediment will be re-used to fill low spots and braided arms of the low-flow channel (terrace of the new low-flow channel) and compacted. The remaining 20,388 cubic yards will be off-hauled to a local upland storage area for beneficial reuse. This project phase is a joint cost-share with the Alameda County Water District (ACWD).

PHASE 2: RD2 (37.56'58.74N -121.99'67.40W) to Upstream Of Dry Creek Confluence (37.57'59.64N -122.02'09.70W)

Project Phase 2 extends from downstream of the RD2 structure for approximately 8000 feet to the confluence of Dry Creek downstream and includes modification of Grade control structures, modification of Bridge footing within the Channel, extending the low flow channel improvements through this reach and habitat complexity improvements such installation of Boulders and vegetation. The 5000-foot reach downstream of GC1 is an overlapping transitional zone between Phases 2 and 3. The transition area is designed to minimize sediment deposition as the District seeks funding for Phase 3; and will be regraded during Phase 3 construction consistent with the overall channel design configuration.

a. **Modification of Existing Grade Control (GC) Structures.**
The four Grade Control Structures (GC), or sills, located downstream of RD2 are spaced at 2,000-foot intervals as listed in Table 2. Figure 4A shows one of the Structures.

Each Grade Control Structure consists of two 3-foot thick grouted rock walls 50 feet apart extending to a depth of 9 feet below the channel bottom. The two parallel grouted rock walls extend across the channel width and converges to a 10-foot wide crest elevation above the designed flat channel bottom elevation to prevent head cutting erosion. These structures and transportation bridge crossings have since become impediments to fish migration as the low flow channel erodes between the structures. The segments immediately upstream and

downstream of these Structures also accumulate sediment which causes braided shallow channels and sheet flow that adversely affect fish movement.

The GC structures will be modified by cutting out the middle portion (78 feet) to conform to the new low-flow channel width described in Phase 1(a) (See Figure 4B). The remnant portion of the modified structure on either side of the new low-flow channel will be at the Corps designed channel bottom elevation. The bottom elevation of the modified structures will conform to the new channel configuration up and downstream. Boulders will be installed up- and downstream of the modified structure adjacent to the new low-flow channel to assist fish habitat complexity development.

b. **Low-Flow Channel Modification at the Transportation and Utility Crossings**

All the existing transportation crossings in Phase 2 (Sequoia Terrace and Isherwood Way) and Phase 3 (Decoto Road, I-880 Freeway, Alvarado Boulevard, and Union Pacific Railroad) within the project limits will be modified for sediment transport and fish passage. The low flow channel underneath these bridges will be regraded to optimize the low channel width and depth and secured in place with grouted rocks to provide structural stability and prevent braiding.

At each crossing location the low-flow channel will be constructed to contain the flow volume passing underneath the bridges. At I-880 Freeway and UPRR crossings, the low-flow channel will split between the bridge support columns. One of these channels would be lower than the others in order to serve as the principal corridor for fish movement and sediment. These multiple channels underneath these bridges will transition approximately 1,000 feet to conform to the existing low flow channel up- and downstream (Appendix A).

Phase 3. From GC1 (37°34'33.14"N;122° '14.93"W) to UPRR Crossing (37.572788°N -122.061406°W)

Phase 3 consists of similar improvements as described in Phase 1 and 2. The low flow channel will be extended through this phase, bridge crossings will be improved and the PG&E gas main crossing the channel will be protected with grouted rock One new grade control structure similar to the modified structures described above will be installed in the vicinity of Dry Creek confluence to reduce the anticipated effects of upstream tidal migration after the UPRR crossing improvement is completed.

This phase construction may require 5 to 8 years to complete because of current funding constraints. Consequently, the 5000-foot transition reach downstream of GC1 described under Phase 2 will be regraded to conform to the low flow channel design.

The District will continue to maintain and monitor the entire Flood Control Channel to assure that the low flow and other constructed components of the project meet the multi-function goals and objectives of flood protection, sediment transport and improvement of fish migratory habitat. Following, the completion of the improvements, the District will request modification of the

Maintenance Manual to include an adaptive management approach to sustainably meet the flood control channel competing and contradictory needs and functions.

Figure 3A. Scour Pool at BART

Figure 3B. RD2 / Larinier Fishway

Figure 3C. Example of Rock Veins

Installed in 2011 along the north levee toe downstream of Alvarado Road Crossing to effectively redirect the low flow channel from the levee toe.

Figure 4A. Typical Grade Control Structure (GC1, 2, 3 & 4)

Figure 4B. Proposed Cross Sections: (A) Sediment Transport and Fish Flow Channel; Detail 1. Fish Passage Channel; (B) Modified Grade Control Structure

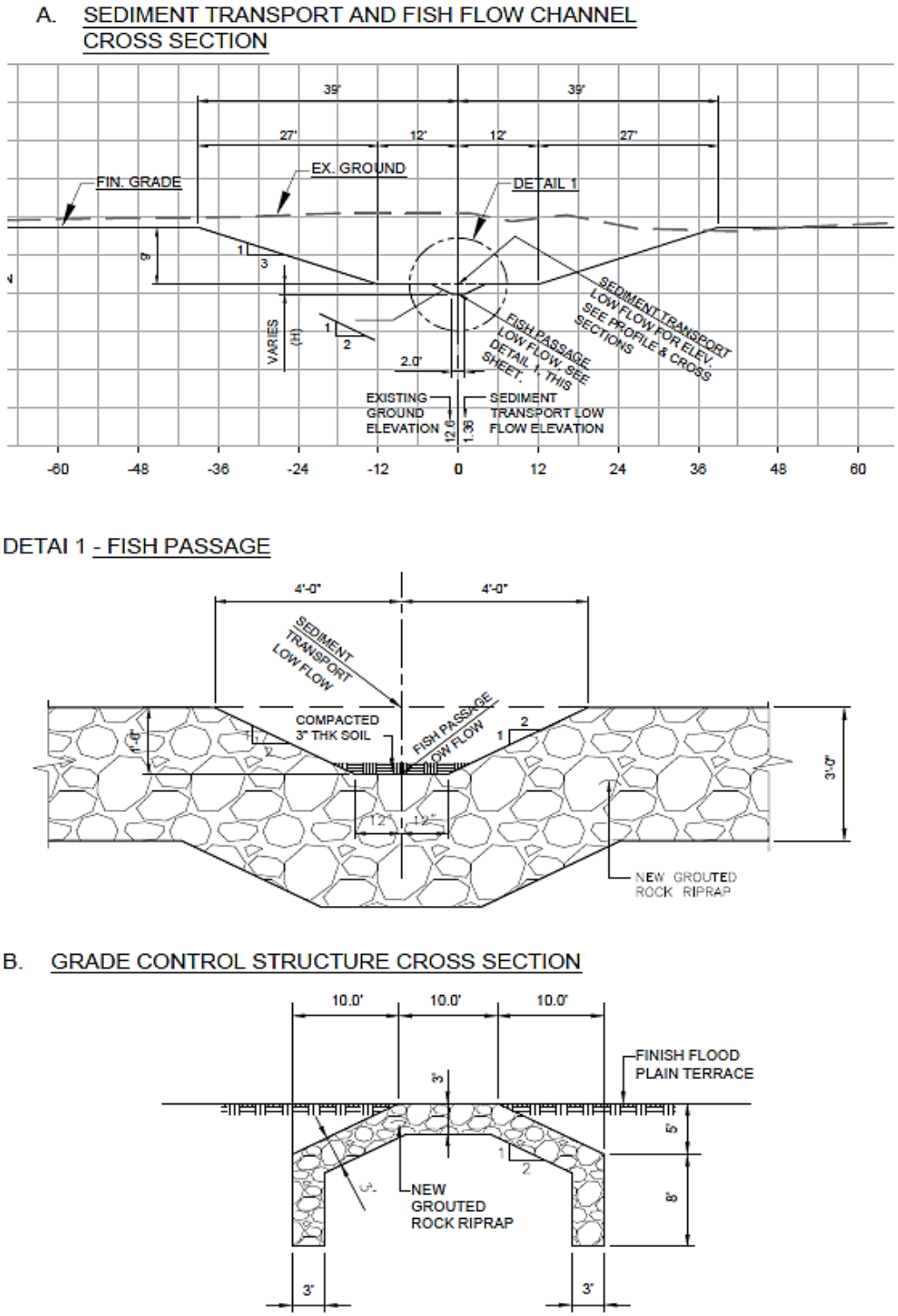
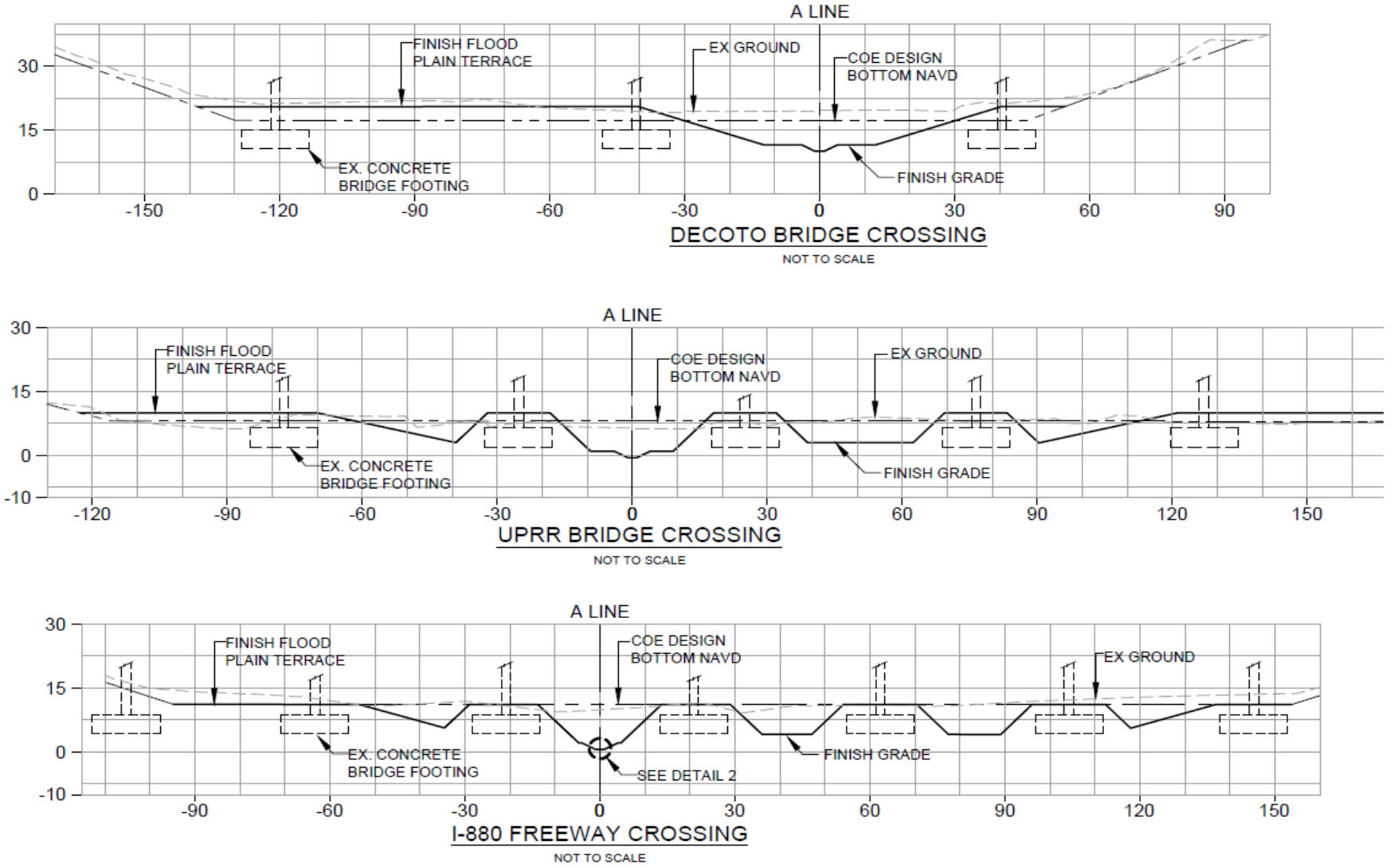


Figure 4C. Cross-Section View of the Modified Channel at Bridge Crossings



Note: Multiple channels are needed to accommodate flow volume. Fish flow channel is lower than others.

Figure 5. Transportation Crossings

(A) Sequoia Terrace Bridge

The Low Flow channel maintained between bridge support columns. Damaged South Levee Maintenance Access road underneath the Bridge will be repaired

(B) Isherwood Way Bridge

Low Flow channel configuration underneath Bridge. See Figure 4C.

(C) Decoto Road Bridge

See Figure 4C for Low Flow channel Configuration.

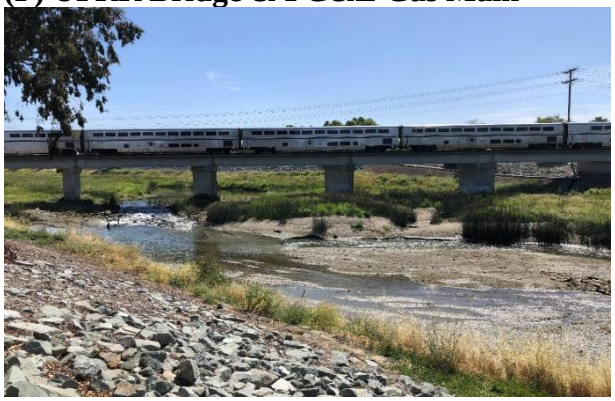
(D) I-880 Freeway Bridge

The bridge has a combination of wall supports seismically reinforced with rows of multiple columns.

(E) Alvarado Road Bridge

Note sediment buildup in the middle of channel causing severe meander.

(F) UPRR Bridge & PG&E Gas Main



Existing Low Flow channel. The bridge marks the end of tide. PG&E Gas Main runs parallel to and just upstream of the UPRR Bridge.

1.6 Habitat Improvement and Revegetation

To assist fish migration, velocity breaks and pools have been incorporated into the design of the low flow channel. This involves installation of large boulders in the outside bends of the low flow channel meanders to assist upstream migration during the fall/winter months (October through March). All disturbed areas will be restored and planted with appropriate vegetation. The reconstructed channel terrace will be revegetated with appropriate plant species (e.g., native grasses and shrubs) that respond to high flows without creating hydraulic obstructions to compromise the levees integrity (Table 3. Plant Pallet).

Table 3. Plant Pallet

Scientific Name	Common Name
Baccharis salicifolia	Mulefat
Leymus triticoides	Creeping wild rye
Carex senta	Rough sedge
Lupinus succulentus	Arroyo lupine
Hordeum brachyantherum	Meadow barley
Lolium multiflorum	Italian ryegrass
Baccharis douglasii	Marsh baccharis
Juncus xiphiodes	Iris leaved rush
Elocarus macrostachya	Spike Rush

1.7 Action Area

The Proposed Project would be implemented within the US Army Corps of Engineers (USACE) Flood Control Channel in the urban reach of Alameda Creek that substantially limits habitat suitability for the threatened and endangered species that may occur within the area. The Action Area, as shown on Figure 1, consists of the Lower Alameda Creek Flood Control Channel from the scour pool downstream from the BART Weir fish ladder and extending approximately 5.6 miles (29,730 feet) downstream to 600 feet below the UPPR crossing (floodplain). The Action Area does not extend upstream of the BART Weir nor downstream into the estuary.

USACE Readiness Command and Regulatory branches are responsible for meeting the requirements of the Federal National Environmental Policy Act (NEPA). For the CEQA decision-making process, ACFCD would make CEQA findings and would decide whether to authorize this Proposed Project.

An Initial Study (IS) has been prepared as a basis for a California Mitigated Negative Declaration (MND). A federal Biological Assessment has also been prepared to address the potential for construction and maintenance of the Proposed Project to adversely affect federally-listed threatened and endangered species. The proposed Project would be undertaken in the context of the ongoing comprehensive steelhead restoration program in the Alameda Creek watershed. In addition to addressing past projects and current activities in the Flood Control Channel, the Initial Study addresses the cumulative impacts of the Proposed Project in the context of other actions downstream potentially affecting Lower Alameda Creek (Table 11).

The construction and maintenance of the Projects elements temporarily add to current and on-going construction-related water quality effects, i.e.; Joint Fish Passage Project in the Lower Alameda. Following completion of the BART Weir fish ladder and the Proposed Project, subsequent cumulative effects will be limited to those associated with operations and maintenance of these facilities. No adverse cumulative effects are anticipated from the long-term operations of the Proposed Project intended to facilitate steelhead migration within the proposed project limits.

This project may require the following permits: USACE Section 404 Permit; USFWS Concurrence or Biological Opinion; NMFS concurrence or Biological Opinion; RWQCB Water Quality Section 401 Certification; CDFW1600 Lake and Streambed Alteration Agreement; and BCDC Permit.

1.8 Proposed Project Element Locations

The locations of Proposed Project components are shown in Table 2. Locations are defined in terms of USGS coordinates at each site. The approximate areas of temporary and permanent construction footprints are shown in Table 5A. Actual boundaries may vary. Construction contractors may make arrangements with near-by private property owners to temporarily utilize their property during construction (such as equipment storage and stockpiling of materials).

1.9 Construction

ACFCD anticipates completion of the proposed improvements over a period of 5-10 years or sooner if grant funds are available. Work in the Flood Control Channel would be limited to the dry season each year to the construction window from June 1 to October 31. However, in-water construction may begin earlier and extend later into the year with agency approval. A one-season period is required for construction of the Phase 1 low flow channel realignment between the BART Weir Fishway and RD2. One season is required for the modification of the four existing Grade Control Structures and two transportation crossings included in Phase 2. Modification of the transportation crossings in Phase 3 may require five to 10 years to complete. Construction activity will be limited to daytime only (7:00 AM to 6:00 PM) Monday through Friday.

The sequence of construction and duration of construction of project elements may vary from that presented above. The specific sequence of work will be determined by final engineering design and logistics; availability of grant funding; ability to improve construction efficiencies by scheduling activities concurrently vs. sequentially; weather conditions; site space constraints; and compliance with local, state, and federal permitting considerations.

1.10 Typical Activities

Construction will begin as early in the construction window as feasible (when flows are low in the channel) to be able to complete each project element within one construction season and to accommodate potentially overlapping elements. Scheduling may vary, depending on factors such as weather, emergency conditions, and fiscal resources. Construction would occur in phases and may overlap with future phases.

Access to the channel construction sites would be via one of the existing levee maintenance roads/trails, which would be closed to the public near the vicinity of construction activity. The

public will be detoured to the levee not in use. General access to the levee maintenance roads/trails will be along surface streets including Hillview Drive, I Street, Riverwalk Drive, Niles Boulevard, Sequoia Terrace, Isherwood Way, Alvarado Niles Road, Montecito Drive and Vallejo Street.

1. **Mobilization and isolation of the construction area from the active flow includes:**

   (a) Delivery of equipment, materials, temporary buildings, and fencing to the sites;

   (b) Grading of storage areas as needed;

   (c) Isolating construction activities in the channel from the active channel utilizing gravel bags, fiber mats, and temporary cofferdams, or other methods, to ensure that fish and aquatic resources will be excluded from the construction area, and that runoff from the construction area will be fully contained during construction activity. The temporary cofferdams may consist of a plastic barrier fence, k-rail barrier, an earthen levee with plastic sheeting to protect it from erosion, interlocking steel sheet-pile and piping for control of water, or another similar type of barrier. Location of these temporary facilities may be channel spanning or for isolation of smaller localized areas of the project. Flow in the creek will be bypassed around the isolated work area and returned to the low flow channel downstream of the work area;

   (d) Native Aquatic species in the isolated construction zone would be removed and relocated to the active stream and the construction area would be dewatered (drained). Fish collection and relocation will follow the standard procedures for fish rescue that have been employed in prior Alameda Creek in-channel construction projects. A fish rescue and relocation plan will be provided as required by NMFS and CDFW. Dewatering of the active construction zone may be on-going; and

   (e) Construction equipment access to the work area may require a temporary truck and equipment access road from the levee maintenance road/trail into and through the channel. Construction equipment will be needed to work within the Flood Control Channel to access the grade control foundations, toe of the levees, grouted riprap placement and low-flow channel construction and material hauling.

2. **Demolition and replacement of existing structures includes:**
   (a) Selective demolition of designated portions of existing Grade Control Structures;

   (b) Removal of demolition debris from the site; and

   (c) Disposal of debris at an appropriate landfill or, if feasible, stockpiled for future reuse.

3. **Grading and excavation includes:**
   (a) Grading of the construction sites, channel access roads, and the low flow channel;

   (b) Stockpiling and/or removal of materials; and

(c) Installation of modified sections of the Grade Control Structures below the Corps channel bottom elevation.

4. **In-channel Riprap construction, which includes:**
   (a) Hauling of rock to the sites for riprap;

   (b) Installing sections of rock riprap, including grouting;

   (c) Boulders; and

   (d) Cement or slurry trucked to the site.

5. **Backfill includes**:
   Backfilling of excavated areas and restoration of levee riprap slope used as access to the construction area in the channel.

6. **Site Restoration includes:**
   (a) Restoring all disturbed areas to pre-construction condition and removing all temporary dewatering structures;

   (b) In-kind surface restoration of the recreational trails affected by construction, i.e., aggregates will be added to gravel areas, damaged paved sections will be repaved;

   (c) Demobilization and final site clean-up; and

   (d) Planting native grasses and shrubs on the new low flow channel flood plain (terraces) (Table 3).

Typical equipment and workforce are summarized in Table 4.

Table 4. Typical Construction Equipment and Workforce.

Project	Typical Equipment	Crews
All Phase elements	Excavators Dump trucks Concrete trucks Pumper trucks Pickups and delivery trucks Loaders/backhoes Compaction equipment Water trucks Dewatering equipment Crane	1 foreman 1 operator 2 truck drivers 2 laborers

1.11 Area of Activities

Approximate area of permanent and temporary construction is summarized in Table 5A. Approximate volume of excavation and fill are summarized in Tables 5B and 5C, respectively.

Typical methods of isolating the stream from active construction are shown on Figure 6. Construction zones would extend from the levee crest trails. Full volitional unimpeded steelhead passage may be prevented until all construction is completed and temporary barriers are removed. During construction, levee crest trails would be temporarily re-routed or closed in order to ensure public safety.

Table 5A. Project Impacts Summary*

Phases	Stations	Construction Staging Area & Access (Left) (acre)		Sediment Transport/Fish Passage Channel (low flow width TOB to TOB) (Acre)		10-Foot Construction Access (Right) (Acre)		Construction Staging Area (Right) (Acre)		TOTALS (Acre)	
	Length (miles)	**Wet-land (acre)**	**Other Waters (acre)**	**Wet-land (acre)**	**Other Waters (acre)**	**Wet-land (acre)**	**Other Waters (acre)**	**Other Waters**	**Other Waters (acre)**	**Wet-lands**	**Other waters**
Phase 1 RD2 STA to BART Weir	STA 303+68.96 to STA 278+00+80 **(0.49)**	0.36	2.70	0.38	4.41	0.04	0.50	0.80	1.77	1.58	**4.97**
Phase 2 RD2 to Sill No.1 @STA 198+00	STA 278+00 to STA 98+00 **(1.51)**	2.05	7.16	3.51	10.19	0.12	0.81	0	0	5.68	**7.97**
Phase 2&3 Transition	STA 198+00 to STA 42+00 **(1.06)**	4.05	2.05	2.27	7.76	0.1	1.93	0	0	6.42	**3.98**
Phase 3 Sill No.1 STA 198+00 to STA 39+40	STA 42+00 to STA 39+40 **(1.94)**	11.24	3.85	8.47	9.73	0.89	1.43	0	0	20.6	**5.28**
Total Impacts	**(5.0)**	**17.70**	**15.76**	**14.63**	**32.09**	**1.15**	**4.67**	**0.80**	**1.77**	**34.28**	**22.2**

***Note: All impacts are temporary with only de Minimis permanent impacts.**

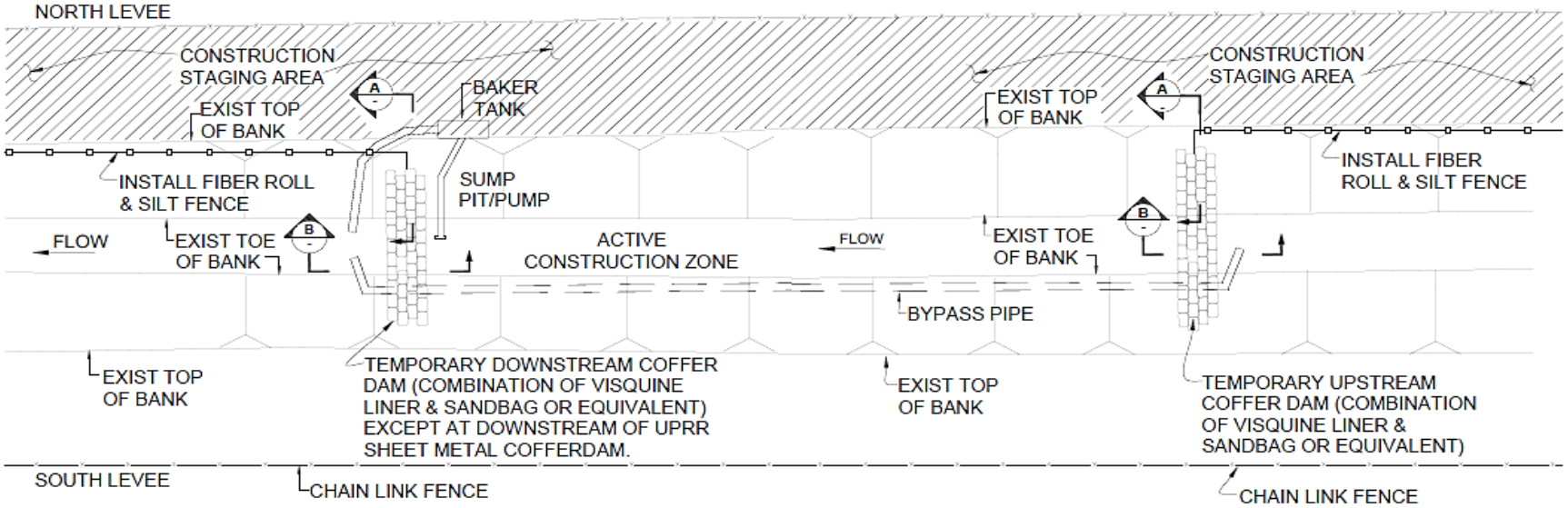
Table 5B. Excavation Volumes in Cubic Yards (cy) or Tons (T)

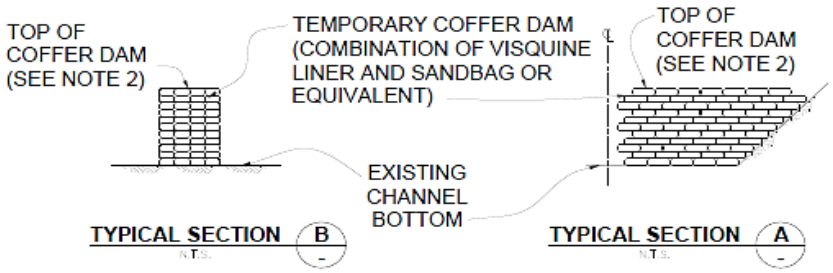
Type	Phase 1 Bart Weir (STA 303+00) to RD2 (STA 278+00)	Phase 2 RD2 to STA 142+00	Phase 3 Sill No.1 to STA 39+40	Total
Low flow Fish Passage	708 cy	2,222 cy	4,250 cy	7,180 cy
Sediment Transport	32,724 cy	170,303 cy	270,445 cy	473,472 cy
RD-2 (concrete)	1,032 cy	0	0	1,032 cy
Existing Sill (4) Grouted Rock	0	2,038 cy	0	2,038 cy
New Sill (soil)	0	0	559 cy	559 cy
Transportation Crossing (soil)	0	11,509 cy	22,205 cy	33,714 cy
Utility Crossing (soil)	0	0	1,038 cy	1,038 cy
Utility Crossing (concrete)	0	0	52	52 cy
Braided Channel (excess soil to level)	0	0	6952	6952
Boulders	0	0	0	0

Table 5C. Fill Volumes in Cubic Yards (cy) or Tons (T)

Type	Phase 1 Bart Weir (STA 303+00) to RD2 (STA 278+00)	Phase 2 RD2 to STA 142+00	Phase 3 Sill No.1 to STA 39+40	Total
Low flow Fish Passage	0	0	0	**0**
Sediment Transport	0	0	0	**0**
RD-2 Grouted Rock	689 T	0	0	**689 T**
Existing Sill (4) / Grouted Rock	0	2,755 T	0	**2,755 T**
New Sill (Grouted Rock)	0	0	1,132 T	**1,132 T**
Transportation Crossing (Grouted Rock)	0	23,307 T	22,205 T	**45,512 T**
Utility Crossing (Grouted Rock)	0	0	1,038 T	**1,038 T**
Utility Crossing (concrete)	0	0	52	**52**
Braided Channel Backfill (Soil)	13,044 cy	5,089 cy	13,500 cy	**31,633 cy**
4-Ton Boulders	56 T	96 T	96 T	**248 T**

Figure 6. Typical Dewatering Of Construction Zones





DEWATERING NOTES:

1. THE DEWATERING SYSTEM PLAN SHOWN IS FOR INFORMATION ONLY. THE CONTRACTOR SHALL USE HIS OWN JUDGEMENT IN DESIGNING & IMPLEMENTING THE REQUIRED DEWATERING SYSTEM TO KEEP THE WORKSITE IN A DEWATERED & WORKABLE CONDITION.

2. SECTION OF ALAMEDA CREEK AT UPRR IS SUBJECTED TO DAILY TIDAL ACTION WHICH MAY VARY THE CONTRACTOR SHALL REFERENCE MOST CURRENT TIDELOG NORTHERN CALIFORNIA OR LOCAL WEATHER WEB SITE TO MONITOR & OBTAIN INFORMATION OF TIDE ELEVATIONS FOR THE DESIGN OF DEWATERING SYSTEM.

3. THE CONTRACTOR SHALL PERFORM STREET SWEEPING OPERATION AT LEAST THREE TIMES A DAY AND AS NECESSARY WHEN DIRECTED BY THE ENGINEER. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

1.12 Maintenance Responsibilities

The District owns and is responsible for maintenance of the flood channel, associated levees and related rock and grouted rock features in the channel. Maintenance associated with these activities would be contained within the active Flood Control Channel and levees from below the BART Weir fish way downstream to below the UPRR crossing downstream (Phase 1). Routine maintenance of the channel, including the low-flow channel and Grade Control Structures will be conducted under permits authorizing the project construction.

Routine maintenance of the Grade Control Structures and low-flow channel would typically involve:

- Assessment of the low-flow channel post storms.
- Removal of Trash and large woody debris from the low-flow channel, typically using combination of hand tools, small cranes and lifts, hoses and suction pumps, and similar small equipment;
- Periodic visual inspection of the Grade Control Structures and low-flow channel; and
- Re-grouting damaged grouted rock (generally following periods of high flow and damage from debris); and
- Repairs to levee toe damages.

1.13 Compliance Monitoring

Compliance monitoring will include the following components:

- During construction and maintenance, ACFCD will implement the suite of avoidance and minimization measures and Best Management Practices (Tables 6 and 7).

- Water quality data (turbidity) from each construction zone will be monitored downstream of the temporary dams during construction; and

- ACFCD will prepare and submit annual site monitoring reports, in each year of post-construction of a project element to the regulatory agencies detailing the construction activities and any significant deviations from the Proposed Project design. Reports will include the most current data available at the time of submittal.

Table 6. Avoidance and Minimization Measures

	Avoidance and Minimization Measures
1	Construction would occur during dry weather
2	Minimal excavation work is expected
3	Install temporary perimeter fiber role and/or silt fencing to prevent silt discharges
4	Install construction site entrance controls to prevent tracking
5	Minimal disturbance of surrounding vegetation
6	Secure exposed cut slopes during construction to prevent fugitive dust by spraying water
7	Hand broadcast seed on site post construction as needed

8	Stockpile equipment at appropriate location within containment barrier
9	Temporarily cover stockpile of drill hole tailing until reuse or off-haul from the site
10	Concrete grout will be trucked in and poured
11	Equipment fueling will not be allowed on site except for emergency
12	Sanitary facilities will be appropriately located and secured to prevent spills
13	Dumpsters would be covered and regularly checked during construction
14	Spill prevention plan would be on hand
15	Accidental spill will be reported to Public Works Agency (510-670-5500)
16	Vehicle and equipment will be regularly inspected for leaks
17	Fire prevention: Spark arrester on all internal combustion engines
18	Daily sweep of the road to prevent tracking
19	Dust control measures and speed control through the residential corridor

1.14 Avoidance and Minimization Measures

Proposed Project impact Avoidance and Minimization Measures (AMMs) to be fully implemented are shown on Table 7. The AMMs application to listed species and other wildlife is discussed, on a species-by-species basis, in Section 8. These are generally applicable measures that address a specific impact from a specific mechanism for effect. Any additional conditions required by the regulatory agencies will be made part of the project construction specifications.

In addition to the implementation of specific avoidance and minimization measures in Table 7 for all construction and maintenance activities in the channel, regulatory agency permit terms and conditions will be implemented. Maintenance requiring substantial construction-type activities will be coordinated with the regulatory agencies. For any substantial (non-routine) maintenance, the District will informally consult with these resource agencies prior to initiation of the maintenance activity. It is anticipated that permits will include some of these routine measures. There is overlap among the various categories of effect and the various mitigation and monitoring measures. For example, measures to address water quality also function as measures to avoid and minimize impacts to aquatic species.

As the lead agency for CEQA, the District would be responsible for implementing the avoidance and minimization measures for the Proposed Project for compliance, monitoring, and reporting commitments summarized in Table 7 below.

Table 7. Proposed Project Mitigation, Monitoring, and Reporting Plan

MITIGATION ACTION	RESPONSIBLE PARTY	DURATION	IMPLEMENTATION ACTIONS
AESTHETICS			
Aesthetics 1. Lighting. If lighting a construction site is needed, ACFCD will direct security lighting away from housing and operate lighting manually or with motion sensors so that lighting only operates when motion is detected.	Construction Contractor	On-going during operation	District will incorporate mitigation action into construction specifications.

Aesthetics 2. Lighting. To address potential for construction lighting after sunset, if needed, ACFCD will require the construction contractor to develop a construction Monitoring plan to include: • Monitoring of lighting levels outside of residences along the banks of the Flood Control Channel adjacent to sites when active construction is in progress; • Use of color-corrected halide lights for construction; • Directing construction lights away from the banks of the Flood Control Channel; • Placing lights at the lowest feasible level; • Use of light screens between the construction area and the housing, at the boundary of construction activity and/or on the levee crest; and the housing, at the boundary of construction activity and/or on the levee crest; and • To the extent feasible expedite construction within the Flood Control Channel.	Construction Contractor	On-going during construction	District will incorporate mitigation action into construction specifications.
AGRICULTURAL RESOURCES			
No Significant Effects. No Mitigation.			
AIR QUALITY			
AQ1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day when active construction is in progress.	Construction Contractors	During Construction	● ACFCD will incorporate mitigation action into construction specifications; ● Contractors will maintain a daily compliance log; and ● ACFCD will inspect compliance logs weekly and document compliance.
AQ2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.			
AQ3. All visible mud or dirt tracked-out 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.			
AQ4. All vehicle speeds on unpaved roads shall be limited to 15 mph.			
AQ5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible.			
AQ6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 2 minutes to the extent feasible (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.			
AQ7. All construction equipment shall be maintained and properly tuned in accordance			

with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.			
AQ8. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.			
AQ9. Minimizing the idling time of diesel powered construction equipment to 2 minutes to the extent feasible.			
AQ10. Equipment Emissions. ACFCD will require the use of highway diesel fuel in all construction equipment to the extent feasible.			
BIOLOGICAL RESOURCES (mitigation and monitoring measures)			
GENERAL AVOIDANCE AND MINIMIZATION MEASURES: CONSTRUCTION			
C1. Channel protection. ACFCD will isolate in-channel construction areas from the active creek channel with sand bags, fiber mats, cofferdams, or other methods during construction.	Construction Contractors	During Construction	● ACFCD will incorporate actions to offset impacts into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
C2. Riparian vegetation. ACFCD will access the channel via areas where no riparian vegetation will be affected.	Construction Contractors	During Construction	● ACFCD will incorporate actions to offset impacts into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
C3. Runoff. ACFCD will control potential downstream runoff from the construction sites with sand bags, fiber mats, or other methods.	Construction Contractors	During Construction	● ACFCD will incorporate actions to offset impacts into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs

			weekly and document compliance.
C4. Fuel containment. ACFCD will fuel and maintain construction equipment out of the channel. If this is not feasible, containment materials will be used.	Construction Contractors	During Construction	● ACFCD will incorporate actions to offset impacts into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
C5. Concrete containment. ACFCD will provide washout areas for vehicles outside of the channel and isolate these areas to ensure that concrete and grout materials do not runoff into the channel.	Construction Contractors	During Construction	● ACFCD will incorporate actions to offset impacts into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
C6. Equipment leaks. When working in the channel or where there may be runoff to the channel, ACFCD will ensure that construction equipment will be fitted with absorbent materials at potential fuel, oil, and other fluid leak spots.	Construction Contractors	During Construction	● ACFCD will incorporate actions to offset impacts into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly & document compliance.
C7. Spill containment and isolation. During construction and post-construction maintenance involving use of equipment in or adjacent to the channel, ACFCD will stockpile sand bags on site so that they may be immediately filled and placed around any spill. In addition, any spills not contained within the maintenance area will immediately be isolated from the active channel.	Construction Contractors	During Construction	● ACFCD will incorporate actions to offset impacts into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly & document compliance.
C8. Re-grading. ACFCD will restore disturbed areas to pre-project contours unless otherwise specified.	Construction Contractors	During Construction	● ACFCD will incorporate actions to offset impacts into construction specifications.

			● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
C9. Monitoring. A qualified biologist will (a) be retained to monitor construction, and (b) will conduct mandatory contractor/worker awareness training for construction personnel if special-status species are found.	District consulting Biologist.	During Construction	● Bio-monitoring and construction crew training will be a line item in Project Construction Budget. ● ACFCD will provide CDFW, USFWS, and NMFS with record of crew training and of monitoring and the results of monitoring.
C10. Site survey. Prior to construction, ACFCD will provide for a qualified biologist to survey the site to determine whether special-status species are present.	District consulting Biologist	Prior to Construction	● ACFCD/Bio. Consultant will prepare reports for submittal to CDFW, USFWS, and NMFS, as appropriate. ● ACFCD will submit report to agencies prior to initiating construction at the site.
C11. Fish rescue. Following installation of barriers to isolate the construction site from the active channel, a qualified fisheries biologist and team will conduct a fish rescue program for stranded fish prior to initiation of construction activities. Fish removed from the site will be immediately returned to the active channel. A fish rescue and relocation plan will be provided to NMFS and CDFW for review and approval prior to initiating the fish rescue;	District consulting Biologist	Prior to and during Construction	● ACFCD/Bio. Consultant will prepare reports for submittal to CDFW, USFWS, and NMFS, as appropriate. ● ACFCD will submit report to agencies prior to initiating construction at the site.
C12. Burrowing owls. If owls are not present, the burrows will be filled to prevent nesting only if it confides with project. If owls are present, a qualified biologist, in consultation with CDFW, will passively relocate the owls to avoid any loss of individuals. Burrows will then be filled. Pre-construction survey and relocation will be on-going so that no burrowing owls will occur at the proposed construction sites.	District consulting Biologist	Prior to Construction	● ACFCD/Bio. Consultant will prepare report for submittal to CDFW, USFWS, and NMFS, as appropriate. ● ACFCD will submit reports to agencies prior to initiating construction at the site.
C13. Western pond turtle. Within 15 days prior to construction activities, a qualified biologist will survey for western pond turtles. If turtles are found the biologist shall relocate the pond turtle to suitable habitat and an exclusion fence will be installed to prevent	District consulting Biologist	Prior to Construction	● ACFCD/Bio. Consultant will prepare reports for submittal to CDFW, USFWS, and NMFS, as appropriate.

movement of turtles back into the construction area.			● ACFCD will submit reports to agencies prior to initiating construction at each site.
C14. Disturbance of nesting birds. Within 15 days prior to construction activities, a qualified biologist will survey for raptor nests in areas within 500 feet of the proposed construction site. If nesting raptors are found, ACFCD will consult with CDFW to establish appropriate no disturbance buffers around the nest sites. No construction will be initiated within the buffers until young have fledged as determined by a qualified biologist. To address potential for work to affect downstream nesting birds, a qualified biologist will conduct pre-construction surveys of downstream areas to identify nesting by special-status and/or migratory birds. If these species are found nesting within 100 yards of the construction site, ACFCD will consult with CDFW to establish appropriate no disturbance buffers around the nest sites until young have fledged. These buffers will be clearly marked to exclude construction equipment and personnel.	District consulting Biologist	Prior to Construction	● ACFCD/Bio. Consultant will prepare reports for submittal to CDFW, USFWS, and NMFS, as appropriate. ● ACFCD will submit reports to agencies prior to initiating construction at each site.
C15. California horned lizard. Within 15 days prior to construction activities, a qualified biologist will survey for California horned lizard. If horned lizards are found in the proposed construction area, they will be relocated by a qualified biologist and exclusion fences will be installed around the construction site to prevent them from reentering the site during construction.	District consulting Biologist	Prior to Construction	● ACFCD/Bio. Consultant will prepare reports for submittal to CDFW, USFWS, and NMFS, as appropriate. ● ACFCD will submit report to agencies prior to initiating construction at the site.
AVOIDANCE AND MINIMIZATION DURING ON-GOING MAINTENANCE			
O&M1. Monitoring. ACFCD will visually inspect the low-flow channel and Grade Control Structures annually to insure adequate conditions for fish passage.	ACFCD and biological consultant; NMFS, and CDFW.	Post construction	● ACFCD/Bio. Consultant will prepare reports for submittal to CDFW, USFWS, and NMFS, as appropriate. ● ACFCD will submit report to agencies. ● ACFCD will prepare a compliance report annually and initiate a summary review of program effectiveness on a 5-year cycle.
O&M2: As winter flows recede in the spring periods of juvenile steelhead outmigration, to the extent feasible, ACFCD will visually monitor the flood channel margins to determine if juvenile steelhead are present and will ensure that juveniles are not stranded as water surface elevations decline.	ACFCD and biological consultant; NMFS, and CDFW.	Post construction	● ACFCD/Bio. Consultant will prepare reports for submittal to CDFW, USFWS, and NMFS, as appropriate. ● ACFCD will submit report to agencies.

			● ACFCD will prepare a compliance report annually and initiate a summary review of program effectiveness on a 5-year cycle.
O&M3. On-going Measures to protect steelhead. • Routine monitoring at the low-flow channel and grade control fishways would include periodic monitoring for debris accumulation and sediment deposits that would impede adult and juvenile migration, and ACFCD would, to the extent feasible, schedule maintenance outside of the period when juveniles and adults may be migrating. • When maintenance requires isolation of the active channel from the maintenance area, ACFCD will engage a qualified biologist to monitor for the presence of steelhead. If steelhead are found anywhere in the area to be isolated, juvenile steelhead will be captured and released to the active channel downstream of the maintenance area. • If adult steelhead are in the maintenance area, they will be (a) diverted to the isolated active channel or (b) captured and transported to the reach upstream of Mission Boulevard. • In an emergency/unplanned maintenance event, ACFCD will notify NMFS and CDFW as soon as possible, and immediately make all feasible and necessary efforts to isolate the maintenance area from the active stream as rapidly as possible.	ACFCD and Construction Contractors	Post Construction	● ACFCD will incorporate actions to offset impacts into a facility O&M Manual ● Activities will be documented as part of daily activity logs.
O&M4. Operations and Maintenance Manual: The NMFS/USFWS/CDFW-approved Operations and Maintenance Manual for the project will include protocols for performance monitoring and impact avoidance & minimization during O&M. Proposed measures include measures described below.	ACFCD	All years	● ACFCD will incorporate actions to offset impacts into a facility O&M Manual. ● Activities will be documented as part of daily activity logs.
O&M5. Avoidance and Minimization Measures. For on-going maintenance, ACFCD will apply construction measures, similar to C1-C14 (above), as detailed in the NMFS/USFWS/CDFW-approved Operations and Maintenance Manual.	ACFCD	All years	● ACFCD will incorporate actions to offset impacts into a facility O&M Manual. ● Activities will be documented as part of daily activity logs.
O&M6. Scheduling. To the extent feasible, ACFCD will avoid scheduling maintenance	ACFCD	All years	● ACFCD will incorporate actions to

activities in the Flood Control Channel in the period from January 1 through May 31.			offset impacts into a facility O&M Manual. ● Activities will be documented as part of daily activity logs.
CULTURAL RESOURCES			
NO SIGNIFICANT EFFECTS. NO MITIGATION.			
GEOLOGY AND SOILS			
NO SIGNIFICANT EFFECTS. NO MITIGATION.			
HAZARDS AND HAZARDOUS MATERIALS (see also water quality and biological resources)			
HH1. Fuel Management. ACFCD will implement BMPs to ensure that fluid leaks during construction in the creek channel do not contaminate groundwater at adjacent facilities.	Construction Contractor	During Construction	● See Hydrology and Water Quality below.
HYDROLOGY AND WATER QUALITY (see biological resources and hazards and hazardous materials)			
HWQ1. Water Quality. ACFCD will implement appropriate BMPs for all work to ensure that Proposed Project construction does not adversely affect water quality.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
HWQ2. Channel protection. ACFCD will isolate the construction zone from the active Alameda Creek channel using sand bags, hay bales, fiber mats, sheet pile, silt screens, and/or other methods.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
HWQ3. Concrete management. ACFCD will wash and cure all concrete and grout work prior to coffer dam or other barrier removal to reduce potential for leaching to affect aquatic resources.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
HWQ4. Leak containment. Before beginning work each day, ACFCD will inspect all construction equipment to ensure that oil and/or gas/diesel fuel are not leaking from equipment.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications.

			● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
HWQ5. Storage. ACFCD will ensure that secondary containment for fueling and chemical storage areas will be provided during construction and Project maintenance.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
HWQ6. Wash water containment. ACFCD will ensure that secondary containment for equipment wash water will be provided to ensure that wash water is not allowed to run off the site.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
HWQ7. Silt containment. ACFCD will ensure that silt traps, ponds, sediment management methods, and/or other means will be provided to prevent runoff from the construction site.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
HWQ8. Stockpile runoff. ACFCD will ensure that material stockpiles will be covered to prevent runoff.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications. ● Contractors will maintain a daily compliance log.

			● ACFCD will inspect compliance logs weekly and document compliance.
HWQ9. Soil erosion. ACFCD will ensure that loose soils will be protected from potentially erosive runoff.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
HWQ10. Leaks. When construction equipment is used within the creek channel, ACFCD will ensure that the equipment will be fitted with secondary containment materials at potential oil/fuel leakage sites.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
LAND USE AND PLANNING			
NO SIGNIFICANT EFFECTS. NO MITIGATION.			
MINERAL RESOURCES			
NO SIGNIFICANT EFFECTS. NO MITIGATION.			
NOISE			
N1. Noise management. ACFCD will comply with City of Fremont noise policies, including scheduling of construction to avoid times when people are most sensitive to noise to the extent practical. The construction contract will include requirements for using sound mufflers on construction equipment.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
N2. Noise monitoring. ACFCD will require the contractor to utilize mufflers and shields on intake and exhaust ports on power construction equipment and shrouds on impact tools.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications.

			● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
N3. Noise control. To reduce construction noise from work ACFCD will monitor construction noise levels in the vicinity of the levee crest and install portable sound walls to deflect construction noise from the residences if noise exceeds 65 dB(A) during the day or 55 dB(A) after 7 PM in the vicinity of occupied residences.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications. ● Contractors will maintain a daily compliance log. ● ACFCD will inspect compliance logs weekly and document compliance.
POPULATION AND HOUSING			
NO SIGNIFICANT EFFECTS. NO MITIGATION.			
PUBLIC SERVICES AND SAFETY			
PS1. Materials delivery. To the extent feasible, ACFCD will require the contractor to schedule equipment and materials transport to occur before the rush hour or after rush hour.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications; ● Contractors will maintain a daily compliance log; and ● ACFCD will inspect compliance logs weekly and document compliance.
PS2. Materials delivery. ACFCD will require that all construction materials and equipment be transported in accordance with Caltrans, Union City, and City of Fremont rules and regulations.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications; ● Contractors will maintain a daily compliance log; and ● ACFCD will inspect compliance logs weekly and document compliance.
RECREATION			
R1. Trails. ACFCD will coordinate with the East Bay Regional Parks District to post trail closure notices and schedules at all trail heads to ensure that the public knows when trails are likely to be closed well in advance.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications; ● Contractors will maintain a daily compliance log; and
R2. Trails. To the extent compatible with public safety, ACFCD and/or the East Bay Regional Parks District, working together, will provide carefully signed detours around	Construction Contractor	During Construction	

construction, and will separate these detours with temporary construction chain link fencing.			● ACFCD will weekly inspect and document compliance logs. ● ACFCD AND/OR EBRPD
TRANSPORTATION AND TRAFFIC			
Trans1. Materials delivery. ACFCD will require that all construction materials and equipment be transported in accordance with Caltrans, Union City, and City of Fremont rules and regulations.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications; ● Contractors will maintain a daily compliance log; and ● ACFCD will inspect compliance logs weekly and document compliance.
USE OF ENERGY			
E1. Equipment management. ACFCD will seek to minimize construction-related energy use by specifying in all construction contracts that all equipment shall be turned off when not in use, with idling of construction equipment limited to not more than 2 minutes to the maximum extent practical.	Construction Contractor	During Construction	● ACFCD will incorporate mitigation action into construction specifications; ● Contractors will maintain a daily compliance log; and ● ACFCD will inspect compliance logs weekly and document compliance.

To simplify compliance during construction, the District would incorporate appropriate elements of the Mitigation, Monitoring and Reporting Plan (MMRP) into construction contracts and would thus delegate day-to-day compliance and reporting responsibilities to construction contractors, who would maintain records of compliance. Additionally, the District would independently monitor and report compliance for cultural resources and biological resources, either using internal staff or specialty contractors for these functions.

In some instances, avoidance and minimization measures are described in general terms with reference to various local, regional, state, and/or federal permit requirements. For example, the minimization measure for air quality effects of the Proposed Project is defined as implementation of Bay Area Air Quality Management Board "Feasible Control Measures for Construction Emissions of PM_{10} and $PM_{2.5}$." These requirements are incorporated by reference. Therefore, at the time of contract issuance, the then-current list of these control measures would be incorporated into construction specifications. Similarly, compliance actions associated with local permits would be incorporated using the most current list of minimization and reporting measures for each permit. The District would therefore, adopt and comply with the most current standards and procedures for minimization and monitoring at the time construction contract award.

2.0 BACKGROUND

The United States Army Corps of Engineers (USACE) constructed the Alameda Creek Flood Control Channel from 1966 to 1968. The approximately 230-foot wide, flat-bottom trapezoidal earthen channel has levees on both sides and extends from San Francisco Bay's eastern shores upstream to the Mission Boulevard crossing in Fremont (Figure 1). The levee's outboard and inboard slopes were armored with rock riprap for erosion protection. Subsequently, the USACE installed several grouted rock grade control weirs (sills) at critical locations to prevent head-cutting erosion. In addition, transportation bridge crossing footings in the channel were secured with either concrete and/or rock riprap. Examples of these structures in the channel include the BART bridge footings and the adjacent modified Grade Control Structure RD1, Alameda County Water District (ACWD) modified Grade Control Structure (RD2) which was used for instream impoundment and diversion of flows for groundwater recharge. The RD2 was subsequently modified to include a low flow notch (Larinier fishway).

Since construction of the channel, a meandering low-flow channel (active channel) has naturally established and persists between sediment-removal episodes. It is generally located towards the center of the 230 ft.-wide flat-bottom channel, except at some locations where the active channel hugs the toe of the levees' slopes. At other locations, there are secondary offshoots that often result in braided reaches. The 15-25 ft.-wide active channel persists throughout the entire reach below the BART Weir into the stable tidal zone downstream of the Proposed Project limit at the UPRR crossing.

The Flood Control Channel was constructed on a relatively flat alluvial floodplain, resulting in immediate sediment deposition as the creek emerges out of the hills to the east. Consequently, within 10 years of channel construction, sedimentation became a major concern requiring periodic removal to maintain the channel design capacity in accordance with the USACE Operations and Maintenance Manual (O&M).

The approximately 700-square-mile Alameda Creek watershed drains most of southern Alameda County and Livermore Valley east of the East Bay Hills (Figure 7). The watershed historically supported a steelhead (*Oncorhynchus mykiss*) population, and substantial efforts are being undertaken to restore the species. In several parts of the upper watershed, steelhead, including the non-migratory form (rainbow trout) persists upstream of dams. Adult steelhead have been observed attempting to migrate upstream in some years.

In 2006, the National Marine Fisheries Service (NMFS) established the Central California Coast (CCC) steelhead distinct population segment (DPS), which is presently listed as threatened. NMFS Steelhead fish recovery plan identified Alameda Creek as a priority for regional restoration. The creek is considered to have adequate habitat and drains a relatively undeveloped upstream watershed with high quality tributaries to support steelhead fish runs.

Beginning in 2009, the ACFCD and ACWD held many interagency (RWQCB, CDFW, USACE, NMFS and USFWS) coordination meetings on the ACFCD Drop Structure/BART Weir fish ladder construction and the proposed improvements in the lower reach of the Flood Control Channel.

These meetings focused on flow releases, fish ladder design and installation approaches, and the passage improvements below the BART Weir. In addition, constraints and improvements needed to minimize sedimentation and improve migration habitat conditions through the Flood Control Channel, while addressing the primary flood protection functions of the Flood Control Channel and levees were discussed. Key elements of these discussions include removal of barriers to fish migration in the channel, adequate fish flow and flow depth, bypass flow releases, adaptive management approach to habitat complexity development, active maintenance and monitoring on short- and long-term basis, and conditions of regulatory agencies project permitting.

2.1 Project Setting

The Proposed Project reach is entirely surrounded by urban development composed primarily of medium to high density housing behind the levees. The project area boundary is shown in Figure 1. The banks of the east to west flowing channel are defined by rock riprap armored levees. The Alameda Creek maintenance access roads and landscape trees are located atop of both levees. These access roads also double as pedestrian trails. The upland terrain to the outboard side of the levees ranges from 47 ft. above sea level at the upstream end to 10 ft. above sea level at the downstream limit.

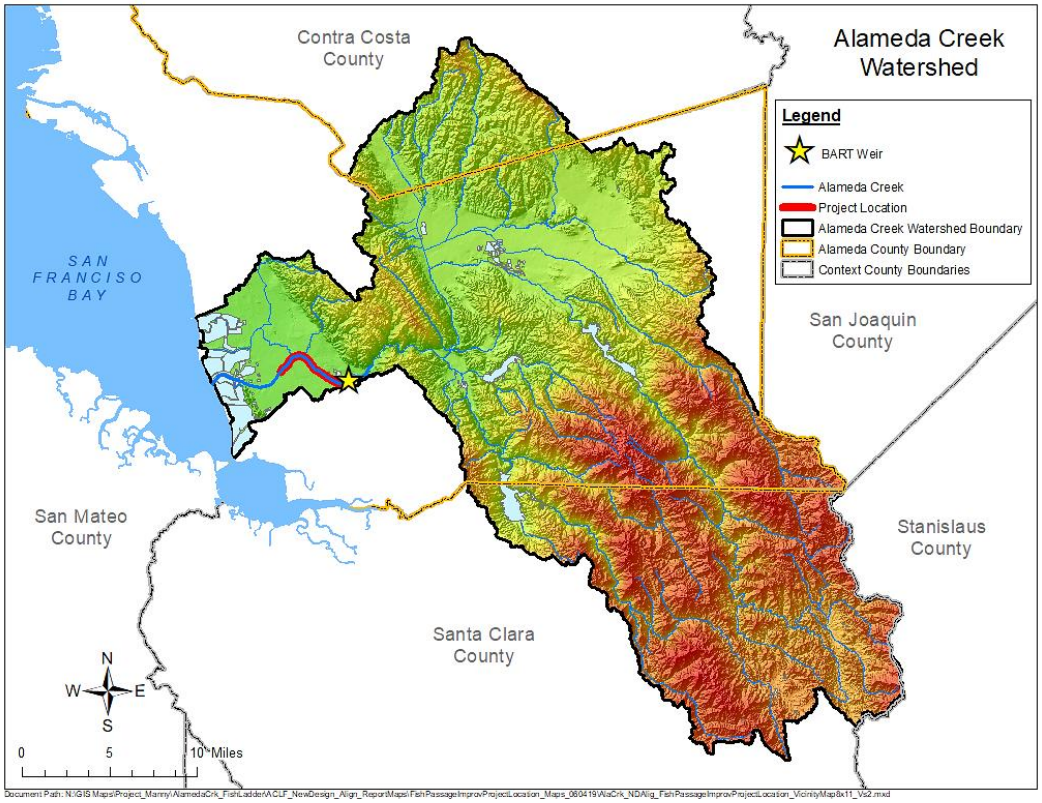
2.2 Hydrology

The approximately 700 square miles Alameda Creek Watershed collects water from Livermore Valley to the north east, and Mount Hamilton to the south in eastern Santa Clara County. The creek with its principal tributaries (Calaveras Creek, San Antonio Creek), flows north for about 25 miles; receiving flows from Arroyo de la Laguna and Sinbad creeks. Alameda Creek then flows westerly through natural setting of Niles Canyon, receiving flows from southerly flowing Stonybrook Creek prior to discharging into the Flood Control Channel at Mission Boulevard crossing in Fremont. The constructed channel extends approximately 12 miles from Mission Boulevard westerly to San Francisco Bay (Figure 7A).

The Alameda Creek watershed flows are regulated by several dams, reservoirs, and Grade Control Structures. Flow within all streams of the Alameda Creek Basin vary with seasonal precipitation. The average annual rainfall is approximately 25 inches (Western Regional Climate Center 2012). There is a continuous subsurface flow of water in the streambed where bedrock is near the surface (Sound Watershed Consulting 2011) Numerous storm drains and side channels carry stormwater and urban runoff into Alameda Creek within the urban reach below Mission Blvd. crossing.

Hydrologic modifications including dams, channelization, and land use changes in the upper watershed of southern and northern Livermore-Amador Valley altered the sediment transport function of Alameda Creek. These modifications were further compounded by the construction of the Federal Flood Control Project. The Federally constructed channel was designed specifically for flood control purposes. The natural creek processes and functions of erosion, sediment mobilization, transport, deposition and effects on aquatic resources, including fish, were not fully understood or analyzed at the time of construction. Thus, the constructed channel and its designed functions are incongruous with these important natural processes.

Figure 7A. Vicinity Map

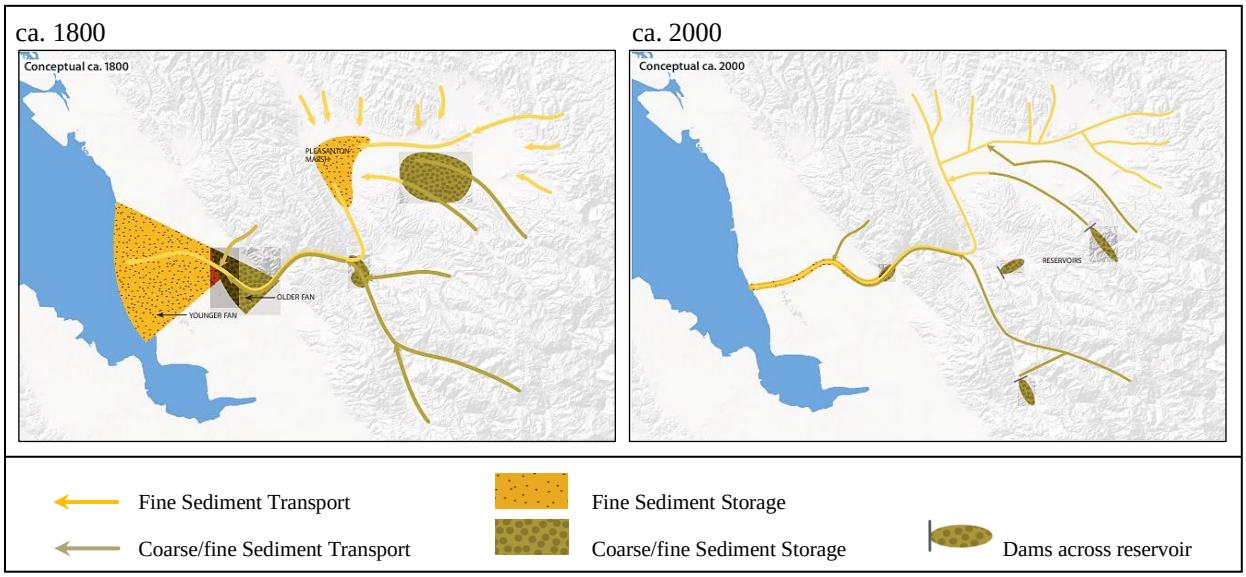


According to SFEI Alameda Creek Historical Ecology Study, "*altered sediment patterns have been one of the most dramatic unintended consequences of hydrologic modifications. Straightened, connected channels through the Livermore-Amador Valley have created incision problems, while levees constructed to prevent overflow across the Niles Cone (coastal plain) have changed the pattern of sediment deposition and erosion and contributed to sedimentation of the channel*".

These alterations in the watershed including removal of historic marshes in the Livermore valley in the northerly portions of the watershed and constructed dams and reservoirs in the southerly portions have resulted in storage of coarse sediment behind dams while finer sediment is transported from the upper watershed down to the *Flood Control Channel.* The channel has become disconnected from the adjacent floodplain marshes due to channelization and reduction of the historic floodplain width of Alameda Creek. Consequently, the creek is no longer able to sort and settle sediment resulting in increased fine sediment deposition in the channel particularly at bridge pilings and installed grade control structures between the Mission Blvd. crossing upstream and Union Pacific Railroad crossing downstream. Figure 7B below shows diagrammatic changes in sediment deposition patterns since the 1800s.

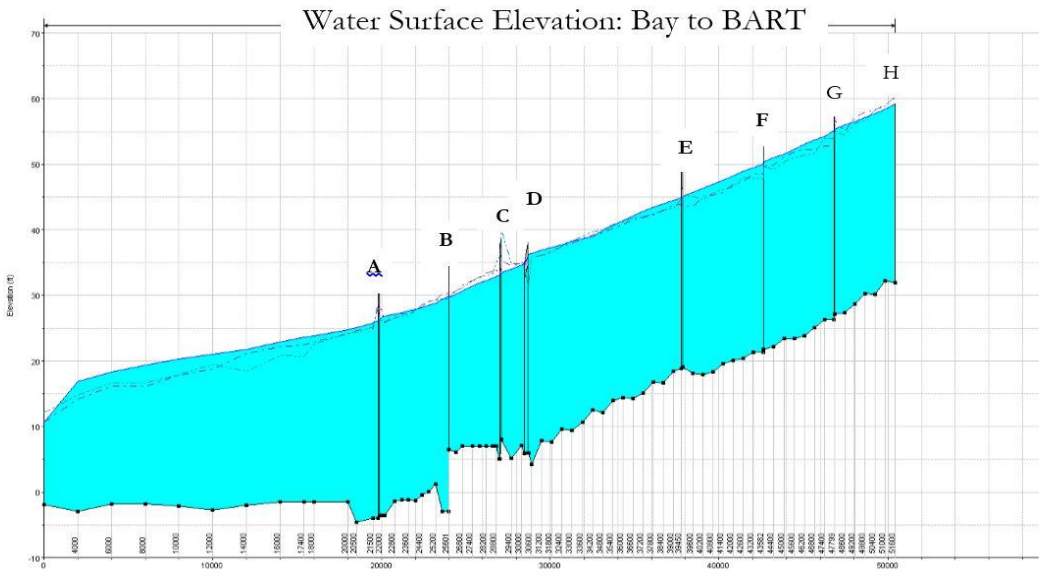
The historical coarse sediment supply has been trapped behind reservoirs. Furthermore, the channelized creek segment no longer is able to spread sediment broadly across its former floodplains resulting in both fine and coarse sediment storage within the channel. This has resulted in aggradation and the need for active management.

Figure 7B. Conceptual Depiction of Sediment Storage and Transport ca.1800 & ca. 2000.
(Excerpt from SFEI 2013 Alameda Creek Watershed Historic Ecology p. 319)



Per the requirements of the USACE's Operation & Maintenance Manual (O&M), the District would desilt the constructed channel when sediment deposition exceeds specified levels. Since construction of the channel, the District has de-silted the channel numerous times removing nearly one million cubic yards (996,118 CY) of sediment. Based on Sediment load records from the Niles Gauge, the Flood Control District estimated sediment accumulations of 74,000 tons per year between 1960 and 1971, 90,000 tons per year between 1972 and 1993 and 156,000 tons per year between 1993 and 2006. This sediment accumulation continues.

Figure 8. Flood Control Channel Standard Flood Surface Elevation



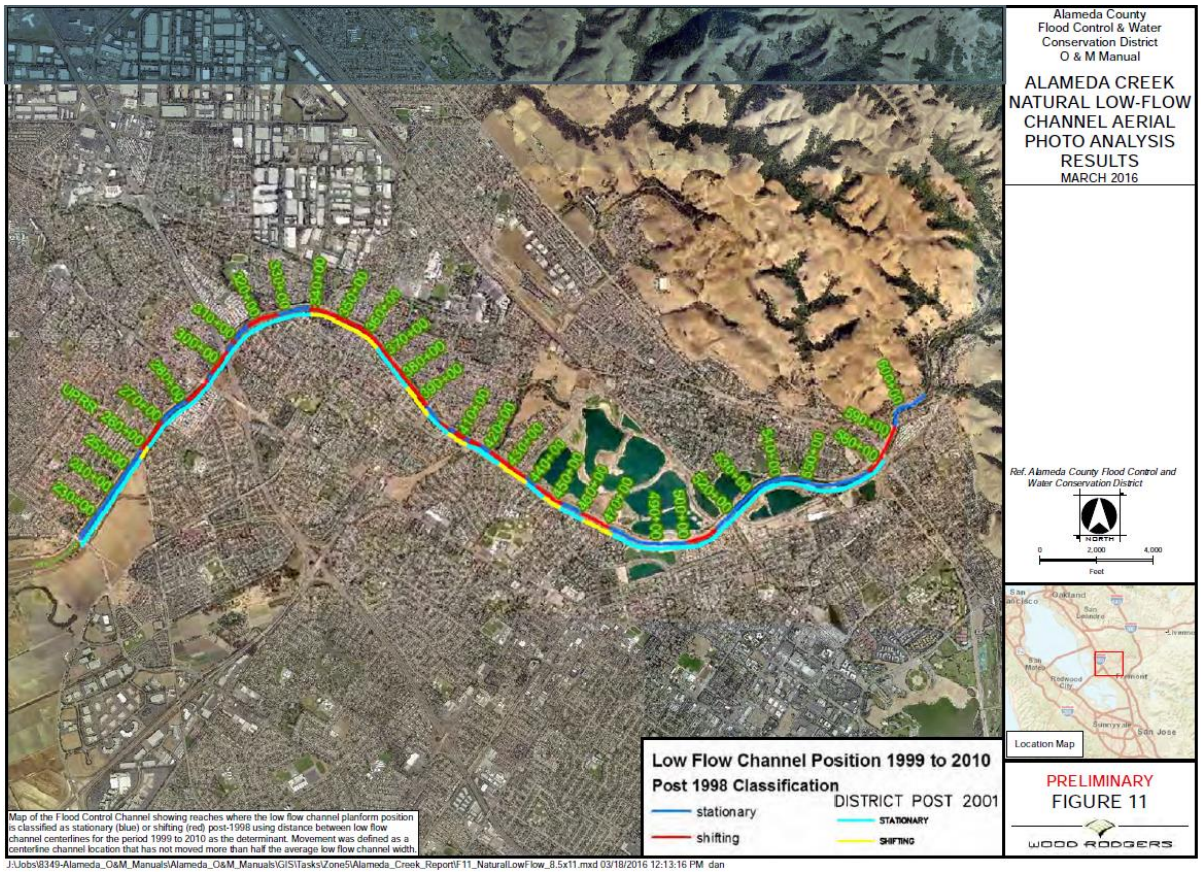
A – Ardenwood Blvd; **B** – UPRR; **C** – Alvarado Rd. ; **E** – Decoto Rd.; **F** – Ishderwood Rd.; **G** – Sequoia Bridge; **H** – BART

Note: This figure clearly shows the inadequate capacity of the channel to carry the standard flood defined as 500 year storm.

2.2.1 The Existing Low Flow Channel

According to Rosgen, 1994, stream stability is defined as *"The ability of a stream to maintain, over time, its dimension, pattern and profile in a manner that is neither aggrading nor degrading and is able to transport without adverse consequences to the flows and detritus of its watershed."* The natural low-flow channel that re-stablishes after past desilting events in the Lower Alameda Creek was assessed for its stability and persistency to inform the design of the proposed improvements for sustainable long-term channel stability. The assessment utilized historical aerial photos to understand the natural plan form, channel width and sinuosity; field survey to gather data on the natural width, depth, bankfull discharge features, and channel profile; and output from numerical hydraulic modeling and statistical analysis to verify hydraulic and sediment transport functions of the channel. *(Alameda Creek Encouraging Natural process to optimize Flood Control, Sediment Transport, and Fish Passage functions, March 2016).*

Figure 9. Flood Control Channel showing Reaches where the low flow channel planform position is classified as stationary or shifting from 1999 to 2010*.

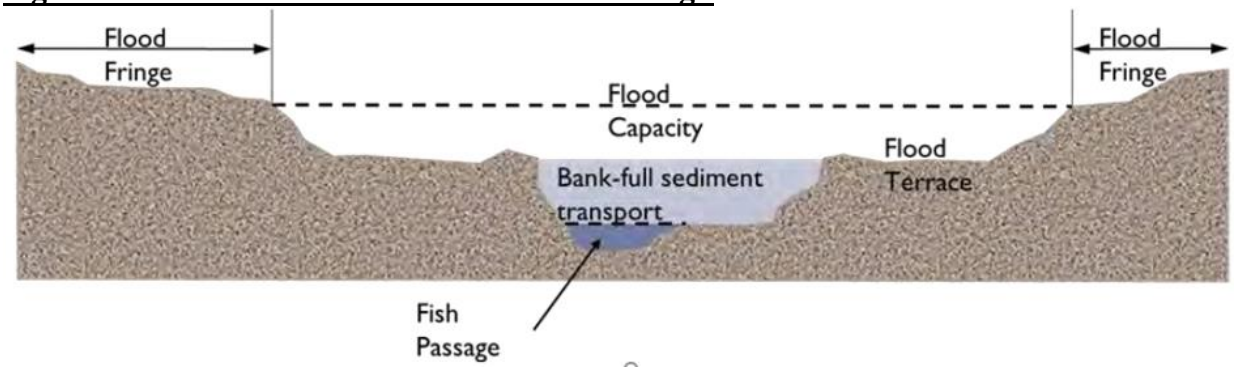


***Shifting was defined in channel reaches where the centerline moved more than half the average low flow channel width.**

2.2.2 Low Flow Channel Optimization Approach

Two Dimensional Hydraulic Modeling (2D) (designed by DHI) was used to evaluate the sediment transport characteristics of the naturally occurring low flow channel and to optimize an enhanced low flow channel alignment and sections in support of the final Sediment transport channel design informed by the concept depicted in Figure 10 below.

Figure 10. One Dimensional Model Used for Design



The Flood Control introduced several different channel cross-sectional configurations into the model to determine which configurations are the optimal sizes for the low-flow channel design. Additionally, longitudinal channel slopes steeper than the existing channel were also analyzed (Figures 11A and 11B).

The model results indicated that a channel with a cross-sectional area that allows a 1,000-cfs discharge is an optimal size. If the modeled channel capacity is larger, sedimentation would occur because the flows will be slow. Conversely, if the modeled channel was narrower, erosion occurred. This value concurred with the bankfull capacity determined from the one-dimensional model of the naturally formed and stable low-flow channel (Figure 11A). The estimated 1,000 cfs stable channel capacity based on 2D modeling is represented by the magenta color line in Figure 11B below.

Figure 11A. 2D Verification of Design Section Stability

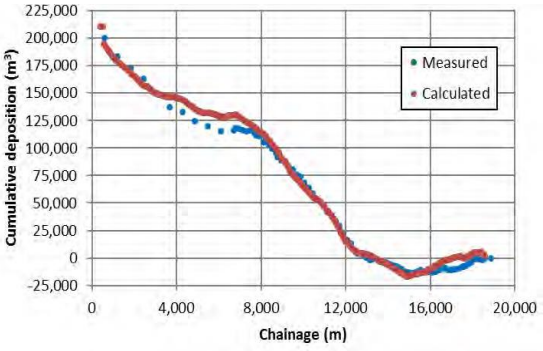
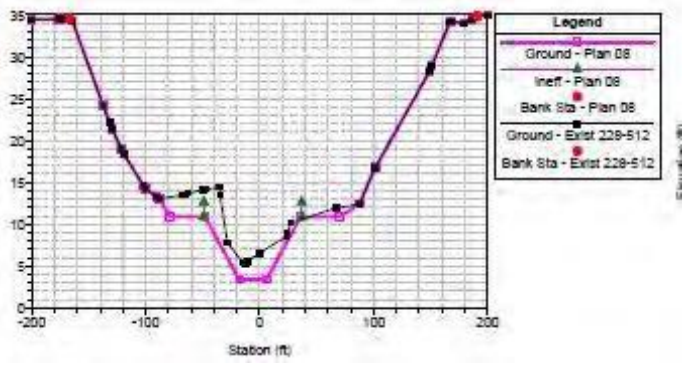


Figure 11B. Optimal Cross-Sectional Area for 1,000-cfs Discharge Based on 2D



2.2.3 Fish Passage and Flows

Streams also provide crucial pathways for aquatic and terrestrial organisms to move and migrate to find food and avoid predators. The *Flood Control Channe*l was not designed for this function. The historical Alameda Creek was a viable natural habitat for fish passage from the San Francisco Bay upstream into Eastern Alameda County. At the time the flood control channel was conceived and constructed, there was not much consideration given to the requirements of aquatic species including anadromous fishes. Development has occurred right up to the creek levees along 12 miles of the lower section. Bridge footings, grade control structures and diversion dams in the channel prevent migratory fish from reaching suitable spawning and rearing habitat in upper Alameda Creek watershed.

The channel currently has no real estuary (with broad floodplain). There is no expansive wetlands or brackish transition habitat from the freshwater outflow of the creek to the saline waters of the bay. The Flood Control Channel levees isolate the channel from the tidal wetland restoration in the South Bay Salt Pond Project areas downstream. Restoration of brackish estuarine habitat and tidal wetlands of Alameda Creek could provide refuge, food and the opportunity for migratory fish to successfully complete their life cycle and survive in the ocean environment.

Natural storm flows in the upper watershed including the tail-end of storms, critical for sediment movement and anadromous upstream fish migration, are generally diverted into storage reservoirs. Consequently, the lower reach of the channel (below the BART weir) receives inadequate flows necessary to mobilize sediment into the San Francisco Bay. During the interagency coordination meetings on the improvements in the channel the regulatory agencies and ACWD agreed to flow bypass rules that will provide minimum flows during the year (Table 8). The design and optimization of the low flow channel is based on these minimum flow bypass rules.

Table 8. Fish Passage Flow By-pass Rules

Season	Dates	Flow @ Niles Gage[3]	Minimum Bypass Flow at ACFCD Drop Structure	Additional Conditions of Bypass
Year Round	Jan 1 thru Dec 31	>700cfs	**NA**	Dams down; no off-stream diversions
		>400 cfs	**NA**	Dams may be up; no off-stream diversions when turbidity is high
Steelhead In-Migration	Jan 1 Thru Mar 31	100-400 cfs	25 cfs + Net SFPUC Releases @ Niles Gage[1],[2]	No water will be released from storage to meet bypass flow requirements.
		30 – 100 cfs	**25 cfs**	If less than 25 cfs arrives at the ACFCD Drop Structure, all flow arriving at ACFCD Drop Structure shall be bypassed. No water will be released from storage to meet bypass flow Requirements.
		30 cfs	**20 cfs**	If less than 20 cfs arrives at ACFCD Drop Structure, all flow arriving at ACFCD Drop Structure shall be bypassed. No water will be released from storage to meet bypass flow requirements
Steelhead out Migration	April thru May 31. Normal to Wet years	All Flows	12 cfs + Net SFPUC Releases @ Niles Gage[1],[2]	Normal/wet conditions are years when water-yr. rainfall to date (as of April 1, at Fremont) is *greater* than the 60% annual exceedance value. Dry/Critical conditions are years when water-year rainfall to date (as of April 1, at Fremont) is *less* than the 60% annual exceedance value. In such years, if less than 12 cfs of natural flow arrives at ACFCD Drop Structure then all flow arriving at ACFCD Drop Structure shall be bypassed. No water will be released from storage to meet bypass flow requirements.
	April thru May 31 Dry or Critical Dry yrs.	>25 cfs	**12 cfs + Net SFPUC Releases at Niles Gage[1],[2]**	flows are less than 25 cfs under dry/critical conditions, ACWD will provide 12 cfs +Net SFPUC Releases at Niles Gage 7 consecutive days in April and 7 consecutive days in May (days to be specified by NMFS/CDFW). If ACWD diversions are zero and less than 12 cfs arrives at ACFCD Drop Structure, all of the flow at ACFCD Drop Structure shall be bypassed. No water will be released from storage to meet bypass flow requirements.
		<25 cfs	**5 cfs**	
Outside of Peak migration	June 1 thru Dec 31	All Flows	**5cfs**	If less than 5 cfs arrives at ACFCD Drop Structure, all of the flow at ACFCD Drop Structure shall be bypassed. No water will be released from storage to meet bypass flow requirements.

Notes:

[1]. Pursuant to the NMFS Biological Opinion for the Calaveras Dam Replacement Project (CDRP) (CDRP BO), the compliance locations for the SFPUC's releases are at (1) USGS Gage 11172955 in Alameda Creek immediately downstream from the Alameda Creek Diversion Dam; and (2) USGS Gage 11173500 in Calaveras Creek below Calaveras Dam. Some of these releases may, at times, contribute to flow further downstream at Niles Gage (CDRP BO, 2011), and, if they do, any such flows contributing to total flow at Niles Gage would be a factor in determining ACWD's minimum bypass flow requirement shown here.

[2]. Net SFPUC Releases at Niles Gage = flows from the Upstream Reach, provided per the CDRP BO, from SFPUC fisheries bypass/releases and not lost to natural percolation in the Sunol Valley. ACWD's bypass flow rules do not specify that any SFPUC flows will arrive at Niles Gage; only that those flows will be bypassed if any SFPUC flows reach the Niles Gage.

[3]. Flows are daily average inflows at USGS Niles Gage. Not including Imports on Alameda Creek for Niles Cone basin recharge.

2.3 Steelhead Restoration Action Plan

As an agency with a major interest in management of water resources in Alameda Creek, ACFCD has been involved in efforts to restore steelhead to Alameda Creek in collaboration with the Alameda Creek Fisheries Restoration Workgroup. Steelhead swim upstream to spawn, but man-made barriers along the creek are impediments or complete barriers to this upstream movement.

The Alameda Creek Watershed, including a number of perennial streams, is the largest drainage in the South San Francisco Bay region. The upper watershed areas are relatively undeveloped, and include areas designated as wilderness. Alameda Creek historically supported a number of native fish species, including Pacific lamprey (*Lampetra tridentata*), steelhead/rainbow trout (*Oncorhynchus mykiss*), California roach (*Lavinia symmetricus*), prickly sculpin (*Cottus asper*), Sacramento sucker (*Catostomus occidentalis*), Sacramento pikeminnow (*Pytchocheilus grandis*), threespine stickleback (*Gasterosteus aculeatus*), riffle sculpin (*Cottus gulosus*), and hitch (*Lavinia exilicauda*). With the exception of riffle sculpin, these species continue to be found in the upper watershed. Five species of non-native fish, including largemouth bass, have been found in the creek.

Like steelhead, Pacific lamprey are anadromous, with a free-swimming parasitic or predatory marine adult stage and a freshwater immature stage (ammocoetes) that is a benthic filter feeder. Lamprey spawn in higher-gradient, cool-water streams with gravel beds. The ammocoete stage is thought to last five to seven years (Moyle 2002), although data for this stage is relatively incomplete since ammocoetes live within the substrate and are not easily captured or quantified using standard sampling methods such as electrofishing, seining, or snorkel surveys. Lamprey ammocoetes were, however, collected in 1998, 1999, 2001 and 2002 at several sites in Alameda Creek between Niles Canyon and the confluence with Calaveras Creek (Trihey & Associates 2001, SFPUC 2002a, 2002b, and 2002c) and also in recent years at the BART Weir. These collections are important because they demonstrate that lamprey can pass a number of barriers in Alameda Creek that prevent access to other anadromous fish, such as steelhead. Although the collected ammocoetes were assumed to be Pacific lamprey ammocoetes, taxonomy is inconclusive and it is possible that some of the collected ammocoetes may have been river lamprey.

Unlike Pacific lamprey, steelhead cannot pass several man-made barriers in Alameda Creek (including Rubber Dam 1, BART Weir). Resident rainbow trout inhabiting the upper portions of the Alameda Creek watershed have been identified through genetic studies (Neilsen and Fountain 1999, cited in CEMAR 2002) to be related to anadromous steelhead. These fish were probably of anadromous origin and were trapped in the upstream watershed following construction of the barriers in Alameda Creek. Anadromous steelhead, which have been listed as a threatened species under the Federal Endangered Species Act (Central California Coast (CCC) Evolutionary Significant Unit (ESU), do not currently inhabit upper Alameda Creek. Access to the creek by steelhead has been blocked by impassable barriers.

2.4 Alameda Creek Fisheries Restoration Workgroup

In 1999, the Alameda Creek Fisheries Restoration Workgroup (hereafter Restoration Workgroup) was formed to cooperatively address issues related to restoring Alameda Creek Watershed fisheries, with a goal of restoring a self-sustaining population of native steelhead to the watershed.

The Restoration Workgroup has been facilitated by the Center for Ecosystem Management and Restoration (CEMAR) for most of its existence. Over the 20-year course of meetings, involved parties in the Restoration Workgroup have varied. The participating organizations include:

Local Agencies

- Alameda County Flood Control and Water Conservation District;
- Alameda County Water District;
- Alameda County Resource Conservation District;
- East Bay Regional Parks District;
- San Francisco Public Utilities Commission (SFPUC); and
- Zone 7 Water Agency.

State Agencies

- The Coastal Conservancy;
- Caltrans;
- Department of Fish and Wildlife;
- Department of Water Resources; and
- Regional Water Quality Control Board.

Federal Agencies

- National Marine Fisheries Service; and
- U.S. Army Corps of Engineers.
- USFWS

Non-Governmental Agency Members

- Alameda Creek Alliance;
- American Rivers;
- Environmental Defense;
- Natural Resources Defense Council; and
- Pacific Gas & Electric Company.

In addition, a variety of interested parties have attended Restoration Workgroup meetings, including representatives from the American Fisheries Society, Tri-Valley Fly Fishers, and USDA Natural Resources Conservation Services.

ACFCD goals and obligations are to enhance steelhead and other species up- and downstream passage while maintaining flood protection capacity and habitat conditions within the lower reach of the creek.

A keystone element of restoring a steelhead population in lower Alameda Creek is the Joint Fish Passage Project which includes installation of a fish ladder at the rubber dam #1 (RD1) and the BART Weir to allow up- and downstream migration by steelhead and other species. The Joint Fish Passage Project substantially enhances fish passage throughout the urban reaches of Alameda Creek. The proposed Project improves fish passage connectivity between the bay and BART Weir by modifying the four Grade Control Sills in the channel, modifying the RD2/Larinier Fishway concrete foundation and modifying in-channel structures associated with transportation bridges to

incorporate a low-flow channel that supports both efficient sediment transport and fish passage. In addition, the Proposed Project includes enhancing the existing low-flow channel from the scour pool below the BART Weir (upstream limit) to the tidal limits at UPPR crossing downstream to improve adult and juvenile steelhead passage under low-flow conditions. These elements of the Proposed Project are an integral part of the on-going program to manage and maintain the channel per the USACE Maintenance & Operations Manual.

2.5 ACFCD Operations and Facilities

ACFCD manages the County's flood control infrastructure that includes natural creeks, constructed channels, pump stations, and other facilities. The Proposed Project is located in the ACFCD's Zone 5, a 45,440 acre area that covers mostly the alluvial plains on the westerly sides of the East Bay Hills and includes the lower reach of Alameda Creek extending from the vicinity of Mission Boulevard through the urbanized areas to the San Francisco Bay. Following the original channel construction, the Army Corps of Engineers installed a series of Grade Control Structures across the channel at 2,000 feet apart in the upstream reach of Decoto Road crossing (Figure 1 and Appendix A)

The functions of these structures are to protect the channel from erosion by moderating flow velocity and energy. The RD1 use for water diversion operation and the adjacent concrete Weir, which protects the channel area around the Southern Pacific Railroad and BART Bridge footings, are major barriers to fish passage. Also, several smaller grouted rock Grade Control Structures, located between the BART Weir and Decoto Road crossing, and the transportation bridge footings have been identified as fish passage impediments at low flows. These locations cause siltation and erratic braiding of the low flow channel. The Proposed Project would remove these impediments to allow efficient fish passage connectivity between the bay and the BART Weir fish ladder and optimize sediment transport to the tidal reach.

2.6 Proposed Project Purpose and Need

The purposes of the Proposed Project are to improve anadromous fish passage in the modified urban reach segment of the Alameda Creek Watershed, and improve sediment transport, while maintaining ACFCD's flood protection functions. The Proposed Project is consistent with the integral elements of the Alameda Creek Steelhead Restoration Workgroup Plan and the NMFS Central California Coastal (CCC) Steelhead Recovery Plan of 2016.

2.7 Scope of Initial Study

Under CEQA, an Initial Study need not include the evaluation of alternatives to a proposed project. If the Initial Study reveals that the project would have a significant adverse effect on the environment, an Environmental Impact Report (EIR) would be required. This would necessitate the consideration of a range of reasonable alternatives that would achieve most of the basic objectives of the Proposed Project but would also avoid or substantially lessen any of the significant effects of the project (Section 15126.6 if the CEQA Guidelines).

Under NEPA, the evaluation of alternatives to a proposed action is only required when there are "unresolved conflicts concern the alternative uses of available resources" (NEPA Section 102[2]

[E]). For the reasons discussed below, this document does not include the evaluation of alternatives, other than the "no action" alternative. Based on coordination conducted in preparing this draft EA/IS, there are no unresolved conflicts concerning alternative uses of available resources (NEPA Section 102[2] [E]), therefore this EA only analyzes the proposed action and no action. NEPA guidance from the Council on Environmental Quality September 8, 2005, ("Preparing Focused, concise and Timely Environmental Assessments") states "When there is consensus about the proposed action based on input from interested parties, you can consider the proposed action without consideration of additional alternatives".

As described in CEQA *Guidelines* Section 15063, the function of an Initial Study is to determine if the Proposed Project may have a significant effect on the environment. Contents of an Initial Study are specified in CEQA *Guidelines* Section 15063 (d):

(1) A description of the Lower Alameda Creek Fish Passage Restoration in Flood Control District Zone 5, Cities of Fremont and Union City, California including the location of the Proposed Project;

(2) An identification of the environmental setting;

(3) An identification of environmental effects;

(4) A discussion of the ways to mitigate the significant effects identified, if any;

(5) An examination of whether the Proposed Project would be consistent with existing zoning, plans, and other applicable land use controls; and

(6) The name of the person or persons who prepared or participated in the Initial Study.

An Initial Study may lead to a conclusion that an EIR or a Negative Declaration should be prepared. Accordingly, this Initial Study addresses a full range of potential effects of the Proposed Project, describes feasible avoidance and minimization measures, and evaluates the significance of potential effects considering that avoidance and minimization measures are implemented as a part of the Proposed Project. The potential effects are categorized to reflect CEQA *Guidelines* Appendix G (*CEQA Checklist*).

2.8 Alternatives Examined but not Considered in Detail

ACFCD considered, but rejected, the following alternatives:

Desilt the Lower Alameda Creek channel and modify the existing Grade Control Structures. The channel desilting alternative was rejected by ACFCD based on concerns expressed by resource and regulatory agencies regarding potentially significant environmental impacts and project costs. As part of this desilting project approximately 579,392 cubic yards of sediment would be removed to about 2 feet above the original USACE design bottom elevation through the entire 5 mile (26,420-linear-feet) reach of lower Alameda Creek centered along the existing channel. The naturally established low flow channel is below the constructed flat bottom designed elevation. This existing low flow channel would be optimally deepened and reconfigured to provide efficient sediment transport. Approximately 110,513 cubic yards of excavated native materials below the invert bottom and excavated sediment above the invert bottom would be used to fill braided

sections of the low flow channel and to secure and stabilize the upper banks and slopes of the realigned section of the low flow channel. The excess sediment and the excavated native material from the project would be off-hauled and temporarily stockpiled on the ACFCD upland sediment processing sites and/or agricultural lands for beneficial reuse. Approximately 1 ft. of sediment on the channel flat bottom would be left in place on either side of the newly reconfigured low flow channel to support the foundation of the 3:1 bank of the new low flow channel. The reconfigured low flow channel dimensions width and depth would optimize sediment transport through the corridor.

2.9 No Project

The no project alternative was rejected because conditions in the Flood Control Channel would continue or worsen: 1) sediment accumulation and loss of channel capacity; 2) flood risk; and 3) fish passage barriers within the project reach remain.

2.10 No Project (Action) Alternative under NEPA

NEPA requires the evaluation of the comparative impacts of a "No Action "alternative. The No Project (Action) Alternative was rejected under CEQA because it would not meet the Proposed Project goals and objectives related to upstream passage of steelhead and sediment transport. The continued inability of anadromous steelhead to migrate unimpeded upstream and downstream through the Flood Control Channel under low-flow conditions to reach the RD1/BART Weir fish ladder and access upstream habitat would result in failure of these fish to complete their anadromous fish life cycle (that is failure to reach spawning and rearing grounds). Upstream and downstream populations of steelhead would continue to be isolated and the genetic integrity of the populations would be compromised. This would be completely inconsistent with the objective of ACFCD and other agencies that support the recovery program goal to restore anadromous fish passage through this reach to upstream watershed. The No Project Alternative would also be inconsistent with watershed-wide efforts to restore the population of anadromous steelhead in the Alameda Creek watershed. Other existing and proposed elements of the general restoration land recovery plans would be rendered ineffective.

In short, the No Project Alternative would be inconsistent with the general plan for steelhead restoration in Alameda Creek and San Francisco Bay. Steelhead restoration has benefits that more than offset the temporary construction-related impacts of the Proposed Project, and the No Project Alternative was therefore rejected.

3.0 ENVIRONMENTAL SETTING & EVALUATION

3.1 Approach to Analysis of Effects

In analyzing the Proposed Projects' environmental effects, the Initial Study/Environmental Assessment first focuses on defining the physical mechanisms by which the Proposed Project may alter the physical environment. Both direct and indirect effects are considered. If there is no physical mechanism by which an element of the Proposed Project may have effects under each category of impact, then the Initial Study/Environmental Assessment concludes that there would be no effects associated with the impact category.

If there is a physical mechanism by which the Proposed Project may affect a category of impact, then the potential direct and indirect effects associated with that mechanism are evaluated. If this evaluation determines that the Proposed Project may cause significant effects on the environment, then feasible avoidance and mitigation measures are examined in terms of their ability to reduce potential effects to a level of less-than-significant. This determination is made with reference to the significance criteria defined in Section 15064 of CEQA Guidelines.

For NEPA purposes the assessment of potential impacts takes into consideration the significance of the proposed action in terms of its context and its intensity (40 CFR 1508.27). An Environmental Assessment is prepared to determine the environmental effects of the Proposed Project and whether an Environmental Impact Statement (EIS) should be prepared.

3.2 General Environmental Setting

Alameda Creek drains a watershed of approximately 700 square miles, from Mount Diablo in the north to Mount Hamilton in the south and east to Altamont Pass. Thirty-three percent of this drainage area is in Santa Clara County and the remainder is in eastern Alameda County. Average rainfall in the watershed is about 25 inches per year. Runoff is collected in a number of local reservoirs. In Alameda County these include Calaveras and San Antonio reservoirs, operated by the SFPUC, and Del Valle Reservoir, constructed by the State of California as part of the South Bay Aqueduct Project. The Proposed Project located between the BART Weir fish ladder upstream to 600 feet below the Union Pacific Railroad (UPPR) crossing downstream in Flood Control District Zone 5 is located in the Cities of Fremont and Union City. The City of Fremont in the 2010 Census had a population of approximately 218,000 people (City of Fremont 2015). The City is part of the greater San Francisco-San Jose Bay Area, which has a population of approximately 7 million people. The City is located between San Jose and Oakland, and is on major regional commuter routes to industrial and trade centers such as the Port of Oakland. Regional transportation corridors passing within 5 miles of the Proposed Project are: Interstates 880 and 680 (north-south), State Route 84 (east-west), State Route 238 (north-south Union Pacific Railroad, SPRR, and the Bay Area Rapid Transit (BART) system (north-south) (Figure 6). The City is the site of a major automobile manufacturing plant and is part of the high-tech and bio-tech industry. Union City has a population of approximately 75,000 (2016) with a median age of approximately 36 years.

In general, the adjacent areas on the northerly and southerly sides of the east-west running levee are dominated by extensive residential homes extending from Hesperian Blvd downstream to Mission Blvd upstream (Appendix A).

Climate in the area is mild due to the moderating influence of the San Francisco Bay, with average maximum temperatures generally above 60°F and below 80°F. Temperatures seldom exceed 95°F and seldom fall below freezing (City of Fremont 2005).

3.3 The Flood Control Channel Facilities and Operations

ACFCD maintains the approximately 230-foot wide earthen channel with rock riprapped levee slopes, four sills or grade control structures installed to prevent head-cutting erosion, and transportation bridge footings secured with concrete or grouted rock riprap. The District is responsible for sediment, debris, and vegetation management necessary to prevent flooding in the Cities of Fremont, Newark and Union City.

Substantial sedimentation accumulates within the reach between Decoto Road crossing and Ardenwood Boulevard. Maintenance of this sediment requires periodic removal in accordance with the Corp's Operation and Maintenance Manual. Eroded riprapped levee slopes are also repaired as warranted.

3.4 Existing Habitat

Existing Conditions: BART Weir Structure to Decoto Road

Downstream of the BART Weir, there is no longer diversion to recharge basins since decommissioning of the RD2. The channel and floodplain constitute a disturbed freshwater environment. In this reach, the Flood Control Channel is a wide flat and shallow floodplain with segments of narrow channel below the Grade Control Structures alternating with segments of wide shallow braided channels meandering through the project reach. Similar conditions occur in the few channelized drainages flowing into the creek from the north at (a) Crandall Creek (Dominic Drive), and (b) Dry Creek (Trailside Way), except that these drainages are dry most part of year. The adjacent areas of this project reach is entirely urban with residential homes and open spaces characterized by mix of disturbed woodland, scrub, and landscape vegetation.

Between the levees, the vegetation is dominated by California bulrush, with associated species including alkali bulrush, water smartweed, bur-weed, broad-leaved cattail, matted water primrose, tall umbrella sedge, common spike rush, water cress, water plantain, and common horsetail. This vegetation is periodically disturbed by very high flood flows.

The 1-year flood event is 1,000 to 1,400 cfs and inundates about 40% of the marsh. The 100-year flood inundates the entire floodplain to within few feet of the levee crest beyond the required 3-foot freeboard (Table 8). High flow events create scour and alter the channel configuration; some areas of the marsh are subject to scour and others accumulate sediment. The flood control channel is therefore, subject to substantial changes on a 10-year cycle when accumulated sediment is excavated.

Existing Conditions: Decoto Road to the tidal marshes of San Francisco Bay (Don Edwards National Refuge)

In this reach, the combination of riprapped levee and adjacent dense urban development continues. The channel slope of about 4 feet per mile results in substantial sediment deposition and accumulation. The freshwater marsh characteristics of the floodplain remain relatively consistent with the upstream conditions of the BART Structure to Isherwood Road, except that there is greater sediment accumulation in the Flood Control Channel. Between the levees, the marsh area is dominated by California bulrush, with associated species including alkali bulrush, water smartweed, bur-weed, broad-leaved cattail, matted water primrose, tall umbrella sedge, common spike rush, water cress, water plantain, and common horsetail.

The bridge footing structure at the Union Pacific Railroad Bridge, downstream of Alvarado Boulevard, generally marks the transition from freshwater marsh to tidal saline estuarine marsh (Figure 5F). In this reach, floodplain habitats are dominated by alkali bulrush, with associated species including cattail, California bulrush, water smartweed, bur-weed, broad-leaved cattail, matted water primrose, common spike rush, and transitioning into pickle weed, salt-grass and other plant species that predominates saltmarsh habitat.

Below the Project downstream limits, adjacent housing development transitions from urban development to the Don Edwards San Francisco Bay National Refuge. The Proposed Project area extends in the riverine channel 300 feet downstream of the UPRR crossing and does not include the tidal zone (Appendix A).

4.0 ENVIRONMENTAL EVALUATION

4.1 CEQA Determinations

1. **Project title:** Lower Alameda Creek Fish Passage Restoration in Flood Control District Zone 5, Cities of Fremont and Union City, California

2. **Lead agency names and addresses:** Alameda County Flood Control & Water Conservation District, 399 Elmhurst Street, Hayward, California 94544-1395

3. **Contact person name & email:** Jim Browne; jimb@acpwa.org

4. **Project location:** Flood Control District Zone 5 in the Cities of Union City and Fremont, Alameda County, Ca

The Alameda County Flood Control and Water Conservation District (ACFCD) proposes to modify and improve the riverine reach of the Army Corps of Engineers designed and constructed flat bottom channel on lower Alameda Creek to provide efficient sediment transport and a more sustainable migratory habitat for anadromous fish. The Proposed Project upstream limit is the existing scour pool below the BART Weir fish ladder. The scour pool demarcates the downstream limit of the Alameda County Water District (ACWD) and the ACFCD Joint Fish Ladder Project under construction. The proposed project extends approximately 5.6 miles (29,730 feet) downstream to about 600 feet downstream of the Union Pacific Railroad (UPPR) crossing. The Project will be constructed in three phases as described below in order to complete each phase element in one construction season as funding becomes available.

Phase l. Scour Pool Downstream of BART Weir (37°34'6.61"N 121°59'20.44"W) to RD2 (37°33'57.01"N 121°59'52.17"W)

a. LOW-FLOW SEDIMENT TRANSPORT CHANNEL: Optimize and realign the existing low-flow channel for sediment transport by excavating accumulated sediment to create a trapezoidal low flow channel fully contained within the existing Flood Control Channel. The channel would have 3:1 (horizontal to vertical) slopes with top and bottom widths of 78 feet and 24 feet respectively and about 10 feet deep. The top elevation of the sediment transport channel will conform to the channel original designed flat bottom elevation. This channel reach horizontal profile will be steepened to assist sediment movement. Nestled within the sediment transport channel will be a fish passage channel that carries 25cfs minimum flows (Figure 2A). The proposed fish passage channel top and bottom width and depth dimensions are 8 feet by 2 feet by 1.6 feet (Figure 4B).

b. LEVEE TOE OF SLOPE REPAIR. (37°33'56.79"N 121°59'37.00"W to 37°33'58.70"N 121°59'29.96"W).

Reconstruct an approximately 600-foot section of the outside bend of the eroding south levee toe (outside bend) by excavating and installing rock veins keyed in place to protect against further erosion similarly as shown in Figure 3C. This will also secure or prevent the existing low flow channel from undermining the toe of the levee slope.

c. RD2 / LARINIER FISHWAY MODIFICATION (37°33'57.52"N 121°59'48.35"W)

RD2, a former grouted-rock grade control structure, was modified to support flow diversion operations and subsequently modified to install the Larinier fishway. This 50-foot wide concrete structure will be modified by demolishing the middle segment similarly as described below under Grade Controls. The modified and reconstructed structure's cross-sectional face will be covered with grouted rock anchored into the channel bottom by two 3-foot wide grouted rock footings spaced 3-feet apart for stability (Figure 4C). Boulders will be installed up- and downstream of the modified structure adjacent to the low flow channel to assist with fish habitat complexity.

As shown in Tables 5B and 5C, materials excavated to create the low flow channel will be used to fill low spots and braided arms in the floodplain of the new channel. The remaining excess materials will be off hauled to a local upland storage area for beneficial reuse. The reconstructed channel terrace will be re-vegetated with appropriate native plant species (grasses and shrubs) that respond to high flows without creating hydraulic obstructions to compromise the integrity of the levees.

Phase 1 is a joint cost-share between Alameda County Water District and the District and is expected to be completed in a single work period.

Phase 2. Downstream of the RD2 structure (37°33'57.52"N 121°59'48.35"W) to the confluence of Dry Creek downstream (37°58'37.66"N 121°03'03.70"W)

Phase 2 extends and includes modification of Grade control structures, modification of Bridge footing within the Channel, extending the low flow channel improvements through this reach and habitat complexity improvements such as installation of boulders and vegetation. The 5000-foot reach downstream of GC1 is an overlapping transitional zone between Phases 2 and 3. The low flow channel gradient in this reach is designed to minimize sediment deposition until Phase 3 is constructed. The 5000-foot transition segment will be re-graded to conform to the overall project channel design configuration during Phase 3 construction. See project description in Section 1.4 above. This phase may require construction over a 5- to 8-year period (generally one element of Phase 2 per year) depending on funding availability.

Phase 3. GC1 (inclusive of the 5000-ft Transition area) to Downstream of UPRR Crossing

Phase 3 consists of improvements as listed in Table 2. The sediment transport low flow channel will be extended through this phase. The transportation crossings will be modified as described above and in Figure 4C. The PG&E gas main will be secured in place with grouted rock as flows over the structure would have ample depth (over 2 feet) to provide unimpeded fish passage.

These proposed improvements address the Central California Coastal (CCC) steelhead and other fish passage needs through this reach of the flood control channel while ensuring continued ACFCD flood control functions. The proposed action area and general facility location are shown in Figure 1 and Appendix A.

The District will continue to maintain and monitor the entire Flood Control Channel to assure that the low flow and other constructed components of the project meet the multi-function goals and objectives of flood protection, sediment transport and improvement of fish migratory habitat. Following, the completion of the improvements, the District will request modification of the Maintenance Manual to include an adaptive management approach to sustainably meet the flood control channel competing and contradictory needs and functions.

4.2 Other Public Agencies Approvals Required (e.g., permits, financing approval, or participation agreement)

Agency	Action Required
U.S. Army Corps of Engineers (USACE)	• CWA Sect. 404 Permit • 33 USC 408
California Department of Fish and Wildlife (CDFW)	• Sect. 1600 LSA
Regional Water Quality Control Board (RWQCB)	• Construction General Permit (CGP) • CWA Sect. 401 Certification
National Marine Fisheries Service (NMFS)	• Threatened & Endangered Species Consultation
U.S. Fish and Wildlife Service (USFWS)	• Threatened & Endangered Species Consultation
Bay Conservation and Development Commission (BCDC)	• McAteer-Petris Act Consistency Determination

Consultation with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service will be necessary as part of the Clean Water Act Section 404 permit process to address the *potential* for effects to threatened and endangered species and the avoidance and minimization measures to be taken to reduce such effects to a less-than-significant-level.

Combined with the substantial restoration of steelhead access to historic upstream habitats and the improvement in flow regimes in the low flow channel downstream of the Joint Fish Passage Project reach, avoidance and minimization measures are anticipated to reduce potential effects to listed species to negligible levels: First, based on multiple years of survey by many agencies, there are no federal or state listed species in the Proposed Project construction area except steelhead;

- Second, *potential* effects to listed species are limited to construction-related water quality effects, which will be rigorously managed and avoided. ACFCD has extensive experience and success in implementing such avoidance and minimization programs;

- Construction will occur in seasonal periods when steelhead would not be in the construction reach; and

- Long-term maintenance and operation of the Proposed Project facilities will benefit steelhead to the extent that any incidental adverse effects will be outweighed by the benefits of the project.

This IS/CEQA Checklist/Environmental Assessment incorporates impact avoidance measures to avoid and minimize take of threatened and endangered species and other resources (see Tables 6 and 7).

4.3 Environmental Factors Potentially Affected

The environmental factors checked below could 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.

- ❒ Aesthetics (mitigated to a level of less-than-significant)
- ❒ Agriculture Resources
- ☒ Air Quality (no significant impact, but ACFCD will implement measures to further reduce emissions)
- ☒ Biological Resources (mitigated to a level of less-than-significant)
- ❒ Cultural Resources
- ❒ Geology/Soils
- ☒ Hazards & Hazardous Materials (mitigated to a level of less-than-significant)
- ☒ Hydrology/Water Quality (mitigated to a level of less-than-significant)
- ❒ Land Use/Planning
- ❒ Mineral Resources
- ☒ Noise (mitigated to a level of less-than-significant)
- ❒ Population/Housing
- ❒ Public Services
- ☒ Recreation (mitigated to a level of less-than-significant)
- ☒ Transportation/Traffic (mitigated to a level of less-than-significant)
- ❒ Energy Use (no significant impact, but ACWD will implement energy saving actions)
- ❒ Utilities/Service Systems
- ❒ Greenhouse Gas Emissions
- ☒ Cumulative Impacts (mitigated to a level of less-than-significant)
- ❒ Mandatory Findings of Significance

4.4 Determination:

On the basis of this initial evaluation:

☐ I find that the Restoration of Lower Alameda Creek Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ The Board of Supervisors of the Alameda County Flood Control and Water Conservation District finds that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because measures have been incorporated to reduce effects to levels of insignificance. A MITIGATED NEGATIVE DECLARATION has been prepared.

❒ I find that 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 Joint Fish Passage Project, nothing further is required.

Signature: _____ Date: 1/30/2020

Printed Name KWABLAH ATTIO GBE

For: Alameda County Flood Control & Water Conservation District

5.0 AESTHETICS

Would the project:

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

5.1 Environmental Setting

The Proposed Project area is located in the flat alluvial plain at the westerly base of the East Bay Hills which separate the Livermore Amador Valley from San Francisco Bay Coastal Plains. The immediate project area is urban. Alameda Creek from the ACFCD Drop Structure/BART Weir westerly to San Francisco Bay flows in a constructed leveed channel. The channel passes through a mix of industrial development and housing. Views of the coastal hills are good from the multi-use trails on the north levee and the bike trail on the south levee.

In the reach downstream of the ACFCD Drop Structure/BART Weir, Alameda Creek is contained within a trapezoidal riprapped channel, intermittently planted along the levee crest with non-native trees. The primary view scape in the Flood Control Channel is riprap levees on both channel margins and the flat bottom stream meandering across a sandy gravel creek bed with the coastal hills in the distance.

Views of the channel are often blocked by fencing, levees, railroad bridges, and commercial development. When views are available, they are of a modified trapezoidal channel with riprap and several major bridges. All of the ACFCD facilities would be located in the Flood Control Channel. The existing view scape at the various sites is described below:

- **BART Weir / ACWD RD1 fish ladder**. The raised BART Bridge and piers, the Southern Pacific Rail Road Bridge and piers, and vehicle bridges and embankments to the north and south of the bridges separate the views in the project site. Viewers north of the bridges have only a partial view of the channel to the south, and the view is of bridge piers and the rail lines. Similarly, viewers from the south have a limited view to the upstream side of the channel. The view from residential development on the south bank of the channel west of the bridge complex is effectively blocked by bridge piers and raised rail lines. The creek is visible from the unpaved hiking trail along the north levee and the paved bike trail along the south levee. The view scape is dominated by the riprap Flood Control Channel, BART and railroad and vehicle bridges and the concrete infrastructure that supports them.

- **RD1 downstream to UPRR crossing.** The adjacent homes along the north are generally below the levee crest and many have views from the second floor into the channel. Homes along the south levee are on higher grounds and have views of the project site although separated by a roadway running parallel to the levee. See Appendix A.

5.2 Mechanisms for Effect

Aesthetic/visual impacts would be the result of added infrastructure along the existing Flood Control Channel system and there would be short-term visual impairment due to construction equipment on the levee and in the channel. The modified sills would be buried and not visible. The optimized low flow channel will be like the existing low flow channel in the bottom of the Flood Control Channel.

5.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

5.4 Potential for Aesthetic Effects

The proposed modifications to the existing sills and low flow channel would not add major visible elements to the Flood Control Channel. All construction would be limited to the bottom of the channel and other than vehicle access would not be visible from local residences but would be visible from the top of the levees. Construction activity would be temporary. The sills would be buried and not visible once construction is complete.

Construction activity would be limited to daytime hours only (7:00 AM to 6:00 PM) Monday through Friday. No lighting of the construction sites is proposed.

The primary permanent visual impact of the Proposed Project would be modifications to the low flow channel which would be similar to the existing low flow channel. A small section of riprap levee will be temporarily degraded for access and would be repaired to facilitate access to the reach between the BART Weir and RD2 which would be similar to the existing levee in the channel.

In this context, the potential for permanent aesthetic impacts is:

(a) None of the facilities would block a view of the primary scenic resources of the area, the existing Flood Control Channel and the coastal hills. The facilities are below grade and cannot block the view of either the Alameda Creek channel or the coastal hills and the east bay hills.

(b) None of the facilities would affect scenic resources within a State Scenic Highway.

5.5 No Action Alternative

No construction activity or changes would occur. No impacts to aesthetics associated with the proposed project would occur.

5.6 Significance of Effects

The Proposed Project would not have permanent aesthetic effects. Although the view of the channel from the trail along the channel would be temporarily altered during construction of the low flow channel and the Grade Control Structures by equipment or personnel from the trails, they would not have adverse effects on the existing view shed. The Proposed Project effects therefore, would be considered insignificant. The sills will be buried and not visible and the low flow channel will be similar to the low flow channel currently existing and therefore no permanent impacts will occur. Impacts during construction will be localized within the Flood Control Channel and temporary and are less-than-significant. No mitigation is required. No construction will occur at night and lights at the sites are not proposed.

6.0 AGRICULTURAL RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. 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?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

6.1 Environmental Setting

The lower Alameda Creek Flood Control Channel is located in an area that has historically been used for agriculture, and has since become a mix of residential and commercial development, flood management, public utility, and recreation. There is residential housing and commercial development on both sides of the creek channel, vehicle bridges, and there is railroad-related industrial and commercial development south of the Flood Control Channel.

6.2 Mechanisms for Effect

There is no agricultural land within the Proposed Project area and no mechanism by which the Proposed Project could affect agriculture. No impacts are anticipated to agricultural resources.

6.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

The Proposed Project would not affect existing agricultural resources.

6.4 No Action Alternative

No construction activity or changes would occur. No impacts to agricultural resources would occur under the no action alternative.

6.5 Significance of Effect

The Proposed Project would not affect agricultural resources. No significant impacts would occur.

7.0 AIR QUALITY AND GHG EMISSION

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

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

❒ Potentially Significant Impact ☒Less-than-significant with Mitigation
❒ Less-than-significant Impact ❒ No Impact

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

❒ Potentially Significant Impact ☒ Less-than-significant with Mitigation
❒Less-than-significant Impact ❒ No Impact

c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

d) Expose sensitive receptors to substantial pollutant concentrations?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

7.1 Environmental Setting

The project site is located in the western portion of Alameda County within the San Francisco Bay Area Air Basin (SFBAAB), which comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the southern portion of Sonoma County, and the southwestern portion of Solano County. There are 11 climatological sub-regions within the SFBAAB. The project site is located in the Southwestern Alameda County climatological sub-region of the SFBAAB. Air Quality within the SFBAAB is under the regulatory authority of the BAAQMD. The BAAQMD is responsible for implementing emissions standards and other requirements of federal and state laws in the SFBAAB. Attainment plans for meeting the federal air quality standards are incorporated into the State Implementation Plan (SIP), which is

subsequently submitted to the U.S. Environmental Protection Agency (USEPA), the federal agency that administrates the Federal CAA of 1970, as amended in 1990.

Ambient air quality is described in terms of compliance with state and national standards, and the levels of air pollutant concentrations considered safe, to protect the public health and welfare. These standards are designed to protect people most sensitive to respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. The USEPA has established national ambient air quality standards (NAAQS) for several air pollution constituents. As permitted by the Clean Air Act, California has adopted the more stringent California ambient air quality standards (CAAQS) and expanded the number of regulated air constituents.

The California Air Resources Board (CARB) is required to designate areas of the state as attainment, nonattainment, or unclassified for the ambient air quality standards. An "attainment" designation for an area signifies that pollutant concentrations do not violate the standard for that pollutant in that area. A "nonattainment" designation indicates that a pollutant concentration violated the standard at least once. The air quality attainment status of the SFBAAB is shown in Table 9A, San Francisco Bay Area Air Basin Attainment Status.

Table 9A: San Francisco Bay Area Air Basin Attainment Status

Pollutant	***State of California Attainment Status***	***Federal Attainment Status***
Ozone	Nonattainment	Nonattainment (Marginal)
Coarse Particulate Matter (PM_{10})	Nonattainment	Unclassified
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment (Moderate)
Carbon Monoxide	Attainment	Unclassified/Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Lead	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified/Attainment
Sulfates	Attainment	No Federal Standard
Hydrogen Sulfide	Unclassified	No Federal Standard
Visibility Reducing Particles	Unclassified	No Federal Standard

Source: CARB 2017a; USEPA 2019.

The SFBAAB is designated as nonattainment for the state and national ozone standards, the state PM_{10} standards, and the state and national $PM_{2.5}$ standards. The current air quality plan applicable to the project, 2017 Clean Air Plan: Spare the Air, Cool the Climate, was developed by the BAAQMD to describe how the Air District will continue the progress toward attaining all state and national air quality standards and eliminating health risk disparities from exposure to air pollution among Bay Area communities (BAAQMD 2017b).

Ground-level ozone is not emitted directly into the environment but is generated from complex

chemical reactions between the precursor pollutants Reactive Organic Gases (ROG)[1], or non-methane hydrocarbons, and Oxides of Nitrogen (NO_X) that occur in the presence of sunlight. PM_{10} and $PM_{2.5}$ is generated from a variety of sources, including road dust, diesel exhaust, fuel combustion, tire and brake wear, construction operations and windblown dust. In addition, PM_{10} and $PM_{2.5}$ can also be formed through chemical and photochemical reactions of precursor pollutants in the atmosphere. Significant anthropogenic ROG, NO_X, PM_{10}, and $PM_{2.5}$ sources in the SFBAAB include: motor vehicles and other transportation sources; off-highway equipment used in construction, ports and airports; industrial activity; petroleum refineries; and electrical power generation facilities. Construction equipment and activity duration assumptions for each phase have been reviewed by the project engineer and are shown in Table 9B, Estimated Project Construction Equipment.

Table 9B. Estimated Project Construction Equipment

Activity	Equipment	Duration (work days)
Phase 1 (year 1)		
Low flow channel excavation	1 excavator, 2 dump trucks, 1 water truck, 1 sheep foot roller, 1 street sweeper, 1 jack hammer crane (used 1 day only)	56
Phase 2 (years 2-3)		
Sill #1	1 excavator, 2 dump trucks, 1 water truck, 1 street sweeper, 1 jack hammer crane (used 1 day only)	52
Sill #2	1 excavator, 2 dump trucks, 1 water truck, 1 street sweeper, 1 jack hammer crane	43
Sill #3	1 excavator, 2 dump trucks, 1 water truck, 1 street sweeper, 1 jack hammer crane	41
Sill #4	1 excavator, 2 dump trucks, 1 water truck, 1 jack hammer crane	34
Phase 3 (years 4-10)		
Sequoia Terrace	1 excavator, 2 dump trucks, 1 water truck, 1 street sweeper	35
Isherwood Way	1 excavator, 2 dump trucks, 1 water truck, 1 street sweeper	35
Decoto Rd	1 excavator, 2 dump trucks, 1 water truck, 1 street sweeper	35
I-880	1 excavator, 2 dump trucks, 1 water truck, 1 street sweeper	35
Alvarado Blvd.	1 excavator, 2 dump trucks, 1 water truck, 1 street sweeper	35
UPRR Crossing	1 excavator, 2 dump trucks, 1 water truck, 1 street sweeper	45
PG&E Gas Main		35

Source: Hanson Environmental 2019.

Construction activity would occur 7 hours per day, 5 days per week. Accounting for breaks, maximum equipment use would be 6 hours per day. The estimated crew would consist of 1

[1] CARB defines and uses the term ROGs while the USEPA defines and uses the term Volatile Organic Compounds (VOCs). The compounds included in the lists of ROGs and VOCs and the methods of calculation are slightly different. However, for the purposes of estimating criteria pollutant precursor emissions, the two terms are often used interchangeably.

foreman, 1 operator, 2 truck drivers, 3 laborers, and 2 concrete/masonry workers (Hanson Environmental 2019).

7.2 Best Management Practices

For all construction projects, the Bay Area Air Quality Management District (BAAQMD) requires implementation of the following Basic Construction Mitigation Measures (BAAQMD 2017a):

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out 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.

4. All vehicle speeds on unpaved roads shall be limited to 15 mph.

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of the California Code of Regulations). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.

8. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The air district's phone number shall also be visible to ensure compliance with applicable regulations.

In addition to the above BAAQMD measures, the ACFCD would require the following Best Management Practices (BMPs):

9. Minimizing the idling time of diesel-powered construction equipment to 2 minutes to the extent feasible

10. The use of highway diesel fuel in all construction equipment to the extent feasible.

The ACFCD would incorporate all of the above Basic Construction Mitigation Measures and BMPs into construction specifications. Contractors would maintain a daily compliance log, and the ACFCD would inspect compliance logs weekly and document compliance

7.3 Mechanisms for Effect

The Project does not involve facilities that would generate emissions of criteria pollutants over a long term. Construction would, however, involve emissions from construction equipment and potential fugitive dust emissions from material excavated or otherwise disturbed from the channel side slopes and the channel during construction. There would be no long-term energy use for passive facility operations of the low flow channel or modified Grade Control Structures,

7.4 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

7.5 General Conformity

Because the project may seek Federal funding, General Conformity Regulations may be applicable. The General Conformity Rule of the CAA (40 CFR §§ 51.850-860 and 40 CFR §§ 93.150-160) establishes de Minimis levels, which are emissions levels established by the USEPA for criteria air pollutant emissions caused by federally sponsored, approved, or funded activities in areas that do not meet the NAAQS thresholds. The de Minimis level established for each pollutant varies by the severity of nonattainment and sets an emission level above which further analysis is required to demonstrate that the proposed activities would not cause or contribute to a violation of a NAAQS for a nonattainment pollutant.

As discussed above, the SFBAAB is currently classified as a marginal nonattainment area for the national 8-hour ozone standard, and a moderate nonattainment area for the national 2006 $PM_{2.5}$ standards. For a marginal nonattainment area for ozone the, de minimis levels for the precursors NO_X and VOCs are 100 tons per year. For a moderate nonattainment area for $PM_{2.5}$, the de minimis levels for direct emissions of $PM_{2.5}$, and the precursors SO_2, NO_X, and VOCs are 100 tons per year.

7.6 Project Analysis

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

The BAAQMD's 2017 Clean Air Plan provides the input to CARB for the SFBAAB portion of the SIP updates and is the applicable air plan for the project (BAAQMD 2107b). Per the BAAQMD CEQA Air Quality Guidelines, the criteria for determining consistency with the Clean Air Plan are: the project supports the primary goals of the Clean Air Plan; and the project conforms to applicable control measures from the plan and does not disrupt or hinder the implementation of any Clean Air Plan control measures (BAAQMD 2017a). The primary goals of the Clean Air Plan are compliance with the state (California) and national ambient air quality standards. As discussed in criterion (b) below, the project's estimated construction and operation emissions would be well below the thresholds for construction emissions established by the BAAQMD. As a construction project with no significant operational emissions, the only applicable control measures from the

Clean Air Plan relate to the implementation of Tier 3 and Tier 4 diesel engines for off-road equipment, and the diversion and recycling of construction debris. The project's construction equipment fleet would comply with all applicable CARB regulations and schedules for the replacement or refurbishment of older equipment to meet the Tier 4 standards. The project would re-use all sediment and extracted rock on the project site where feasible. Exported sediment would be hauled to an existing ACFCD upland sediment storage area for future reuse. Concrete debris would be exported to a concrete recycling facility. Therefore, the project would not conflict with or obstruct implementation of the BAAQMD 2017 Clean Air Plan and the impact would be less than significant.

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

By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, the potential for a project's individual emissions to contribute to existing cumulatively significant adverse air quality impacts is evaluated.

Criteria pollutant and precursor emissions for project construction were calculated using the California Emissions Estimator Model (CalEEMod), version 2016.3.2. CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operations from a variety of land use projects. The model was developed for the California Air Pollution Control Officers Association (CAPCOA) in collaboration with the California air districts. CalEEMod allows for the use of default data (e.g., emission factors, trip generation, trip lengths, meteorology, source inventory) provided by the various California air districts to account for local requirements and conditions, and/or user-defined inputs. The calculation methodology and input data used in CalEEMod can be found in the CalEEMod User's Guide Appendices A, D, and E (CAPCOA 2017). The input data and subsequent construction emission estimates for the proposed project are discussed below. The CalEEMod output files for the project are available from ACFCD upon request.

As shown in Table 9C, the project's construction emissions would not exceed the BAAQMD thresholds. Long-term operation of the project would not result in any significant change in emissions compared to existing conditions. Therefore, the project would not 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 during either construction or operation. The impact would be less than significant.

Table 9C. Construction Criteria Pollutant and Precursor Emissions

Year	Emissions (pounds per day)							
	ROG	**NO_X**	**CO**	**SO_X**	**Fugitive PM_{10}**	**Exhaust PM_{10}**	**Fugitive $PM_{2.5}$**	**Exhaust $PM_{2.5}$**
2020	1.8	19.7	12.4	<0.1	0.4	0.7	0.1	0.6
2021	1.4	11.4	11.3	<0.1	0.2	.05	<0.1	0.4
2022	1.3	10.2	11.7	<0.1	0.2	0.4	<0.1	0.4
2023	1.1	9.4	9.2	<0.1	0.2	0.3	<0.1	0.3
2024	1.1	7.8	9.1	<0.1	0.2	0.3	<0.1	0.3
2025	1.1	6.8	9.0	<0.1	0.2	0.2	<0.1	0.2
2026	1.1	6.8	8.9	<0.1	0.2	0.2	<0.1	0.2
2027	1.1	6.8	8.9	<0.1	0.2	0.2	<0.1	0.2
2028	1.1	6.8	8.9	<0.1	0.2	0.2	<0.1	0.2
2029	1.1	6.8	8.9	<0.1	0.2	0.2	<0.1	0.2
Maximum Daily	**1.8**	**19.7**	**12.4**	**<0.1**	**0.4**	**0.7**	**0.1**	**0.6**
Threshold	54	54	Non	None	BCMMs	82	BCMMs	54
Threshold	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*

Source: CalEEMod version 2016.3.2; Thresholds BAAQMD 2017a.

c) Expose sensitive receptors to substantial pollutant concentrations?

Construction of the project would result in emissions of diesel particulate matter (DPM) from the use of construction equipment. In 1998, the CARB identified DPM as a toxic air contaminant (TAC) based on published evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects. The amount to which the receptors could be exposed, which is a function of concentration and duration of exposure, is the primary factor used to determine health risk. Current models and methodologies for conducting cancer health risk assessments are associated with longer-term exposure periods (typically 30 years for individual residents) and are best suited for evaluation of long duration TAC emissions with predictable schedules and locations. These assessment models and methodologies do not correlate well with the temporary and highly variable nature of construction activities.

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved and are referred to as sensitive receptors. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. There are residential properties adjacent to the project site for much of the length of the flood control channel. For the majority of project construction activities, which would occur near the center of the channel, the residences would be more than 100 feet from equipment. Due to the linear nature of the project site, construction activities would only be concentrated in any single area for a few weeks before moving on. The generation of DPM during construction would be variable and sporadic due to the nature of construction activity and would only occur seasonally. Due to the short duration of work in any single area, and due to the sporadic nature of construction activities requiring the use of heavy diesel-powered equipment, project construction related DPM emissions during construction would not expose sensitive receptors to substantial pollutant concentrations and the impact would be less than significant.

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

Heavy diesel equipment could generate odors during construction activities. The generation of odors during the construction period would be temporary and would tend to be dispersed within a short distance from the active work area. Once operational, the project would not be a significant source odors or other emissions. Therefore, due to the short duration of construction activity near any individual residence, the project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people and the impact would be less than significant.

The annual mass emissions of criteria pollutant and precursors from project construction activities compared to the *de minimis* levels for General Conformity pursuant to the CAA 40 CFR §§ 93.150-160 are shown in Table 9D, *Construction Criteria Pollutant and Precursor Emissions General Conformity*.

Table 9D. Construction Criteria Pollutant and Precursor Emission General Conformity

Year	Emissions (tons per year)			
	VOC	**NO_X**	**SO_X**	**$PM_{2.5}$**
2020	0.05	0.6	<0.01	0.02
2021	0.05	0.5	<0.01	0.02
2022	0.05	0.4	<0.01	0.02
2023	0.02	0.2	<0.01	<0.01
2024	0.02	0.2	<0.01	<0.01
2025	0.02	0.2	<0.01	<0.01
2026	0.02	0.2	<0.01	<0.01
2027	0.02	0.2	<0.01	<0.01
2028	0.02	0.2	<0.01	<0.01
2029	0.02	0.2	<0.01	<0.01
Maximum Annual	**0.05**	**0.6**	**<0.01**	**0.02**
De Minimis Level	100	100	100	100
Threshold exceeded?	*No*	*No*	*No*	*No*

Source: CalEEMod version 2016.3.2; Thresholds USEPA 40 CFR 93 § 153

As shown in Table 9D, emissions generated during construction of the project would not exceed the federal *de minimis* levels for VOC, NO_X, SO_X, or $PM_{2.5}$. No adverse impacts would occur, and no further analysis is required.

7.7 Setting

GHGs, as defined under California's Assembly Bill (AB) 32, include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). AB 32, the California Global Warming Solutions Act of 2006, recognizes that California is a source of substantial amounts of GHG emissions. The statute states (State of California Legislature 2006):

> Global warming poses a serious threat to the economic wellbeing, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

In order to help avert these potential consequences, AB 32 established a State goal of reducing GHG emissions to 1990 levels by the year 2020, which is a reduction of approximately 16 percent from forecasted emission levels, with further reductions to follow. In addition, AB 32 required CARB develop the Climate Change Scoping Plan (Scoping Plan) to help the state achieve the targeted GHG reductions. California is on track to meet or exceed the target of reducing GHG emissions to 1990 levels by 2020, as established in AB 32. In 2015, Executive Order (EO) B-30-15 established a California GHG emission reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG emission reduction targets with those of leading international governments, including the 28 nation European Union. As a follow-up to AB 32 and in response to EO-B-30-15, Senate Bill (SB) 32 was passed by the California legislature in 2016 to codify the EO's California GHG emission reduction target of 40 percent below 1990 levels by 2030. The most recent update to the Scoping Plan was adopted in December 2017 and establishes a proposed framework for California to meet the EO-B-30-15 reduction target (CARB 2017b).

7.8 Significance Criteria

Given the relatively small levels of emissions generated by a typical development in relationship to the total amount of GHG emissions generated on a national or global basis, individual development projects are not expected to result in significant, direct impacts with respect to climate change. However, given the magnitude of the impact of GHG emissions on the global climate, GHG emissions from new development could result in significant, cumulative impacts with respect to climate change. Thus, the potential for a significant GHG impact is limited to cumulative impacts.

According to Appendix G of the CEQA Guidelines, a project would have a significant environmental impact if it would:

a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

The BAAQMD has not established GHG thresholds of significance for determining the significance of a project's construction GHG impacts. Because the project's construction activities would span a 10-year period, the annual construction emissions are compared to the BAAQMD project level long-term operation GHG threshold. The BAAQMD recommends a bright line screening threshold of 1,100 metric ton (MT) of carbon dioxide equivalents (CO_2e) per year for a project's GHG emissions (BAAQMD 2017a). The BAAQMD's GHG thresholds were developed to meet the year 2020 statewide GHG emissions targets as mandated by AB 32 and implemented by the CARB Scoping Plan. The BAAQMD has not adopted guidance or revised thresholds to account for GHG reduction target beyond 2020. Accordingly, this analysis compares the project's

emissions to a reduced threshold corresponding to the SB 32 reduction target of emissions 40 percent below 1990 levels by 2030, or 660 MT CO_2e per year.

7.9 Project Analysis

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

Construction Emissions
Construction GHG emission sources include construction equipment exhaust, on-road hauling trucks exhaust, and worker commuting vehicle exhaust. Project construction is estimated to start in June 2020 and occur during the low water flow months of June through October for a 10-year period. Construction GHG emissions were estimated using CalEEMod version 2016.3.2, as described in the Air Quality analysis, above. The estimated construction GHG emissions for the project are shown in Table 9E, Annual GHG Emissions from Project Construction.

As shown in Table 9E, the project's maximum annual construction emissions of 111.6 MT CO_2e would be below the BAAQMD 2030 adjusted construction screening threshold of 660 MT CO_2e per year. Long-term operations would not result in a significant change in regional GHG emissions compared to existing conditions. Therefore, the project's construction period GHG emissions would be less than cumulatively considerable and the project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. The impact would be less than significant.

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

As discussed in criterion a), above, the project would not exceed the screening GHG emissions threshold during construction or long-term operation of the project. In addition, many long-term GHG reduction plans, including the CARB Scoping Plan, estimate future GHG emissions and corresponding reduction targets based on local and statewide growth estimates. The project would not result in regional population or employment growth. Therefore, the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. The impact would be **less than significant**.

7.10 Summary

As described above, the project's construction emissions of criteria pollutants and precursors, with the incorporation of the BMPs described above, would be below BAAQMD thresholds and would result in a less than significant impact. The project construction emissions would also be below the USEPA *de-minimis* levels for General Conformity under the CAA (Table 9E). No additional air quality mitigation measures are required. The project construction GHG emissions would also be below the BAAQMD 2030 adjusted screening thresholds and would be **less than significant**. No GHG emissions mitigation measures are required.

Table 9E. Annual GHG Emissions From Project Construction

Construction Year	Emissions (MT CO_2e per year)[1]
2020	111.6
2021	108.9
2022	108.8
2023	48.9
2024	48.7
2025	48.6
2026	48.5
2027	48.5
2028	48.4
2029	48.4
Maximum Annual Emissions	**111.6**
BAAQMD 2030 Adjusted Threshold	660
Threshold Exceeded?	No

Source: CalEEMod version 2016.3.2; Thresholds – BAAQMD 2017a.

[1] MT CO_2e = Metric tons of carbon dioxide equivalents.

7.11 No Action Alternative

No construction activity or changes would occur. No air quality impacts associated with the Proposed Project would occur under the no action alternative.

7.12 Avoidance and Minimization

The BAAQMD's approach to the significance of emissions from construction recognizes that construction emissions and long-term emissions from project operations should be addressed differently thus:

> "The District's approach to CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions. The District has identified a set of feasible PM_{10} control measures for construction activities. (These control measures are listed in Table 2). As noted in the table, some measures ("Basic Measures") should be implemented at all construction sites, regardless of size. Additional measures ("Enhanced Measures") should be implemented at larger construction sites (greater than 4 acres) where PM_{10} emissions generally will be higher. Table 2 also lists other PM_{10} controls ("Optional Measures") that may be implemented if further emission reductions are deemed necessary by the Lead Agency."

In addition, per BAAQMD guidelines from 2012:

> "BAAQMD recommends the implementation of all Basic Construction Mitigation Measures (Table 8.1) as mitigation for dust and exhaust construction impacts. In addition, all projects must implement any applicable air toxic control measures (ATCM). For example, projects that have the potential to disturb asbestos (from soil or building material) must comply with all the requirements of ARB's ATCM for Construction, Grading, Quarrying, and Surface Mining Operations. Only reduction measures included in the Project's description or recommended as mitigation in a CEQA-compliant environmental document can be included when quantifying mitigated emission levels."

Although estimated air quality impacts will be below BAAQMD significance criteria, ACFCD will implement all BAAQMD mitigation measures (**AQ1-AQ8** in Table 7, above). To further reduce emissions from construction equipment, ACFCD would also implement BAAQMD measures which require idling to be limited to 2 minutes to the maximum extent practical (**AQ9** in Table 7, above) and the use of highway diesel fuel in all construction equipment (**AQ10** in Table 7, above), which burns cleaner and reduces emissions of NOx and SOx.

In summary, as shown above, un-mitigated construction emissions are well below the Project Operations thresholds of significance. The District's implementation of all eight basic construction measures and several additional construction measures for reduction of emissions will ensure emissions from construction will be substantially below thresholds of significance.

Based on this analysis, the project would not conflict with the BAAQMD air quality plan, violate any air quality standard or contribute substantially to an existing or projected air quality violation, result in a cumulatively considerable net increase of any criteria pollutant, or expose sensitive receptors to substantial pollutant concentrations. In addition, construction does not involve substantial use of asphalt for paving or the storage and use of large amounts of fuels or lubricants; emissions that could create objectionable odors are thus not likely. With mitigation, effects will be less-than-significant.

8.0 BIOLOGICAL RESOURCES

Would the project:

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

❒ Potentially Significant Impact ☒Less-than-significant with Mitigation
❒ Less-than-significant Impact ❒ No Impact

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 US Fish and Wildlife Service?

❒ Potentially Significant Impact ❒Less-than-significant with Mitigation
☒Less-than-significant Impact ❒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

8.1 Environmental Setting

General Habitat Conditions

Habitats on the levees and adjacent levee crest are dominated by ruderal grasses and forbs such as wild oat, ripgut grass, non-native ryegrass and barley, annual blue grass, Bermuda grass and similar species. Overstory is dominated by ornamental trees and shrubs including California live oak, eucalyptus, black locust, and California pepper tree. The levees themselves have minimal vegetation and the inboard slopes are covered with rock riprap. The channel is flooded intermittently during high flows. There is minimal aquatic and emergent vegetation and no native riparian woodland along the channel. The channel is subject to routine post-winter storm debris removal and vegetation maintenance, including grazing.

The levee crest and adjacent area are 10-20 feet above the channel invert and the levee crest is either aggregated rock or paved and used as a recreational trail. Vegetation along the levees is either landscaped (pepper trees are a dominant element of this landscaping) or consists of weedy grasses and shrubs (Appendix A).

Adjacent development on both sides of the levee is either suburban development or urban park and light commercial use. The urban park north of the north levee near the BART Weir fish ladder supports a narrow band of disturbed riparian habitat mixed with trails, fishing access sites, and areas of manicured lawn and landscape.

Wildlife Known to Occur in the Flood Control Channel

The following wildlife species have been identified as occurring in the Alameda Creek Flood Control Channel based on (a) multiple ACFCD/ACWD surveys from 1997 through 2016, (b) interpretation of signs such as tracks and scat, and (c) review of surveys from adjacent or nearby projects.

Fish

The active channel supports or has supported a variety of native and non-native fish and other aquatic species. The Alameda Creek Fisheries Restoration Workgroup (2000) reviewed historic reports from 1900 through 1985 and identified the following native and non-native species known to have occurred in the creek:

Native Fish

- Pacific lamprey
- California roach
- Hitch
- Sacramento blackfish
- Sacramento pike minnow
- Speckled dace
- Sacramento sucker
- Steelhead/rainbow trout
- Three-spine stickleback

- Sacramento perch
- Prickly sculpin
- Riffle sculpin
- Tule perch

Non-Native Fish

- Goldfish
- Carp
- Golden shiner
- White catfish
- Black bullhead
- Brown bullhead
- Mosquitofish
- Inland silversides
- Green sunfish
- Bluegill
- Smallmouth bass
- Largemouth bass
- Black crappie
- Bigscale logperch

Fishery surveys conducted in 2008 confirmed the presence of native and non-native predatory fish (Ochikubo, C and PJ Alexander 2009, Alameda Creek Flood Control Channel Predator Fish Surveys, East Bay Parks District Oakland, CA). Survey of ponded areas (day and night) identified the following fish in the channel:

- Sacramento sucker
- Sacramento pikeminnow
- Common carp
- Largemouth bass
- White catfish
- Hitch
- Prickly sculpin
- Bluegill
- Green sunfish
- Pacific lamprey (ammocoete)
- Goldfish
- Big-scale logperch

The 2008 survey identified a number of larger predatory fish (largemouth bass and Sacramento pikeminnow) 100 mm to 250 mm long. Otter trawls conducted as part of this survey in the lower (tidal) zone identified shrimp, topsmelt, staghorn sculpin, northern anchovy, and starry flounder, reflecting the more saline environment. The 2008 surveys included water temperature measurements, which in August ranged from approximately 23°C to 24.5° C. The most frequently observed fish were non-natives.

Wildlife
There have been numerous surveys of the habitats adjacent to the Flood Control Channel and along the levees in the reach from Mission Boulevard in the north to the Union Pacific Railroad Bridge in the vicinity of Alvarado Boulevard. The 1997-1998 surveys and subsequent annual monitoring by ACFCD suggests that the following species are likely to be using the levees and channel habitats.

Ruderal/Disturbed Habitats on the levees, and adjacent levee-crest areas

Reptiles/Amphibians
The 2008 surveys made no mention of either California red-legged frogs or bullfrogs, although both species occur in the Niles Canyon Reach of the stream.

- Western toad
- Pacific tree frog
- Western fence lizard
- Gopher snake
- Common garter snake
- Several species of racer

Birds
- California towhee
- Mourning dove
- House finch
- Lesser goldfinch
- Northern mockingbird
- Western scrub jay
- American crow
- Brewer's blackbird
- Song sparrow
- Saltmarsh common yellowthroat
- Red-winged blackbird

Mammals
- Deer mouse
- Broad-footed vole
- Botta's pocket gopher
- Western harvest mouse
- California vole
- House mouse
- Black rat
- Norway rat
- Blacktail deer

Freshwater Channel

Reptiles and Amphibians

- Western toad
- Pacific tree-frog
- Bullfrog
- Western fence lizard
- Western skink
- Gopher snake
- Racer
- Common king snake
- Western pond turtle

Mammals

- House mouse
- Deer mouse
- Black rat
- Norway rat
- California ground squirrel
- Virginal opossum (foraging)
- Striped skunk (foraging)
- Yuma bat (foraging)
- Raccoon (foraging)
- Blacktail deer

Avian

- Western pipistrelle (foraging)
- Saltmarsh common yellowthroat (breeding)
- Killdeer (breeding)
- Mallard (breeding)
- Marsh wren (breeding)
- Pied-billed grebe (breeding)
- Red-winged blackbird (breeding)
- Song sparrow (breeding)
- Spotted sandpiper (breeding)
- Rock dove (foraging)
- European starling (foraging)
- Barn swallow (foraging)
- Cliff swallow (foraging)
- Black phoebe (foraging)
- Northern rough-winged swallow (foraging)
- White-throated swift (foraging)
- American crow (transient along levees)
- Bushtit (transient along levees)
- Mourning dove (transient along levees)

- Northern mockingbird (transient along levees)
- Western scrub jay (transient along levees)
- Allen's hummingbird (transient along levees)
- Brewer's blackbird (transient along levees)
- House finch (transient along levees)
- American goldfinch (transient along levees)
- Caspian tern (foraging in channel)
- Double-crested cormorant (foraging in channel)
- Foster's tern (foraging in channel)
- Great blue heron (foraging in and along channel)
- Great egret (foraging in and along channel)
- Snowy egret (foraging in and along channel)

Fishes

- Central California Coast steelhead

Tidal/Freshwater Zone downstream of the Union Pacific Railroad Bridge

Avian

- California clapper rail (endangered, expected to occur but not observed),
- Alameda song sparrow
- Saltmarsh common yellowthroat (breeding)
- Marsh wren (breeding)
- Red-winged blackbird (breeding)
- Song sparrow (breeding)
- Lesser goldfinch (breeding)

Mammals

- Salt marsh harvest mouse (endangered, expected to occur but not observed)

Fishes

- Central California Coast steelhead
- Green sturgeon
- Lamprey

These survey results, from multiple years of survey by ACFCD, ACWD, and others suggest that the Flood Control Channel supports native and non-native wildlife adapted to urban disturbance and a highly variable artificial hydrologic regime.

8.2 Potential for Special-Status Species Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

USFWS species lists for the Niles, Newark, and Mendenhall Springs USGS 7½ minute quadrangles were evaluated and the California Natural Diversity Data Base (CNDDB) was consulted to identify species which may utilize the Alameda Creek Flood Control Channel. Additionally, recent EIRs from projects in the vicinity of the (e.g., Joint Fish Passage Project) were reviewed for concurrent information. Biological surveys have also been conducted by ACFCD per their 1999 EIR commitment to pre-activity surveys and were conducted by Michael Marangio in April 2009 (Marangio, 2009). Results were:

- No nesting burrowing owls or nesting raptors were observed;
- No nesting passerines or raptors were observed within 200 feet of the Proposed Project area;
- Animal species that were observed during the field survey include: Canada Goose (*Branta canadensis*), American Coot (*Fulica americana*), Common Merganser (*Mergus merganser*), Bufflehead (*Bucephala albeola*), Mallard (*Anas platyrhynchos*), Belted Kingfisher (*Ceryle alcyon*), Western Gull (*Larus occidentalis*), Great Blue Heron (*Ardea herodias*), Green Heron (*Butorides virescens*), Snowy Egret (*Egretta thula*), Killdeer (*Charadrius vociferus*), Least Sandpiper (*Calidris minutilla*), Red-wing Blackbird (*Agelaius phoeniceus*), Song Sparrow (*Melospiza melodia*), Black Phoebe (*Sayornis nigricans*), American Crow (*Corvus brachyrhynchos*), Fox squirrel (*Sciurus niger*), and Feral Cat (*Felis catus*);
- No special status species were observed; and
- No bats were observed.

In short, with the exception of a few species in the channel itself, any use of the habitat in or adjacent to the channel is probably transient in response to the intense urban development and disturbance of surrounding areas. There is no evidence of occupation or breeding by any of the special status species in the Flood Control Channel Project reach. For example, the Flood Control Channel would be unsuitable for the California red-legged frog because (a) high flows and velocities occur during winter storms, (b) there is no adjacent upland aestivation habitat, and (c) the channel is subject to high scouring flows. The CNDDB records reflect these conditions in the Flood Control Channel and adjacent developed areas.

ACFCD prepared a Biological Assessment to evaluate the potential for the Proposed Project to affect special status species. This assessment evaluated the potential direct and indirect effects of the Project on the species in the Newark and Mendenhall Springs USGS 7.5-minute Quadrangles. The analysis included review of ACFCD and ACWD surveys from 1999 through 2009 and review of regional analyses by other entities, including a county-wide analysis of species at regional parks throughout Alameda County. In addition, state species of concern were also evaluated. The analysis included four elements (Tables 10A and 10B:

- **Habitat**: Is there suitable habitat for each species within the Proposed Project limits that may have direct effects?
- **Known Occurrence**: Is there evidence that the species actually occurs within the Proposed Project limits which may have direct effects?
- **Critical Habitat**: Is the habitat designated as Critical Habitat for the species or is it a component of the species Recovery Plan (if one exists)? NMFS has not designated critical habitat for steelhead in Alameda Creek, however, the creek is an element of the NMFS multi-species salmonid recovery plan;
- **Direct and/or Indirect Effects**: Is there a probability of direct effects to the species and, if so, what is the potential magnitude of effect?

The conclusions of this evaluation of state special status species are summarized on Tables 10A and 10B.

8.3 No Action Alternative

No construction activity or changes would occur. No impacts to protected or sensitive species or their habitat would occur under the no action alternative.

Table 10A. Potential for Proposed Project to affect Listed Species

(Newark and Mendenhall Springs USGS 7-minute Quadrangle Maps)

Species	Status[1]	Potential for Proposed Project Effects and Rationale					
		Suitable habitat?	Occurrence in Project Areas?	Critical Habitat or in the Recovery Plan?	Direct or Indirect Effects?	Avoidance & Minimization Required?	Conclusion
Invertebrates							
Vernal pool fairy shrimp (*Branchinecta lynchi*)	T: USFWS	NO	NO	NO	NO	NO	No Effect
Vernal pool tadpole shrimp (*Lepiduris packardi*)	E: USFWS	NO	NO	NO	NO	NO	No Effect
Conservancy fairy shrimp (*Branchinecta conservio*)	E: USFWS	NO	NO	NO	NO	NO	No Effect
Fish							
Green Sturgeon (*Acipenser medirostris*)	T: NMFS	YES Estuary Potential	YES Estuary Potential	YES Estuary Potential	Potential Estuary	YES	May Affect not likely to adversely affect
Delta smelt (*Hypomesus transpacificus*)	T: USFWS E: CA	NO	NO	NO	NO	NO	No Effect
Central California Coastal steelhead & Central Valley steelhead (*Onchorynchus mykiss*)	T: NMFS	Potential	Potential	Potential	Potential	YES	May Affect – not likely to adversely affect
Central Valley spring-run Chinook salmon (*Onchorynchus tshawytscha*)	T: NMFS T: CA	NO	NO	NO	NO	NO	No Effect
Central valley winter-run Chinook salmon. (*Onchorynchus tshawytscha*)	E: NMFS E: CA	NO	NO	NO	NO	NO	No Effect
Amphibians							
California tiger salamander (*Ambystoma californiense*)	T: USFWS T: CA	NO	NO	NO	NO	NO	No Effect
California red-legged frog (*Rana draytonii*)	T: USFWS	NO	NO	NO	NO	NO	No effect
Reptiles							
Alameda whipsnake (*Masticophis lateralis euryxanthus*)	T: USFWS T: CA	NO	NO	NO	NO	NO	No effect
Birds							

Species	Status[1]	Potential for Proposed Project Effects and Rationale					
		Suitable habitat?	**Occurrence in Project Areas?**	**Critical Habitat or in the Recovery Plan?**	**Direct or Indirect Effects?**	**Avoidance & Minimization Required?**	**Conclusion**
Western snowy plover (*Charadrius alexandrines nivosus*)	T: USFWS	YES Estuary Potential	YES Estuary Potential	YES Estuary Potential	YES Estuary Potential	YES	May affect – no significant effects
California clapper rail (*Rallus longirostris obsoletus*)	E: USFWS E: CA	Potential Estuary	YES Estuary	Potential Estuary	Potential Estuary	YES	May affect – no significant effects
California least tern (*Sternula antillarum browni*)	E: USFWS E: CA	Potential Estuary	YES Estuary Potential	Potential Estuary	Potential Estuary A	YES	May affect – no significant effects
Mammals							
Salt marsh harvest mouse (*Reithrodontomys raviventris*)	E: USFWS E: CA	Potential Estuary	YES Estuary	No	Potential Estuary	YES	May affect – no significant effects
San Joaquin Kit Fox (*Vulpes macrotis mutica*)	E: USFWS E: CA	NO	NO	NO	NO	NO	No effect
Plants							
Contra Costa goldfields (*Lasthenia conjugens*)	E: USFWS	NO	NO	NO	NO	NO	No effect

[1] Status: E = Endangered (either Federal or State); T = Threatened (either Federal or State)

Table 10B. Non-listed Sensitive Species Potentially Affected by Water Quality
(See Table 6 and 7 for avoidance and minimization measures)

Species	Status[1]	Potential for Joint Fish Passage Project Effects and Rationale				
		Suitable habitat?	Known Occurrence in Project Area?	Direct or Indirect Effects?	Avoidance & minimization required?	Conclusion
Reptiles						
Western pond turtle (*Emmys marmorata marmorata*)	FSC/CSC	NO	NO	NO	NO	No effect
California horned lizard (*Phrynosoma coronatum frontale*)	FSC/CSC	NO	NO	NO	NO	No effect
Fish						
Pacific lamprey (*Lampetra tridentada*)	FSC/SCS	NO	NO	NO	NO	No effect
Birds						
Loggerhead shrike (*Lanius ludovicianus*)	FSC/CSC	NO	NO	NO	NO	No effect
Western burrowing owl (*Athene cunicularia hypugea*)	FSC/CSC	NO	NO	NO	NO	No effect

[1] Status: FSC = Federal Species of Concern; CSC = California Species of Concern

8.4 Mechanisms for Effect

In evaluating the potential for the Project actions to affect each species, the initial consideration is whether there is suitable and/or occupied habitat for the species within the specific boundaries of the Proposed Project. For example, if the species is associated only with certain soil types (such as serpentine soils), and such soils do not exist within the Proposed Project area of effect, then there is no potential for direct effects. Indirect effects may still be considered if there is a mechanism for them. In addition, if the Proposed Project affects an area of Designated Critical Habitat or is targeted for the recovery of the species, then there may be a potential for direct or indirect effects, whether the habitat is occupied or not. Accordingly, for each species an initial evaluation was made, focusing on:

- Is there suitable habitat for each species within the Proposed Project areas that may have effects?

- Is there evidence that the species actually occurs within the areas affected by the Proposed Project?

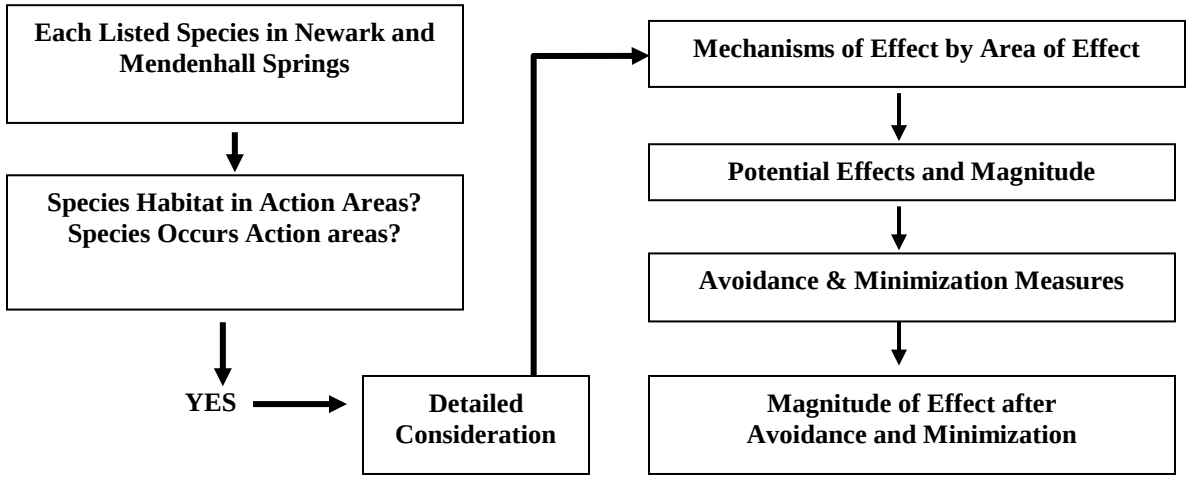
If there is potential suitable habitat for a species and there is evidence that the species actually occurs in the areas affected by the Proposed Project, then, the potential for adverse impacts was addressed in detail, focusing on:

- Is the habitat designated as Critical Habitat for the species or is it a component of the species Recovery Plan (if one exists)?

- Is there a probability of direct or indirect effects to the species and, if so, what is the potential magnitude of effect?

In the detailed consideration of potential for the Proposed Project to adversely affect each species, the focus is on the various mechanisms of effect in each potential area of effect. Thus, for example, species that occur only downstream of a construction site, the analysis of potential for effect is focused on the potential for effects associated with impaired water quality from turbidity and materials spills from construction. The following flow chart describes the initial screening process used in evaluating the potential for the Proposed Project to affect fish and wildlife within the action area.

Figure 12. Flow Chart of Analysis



Mechanisms for effect on Biological Resources Evaluated and Eliminated from Detailed Consideration

The effects of the Proposed Project actions are a function of specific changes to the physical environment. The Proposed Project facilities would not have the following physical mechanisms for effects*:*

- The Proposed Project will not permanently and substantially alter the capacity and basic hydrology of the Flood Control Channel, its riprapped and concrete-lined levees, or adjacent landscaped areas along the levee crest maintenance road/recreational trail. Construction of the low flow channel and modification of existing Grade Control Sills will have permanent but minimal effects on existing levees and other (small) concrete structures. The total area of modified structures will be less than 0.1% (modified Grade Control Structures not including the low flow channel transitions) of the total area within the boundaries of the levees, and with no change in levee footprint;

- The Proposed Project will not substantially modify physical habitat of the floodplain. In the Flood Control Channel, the floodplain will be maintained in current conditions except for minor modifications by the low flow channel and modification of the Grade Control Sills which will be completely buried. Proposed bypass flows (up to 25 cfs greater than

current flow over rubber dam RD1) are of relatively low magnitude when compared to the capacity of the dual-level channel maintained by ACFCD. This effect will benefit steelhead and other anadromous fish and cause an increase in sediment transport through the existing Flood Control Channel;

- The Proposed Project will not alter flow regimes below RD1 in a manner that would adversely affect downstream species. Bypass flows will have a relatively small effect on the general hydrology of the Flood Control Channel in this reach. The Proposed Project will not impede bypass flows but rather will improve low flow conditions and fish passage;

- The Proposed Project will not permanently and substantially alter flow regimes outside of the low-flow channel. The flow bypass rules may increase flow in the low flow channel by 5 to 25 cfs, which is approximately 0.2% of the flow anticipated to occur on a 1-year interval. Combined with Net SFPUC Releases at Niles Gage, flow in the fishway at RD1 and the Flood Control Channel may increase by 5 to 50 cfs. The bypass flows will be contained within the low flow channel. No changes to overland flow are anticipated;

- The Proposed Project will not create elevated suspended sediment concentrations in the Flood Control Channel or the Estuary. Unless there is an early and substantial runoff event, suspended sediments mobilized by construction will fall out of suspension within 200 to 400 yards downstream. This would cause no effects on downstream habitats or estuarine species inhabiting either the Flood Control Channel or estuarine reaches of lower Alameda Creek. A high flow event would mobilize substantial sediment throughout the reach downstream of the ACFCD Drop Structure and construction-related suspended sediment would not constitute a substantial percentage of this total high-flow suspended sediment; and

- The Proposed Project will not alter physical habitat conditions upstream of the ACFCD Drop Structure/BART Weir/RD1 fish ladder.

Physical Mechanisms of Effect Considered in Detail

There are a number of ways in which construction and maintenance of the Proposed Project could alter physical conditions and, potentially, affect threatened and endangered species. The Proposed Project would or could potentially have the following physical mechanisms for effects:

Prior to and During Construction

- Prior to and during construction the existing low flow channel and Grade Control Structures will continue to be low flow passage impediments to migrating steelhead in the Flood Control Channel downstream of the ACFCD Drop Structure/BART Weir fish ladder;

- Construction may potentially result in habitat loss, injury, or death of plants and animals; and

- Construction may temporarily increase levels of turbidity and, potentially cause spills of fuels, lubricants, and concrete which could affect water quality.

During On-going Maintenance

- Maintenance associated with the low flow channel and Grade Control Structures will potentially result in habitat loss, injury, or death of plants and animals;

- On-going maintenance will temporarily increase levels of suspended sediment and turbidity and potentially cause spills of fuels, lubricants, and concrete grout which could affect water quality in the Flood Control Channel; and

- In the Estuary, upstream maintenance activities will temporarily increase levels of turbidity and will potentially cause spills of fuels, lubricants, and concrete grout which could affect water quality.

Potential effects of the Proposed Project on threatened and endangered species are thus addressed in terms of (a) construction and maintenance effects on species occurring in the Flood Control Channel, and (b) water quality effects of construction and maintenance on species in the estuary. The species considered vary in these two reaches of Alameda Creek, as described below.

8.5.0 Threatened and Endangered Species Considered

The Proposed Project construction will only occur within the levees of the existing Flood Control Channel. USFWS and NMFS specify species that should be considered in evaluating potential for the Proposed Project to affect threatened and endangered species within the Flood Control Channel and estuary:

- Vernal pool fairy shrimp
- Vernal pool tadpole shrimp
- Green sturgeon
- Delta smelt
- Central California Coast steelhead
- Central Valley steelhead
- Central Valley Spring-run Chinook salmon
- Winter-run Chinook Salmon
- California tiger salamander
- California red-legged frog
- Alameda whipsnake
- Western snowy plover
- California brown pelican
- California clapper rail
- California least tern
- Salt marsh harvest mouse

8.5.1 California Central Coast Steelhead (Threatened, NMFS)

CCC Steelhead are known to occur periodically in the Alameda Creek Flood Control Channel, although anadromous steelhead do not presently have volitional access to the upper watershed. The fundamental purpose of the Proposed Project is to facilitate restoration of a run of anadromous steelhead to Alameda Creek by removing existing low flow impediments to upstream adult and downstream juvenile passage within the lower reaches of the Alameda Creek Flood Control Channel.

8.5.2 Species Habitat and Distribution

The National Marine Fisheries Service describes the habitat and distribution of steelhead as follows (http://www.nmfs.noaa.gov/pr/species/fish/steelheadtrout.htm):

> Steelhead can be divided into two basic reproductive types, stream-maturing or ocean-maturing, based on the state of sexual maturity at the time of river entry and duration of spawning migration.
>
> The stream-maturing type (summer-run steelhead in the Pacific Northwest and northern California) enters freshwater in a sexually immature condition between May and October and requires several months to mature and spawn.

> The ocean-maturing type (winter-run steelhead in the Pacific Northwest and California) enters freshwater between November and April, with well-developed gonads, and spawns shortly thereafter. Coastal streams, including Alameda Creek, are dominated by winter-run steelhead, whereas inland steelhead of the Columbia River basin are almost exclusively summer-run steelhead.
>
> Adult female steelhead will prepare a redd (or nest) in a stream area with suitable gravel type composition, water depth, and velocity. The adult female may deposit eggs in 4 to 5 "nesting pockets" within a single redd. The eggs hatch in 3 to 4 weeks.
>
> Steelhead are capable of surviving in a wide range of temperature conditions (less than approximately 25 C). They do best where dissolved oxygen concentration is at least 7 parts per million. In streams, deep low-velocity pools are important wintering habitats. Spawning habitat consists of gravel substrates free of excessive silt."

Alameda Creek Flood Control Channel is part of the Recovery Plan for steelhead but it is not designated as Critical Habitat for the coastal steelhead distinct population segments that are listed as threatened and there is no suitable spawning habitat downstream of the ACFCD Drop Structure which currently is a complete barrier to upstream access.

Is there suitable habitat for steelhead within the areas in which the Proposed Project may have effects?

The Alameda Creek Flood Control Channel has limited habitat value for steelhead. It functions as a movement corridor for adult steelhead in-migration and juvenile and kelt outmigration. During outmigration, there may be incidental foraging, but this is limited because substrate within the Flood Control Channel is fine silts and sand that probably does not provide suitable insects and benthic macroinvertebrates. Habitat is otherwise not suitable for spawning or rearing. In the Flood Control Channel and estuary, there is potentially suitable habitat for adult holding and juvenile rearing.

In reaches of Alameda Creek upstream of the ACFCD Drop Structure/BART Weir fish ladder there is habitat for steelhead spawning and rearing, primarily in Niles Canyon and further upstream in the main-stem and larger tributaries. There is no habitat for steelhead in Vallecitos Creek, which has an intermittent flow.

Is the habitat designated as Critical Habitat for the species or is it a component of the species Recovery Plan?

Alameda Creek Flood Control Channel is identified as a feature of the NMFS Recovery Plan for Central California Coast steelhead. Removal of impediments including the BART Weir is a priority.

Is there evidence that the species actually occurs within the areas in which the Restoration of Lower Alameda Creek Project may have effects?

Adult fish have been observed downstream of the BART Weir during winter (outside of the construction season.) There is historic evidence of CCC steelhead inhabiting Alameda Creek prior to construction of ACWD's rubber dams, the BART Weir, and other impediments to fish passage.

Is there a probability of direct or indirect effects to the species and, if so, what is the potential magnitude of effects?

Prior to and during construction of the low flow channel and modification of existing Grade Control Structures, CCC steelhead will continue to encounter low flow conditions and passage impediments that limit or delay access to historic habitats upstream of the BART Weir and fish ladder. Until completion of the RD1/BART Project, upstream fish migration would continue to be precluded. Development of the low flow channel within the existing Flood Control Channel and modification of the existing Grade Control Structures is intended to facilitate unimpeded upstream and downstream migration by steelhead. No adverse effects are anticipated.

In the Flood Control Channel reach downstream of BART Weir will potentially result in habitat loss, injury, or death of plants and animals.

If CCC steelhead juveniles were to occur in the Flood Control Channel, there would be a potential for direct construction-related effects, including injury and death of individuals primarily from stranding, delay in outmigration, injury during passage, high water temperatures, poor water quality, and predation. The potential for such adverse effects and the potential magnitude of such effects is limited. Construction within the Flood Control Channel will be limited to the period from June 1 to October 31 each year when no adult or juvenile steelhead are not likely to occur in the Flood Control Channel because of habitat conditions including and exposure to elevated water temperatures. As an avoidance and minimization action the temporary construction areas will be isolated using coffer dams or other methods, and a fish rescue will be performed prior to dewatering each site and initiating construction. Fish collected during the rescue will be handled in accordance with standard methods approved by NMFS and CDFW and released into the lower creek downstream of the construction area.

Maintenance will potentially result in habitat loss, injury, or death of plants and animals.

On-going maintenance of the low flow channel and Grade Control Structures would involve construction-type activities, and adverse effects would be similar to initial construction activities but the impacts would generally be of lower intensity:

- Stranding during dewatering;
- Delay in outmigration;
- Injury from high water temperatures;
- Injury from poor water quality; and
- Predation within the low flow channel.

Except in emergencies such as high levels of debris accumulation, maintenance will generally take place in June through October, and thus avoid the period when adult and juvenile steelhead would most likely be in the Flood Control Channel. Emergency events may occur at any time. There is

a potential for juvenile and adult steelhead to be in the maintenance areas during some maintenance activities. Avoidance of these potential effects will involve (**O&M 1-7** on Table 7):

- Routine monitoring at the RD1/BART Weir fish ladder would include monitoring for adult and juvenile migration, and ACFCD would, to the extent feasible, schedule maintenance outside of the period when juveniles and adults may be migrating;

- If maintenance requires isolation of the active channel from the maintenance area, ACFCD will engage a qualified biologist to monitor for the presence of steelhead. If steelhead are found in the area, juvenile steelhead will be captured and released downstream of the work area. If adult steelhead are in the maintenance area, they will be (a) diverted to the isolated active channel or (b) captured and transported to the reach upstream of Mission Boulevard; and

- In an emergency/unplanned maintenance event, ACFCD will notify NMFS and CDFW as soon as possible, and immediately (a) engage a qualified biologist to determine if steelhead are in the proposed maintenance area, (b) make all feasible and necessary efforts to isolate the active maintenance area from the active stream as rapidly as possible, and (c) initiate capture-transport-release of steelhead to the isolated active channel or the channel upstream or downstream of Mission Boulevard.

Avoiding maintenance during the juvenile outmigration period and measures to isolate steelhead from maintenance areas will reduce the potential for direct construction-type effects on individuals during maintenance to minimum levels.

In the flood control channel and estuary, maintenance will temporarily increase levels of turbidity and will potentially cause spills of fuels, lubricants, and concrete, which could affect water quality.

Maintenance has the potential to affect rearing juvenile steelhead in the ACFCD Flood Control Channel and within the estuary downstream of Alvarado Boulevard. Turbidity effects from maintenance are likely to fall within the range of ambient turbidity in the channel and estuary, but, if they occur, spills of fuels and lubricants, could adversely affect steelhead in the channel and estuary. To avoid and minimize these potential effects, ACFCD will implement measures to avoid such events and address them if they occur, as listed on Table 7 (**C1-11**, and **O&M 4-6**), above. ACFCD has successfully avoided such construction/maintenance effects on a number of occasions and the potential for significant adverse effects is correspondingly minimal.

In the Flood Control Channel, maintenance activity (such as removal of debris from the low flow channel or Grade Control Structures) may delay adult and juvenile migrations.

Except in emergencies during the migration period where such activities may result in stress on steelhead fish, most maintenance activities will occur during the non-migratory period. There is a potential for maintenance activities in the low flow channel to delay steelhead migrations and subject steelhead to stress. These related mechanisms would have adverse effects on steelhead.

Delay may be a function of physical barriers to movement, such as debris in the low flow channel that affects juvenile or adult use of the channel. Delay may cause:

- Thermal stress. During outmigration, juveniles may be stressed if ambient water temperatures in the low flow channel rise above 18°C to 19°C. Late migrating juveniles may encounter warm temperatures and thermal stress may be a function of higher metabolic demands and low availability of food;
- Predation stress. Juvenile steelhead migrating downstream within a low flow channel would be at risk of predation by fish and birds; and
- Metabolic stress. Adults delayed during in migration to spawn will use up stored energy and may have lowered insufficient reserve energy for migration and spawning. Extended delays may result in egg resorption and poor spawning. Juveniles may have reduced growth or may lose weight (particularly if delay is extensive).

Under normal conditions, these potential effects are minimized by design of the low flow channel and modified Grade Control Structures and by implementation of the seasonal work window. Nevertheless, to avoid and minimize these potential delays, ACFCD will (measure **O&M7,** Table 7):

- Minimize maintenance in the period from November 1 through May 31 to the extent feasible; and
- Evaluate the low flow channel and Grade Control Structures before the projected migration periods (January 1 through May 31) and take any remedial actions necessary (e.g., remove debris that may impede steelhead migration).

8.5.3 Significance of Effect

Based on the avoidance and minimization measures included in the Proposed Project it was concluded that construction and maintenance may affect, but not adversely affect, steelhead or adversely their critical habitat. Impacts would be less-than-significant.

8.5.4 No Action Alternative

No construction activity or changes would occur. No impacts to steelhead or their habitat would occur under the no action alternative.

8.6.0 Vernal Pool Fairy Shrimp (Threatened; USFWS)

Vernal pool fairy shrimp are known to occur in portions of the upstream Alameda Creek watershed. There is one area of designated critical habitat for the species in Alameda County, a site north of Highway 580 on the outskirts of Livermore, approximately 18 miles northeast of the proposed project. In the Niles and Fremont USGS Quads, there is a vernal pool in the vicinity of the Don Edwards San Francisco Bay National Refuge.

8.6.1 Species Habitat Requirements

The USFWS Species Account (http://ecos.fws.gov/docs/life_histories/K03G.html) describes the habitat of the species.

> "HABITAT: Vernal pool fairy shrimp populations live in ephemeral freshwater habitats, such as vernal pools and swales. None are known to occur in running or marine waters or other permanent bodies of water. Vernal pools are unique seasonal wetlands that support a wide variety of wildlife, from waterfowl to amphibians–all of which rely on the protein-rich food sources found in these ecosystems (Geer and Foulk 1999/2000).
>
> The distribution of vernal pools is highly discontinuous and some of the aquatic invertebrates that are found in this habitat occur only in specific geographic areas. Due to local topography and geology, the pools are usually clustered into pool complexes (Holland and Jain 1988). Pools within a complex typically are separated by distances on the order of meters and may form dense, interconnected mosaics of small pools or a sparser scattering of larger pools. This species has a sporadic distribution within vernal pool complexes (Jones and Stokes, 1992, 1993; County of Sacramento 1990; Patton 1984; Stromberg 1933; Sugnet and Associates 1993b) wherein the majority of pools in a given complex typically are not inhabited by the species.
>
> Although the vernal pool fairy shrimp has a relatively wide range, the majority of known populations inhabit vernal pools with clear to tea-colored water, most commonly in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands, but one population occurs in sandstone rock outcrops and another population in alkaline vernal pools (Collie and Lathrop 1976). They are ecologically dependent on seasonal fluctuations in their habitat, such as absence or presence of water during specific times of the year, duration of inundation, and other environmental factors that include specific salinity, conductivity, dissolved solids, and pH levels. Water chemistry is one of the most important factors in determining the distribution of fairy shrimp (Belk 1977; Jamie King, University of California, in litt., 1992; Marie Simovich, University of San Diego, in litt., 1992). The water in pools inhabited by this species has low total dissolved solids (TDS), conductivity, alkalinity, and chloride (Collie and Lathrop 1976). The vernal pools the animal inhabits vary in size from over 10 ha to only 20 square meters. The vernal pool fairy shrimp occurs at temperatures between 6-20 degrees C in soft and poorly buffered waters (Eng *et al*. 1990)."

The 2007 USFWS Vernal Pool Fairy Shrimp *(Branchinecta lynchi)* 5-Year Review: Summary and Evaluation adds the following to the above:

> "The vernal pool fairy shrimp has an ephemeral life cycle and exists only in vernal pools or vernal pool-like habitats; the species does not occur in riverine, marine, or other permanent bodies of water. Roughly 80 percent of observations of the shrimp are from vernal pools (Helm 1998; Helm and Vollmar 2002). Like most other fairy shrimps, the vernal pool fairy shrimp lacks any substantial anti-predator defenses and does not persist in waters with fish (King *et al.* 1996; Eriksen and Belk 1999)."

Is there suitable habitat for vernal pool fairy shrimp within the areas in which construction of the low flow channel and modification of the existing Grade Control Structures within the Flood Control Channel may have effects?

NO: There is no ephemeral pool habitat in the Flood Control Channel. The perennial aquatic habitat of the channel is isolated from any known populations and (b) occupied by predatory amphibians and fish. The species cannot occur in the Flood Control Channel. In addition, the only known suitable habitat for the species is in a separate watershed (Laguna Creek) above the tidal zone about 4 miles south near the Don Edwards Refuge and thus would not be affected by water quality effects of the Proposed Project. Specifically:

- There is no vernal pool habitat in the Flood Control Channel. Habitats in this area consist of disturbed riverine floodplain, landscaped grassland, and concrete-rock levees and paved areas; and
- There is no vernal pool habitat in the downstream estuary, either in river and bay areas or in the active marsh.

Is there evidence that vernal pool fairy shrimp actually occurs within the areas affected by the Proposed Project?

NO: Studies have been conducted by various agencies over the last 15 years; no evidence of vernal pool fairy shrimp have been found. The Proposed Project thus would have no effect on vernal pool fairy shrimp. There is no evidence from multiple surveys by ACWD, ACFCD, and others that the species actually exists in the Flood Control Channel or downstream estuary.

8.6.2 Significance of Effect

Based on these considerations, potential Proposed Project effects on vernal pool fairy shrimp were not evaluated in detail because there is no suitable habitat for the species. The Proposed Project is likely to have no effect on the species.

8.6.3 No Action Alternative

No construction activity or changes would occur. No impacts to vernal pool fairy shrimp or their habitat would occur under the no action alternative.

8.7.0 Conservancy Fairy Shrimp (Endangered, USFWS)

Per the USFWS Species Account, the "Conservancy fairy shrimp inhabit rather large, cool-water vernal pools with moderately turbid water (Eriksen and Belk 1999). The pools generally last until June. However, the shrimp are gone long before then. They have been collected from early November to early April." (http://www.fws.gov/sacramento/es/animal_spp_acct/acctbug.htm)

8.7.1 Habitat and Distribution

The USFWS Species Account describes the known distribution of the species:

> "Currently, the Service is aware of eight populations of Conservancy fairy shrimp, which include (from north to south): (1) Vina Plains, Butte and Tehama counties; (2) Sacramento National Wildlife Refuge, Glenn County; (3) Yolo Bypass Wildlife Area, Yolo County; (4) Jepson Prairie, Solano County; (5) Mapes Ranch, Stanislaus County; (6) University of California, Merced, Merced County; (7) Grasslands Ecological Area, Merced County and (8) Los Padres National Forest, Ventura County."

The USFWS 2005 Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon, December 15, 2005 described the species distribution more specifically (http://ecos.fws.gov/docs/recovery_plans/2006/060307_docs/doc533.pdf):

> "The Conservancy fairy shrimp is known from a few isolated populations distributed over a large portion of California's Central Valley and in southern California (Figure II-35). In the Northeastern Sacramento Valley Vernal Pool Region (Keeler-Wolf *et al*. 1995), four populations are clustered around the Vina Plains area in Tehama and Butte Counties. Conservancy fairy shrimp populations are also found in the Solano-Colusa Vernal Pool Region on the greater Jepson Prairie area in Solano County, at the Sacramento National Wildlife Refuge in Glenn County, and in the Tule Ranch unit of the California Department of Fish and Game Yolo Basin Wildlife Area, in Yolo County. In the San Joaquin Valley Vernal Pool Region, Conservancy fairy shrimp are found in the Grasslands Ecological Area in Merced County, and at a single location in Stanislaus County. In the Southern Sierra Foothills Vernal Pool Region, the species is known from the Flying M Ranch, the Ichord Ranch, and the Virginia Smith Trust lands in eastern Merced County. The Conservancy fairy shrimp is found outside the Santa Barbara Vernal Pool Region at two locations on the Los Padres National Forest in Ventura County."

Designated Critical Habitat is limited to these and adjacent areas in the Central Valley and in coastal Southern California.

Is there suitable habitat for Conservancy fairy shrimp within the areas in which the Project may have effects?

NO: As the Recovery Plan indicates, the three fairy shrimp species associated with vernal pools may co-occur and thus the vernal pool along the margin of the Don Edwards San Francisco Bay National Refuge, about several miles southwest of the project could be considered suitable habitat

for the species. This vernal pool is in a sub-watershed that does not drain to the Alameda Creek Flood Control Channel and is separated from the Flood Control Channel by rock riprapped levees and urban development.

Is there evidence that the species actually occurs within the areas in which the Project may have direct effects?

NO: There are no records in CNDDB or in multiple years of survey of the Flood Control Channel and adjacent areas which are mostly residential homes.

8.7.2 Significance of Effect

Based on these considerations, potential Proposed Project effects on Conservancy fairy shrimp were not evaluated in detail. The Proposed Project would have no effect.

8.7.3 No Action Alternative

No construction activity or changes would occur. No impacts to Conservancy fairy shrimp or their habitat would occur under the no action alternative.

8.8.0 Vernal Pool Tadpole Shrimp (Endangered; USFWS)

In the San Francisco Bay area, vernal pool tadpole shrimp is known to occur in only one area, on the San Francisco Bay National Wildlife Refuge in the City of Fremont, south of Highway 880. The site (designated as Critical Habitat Unit 14) is located south of the Flood Control Channel in an isolated sub-drainage that was historically part of the Alameda Creek floodplain but is now segregated and separated from the Alameda Creek by developments and the constructed channel (Oakland Museum: http://museumca.org/creeks).

8.8.1 Habitat and Distribution

The USFWS Species Account (http://ecos.fws.gov/docs/life_histories/K048.html) describes the habitat of the species:

> "HABITAT: Vernal pool tadpole shrimp are sporadic in their distribution, often inhabiting only one or a few vernal pools in otherwise more widespread pool complexes (Larry Eng, California Department of Fish and Game, pers. comm., 1990; Jamie King, in litt., 1992; Marie Simovich, in litt., 1992; Richard Brusca, San Diego Museum of Natural History, pers. comm., 1992). The vernal pool tadpole shrimp inhabits vernal pools and swales containing clear to highly turbid waters (Eng et al. 1990). These pools are most commonly located in grass bottomed swales of unplowed grasslands in old alluvial soils underlain by hardpan, or in mud-bottomed pools containing highly turbid water. Pools within a complex typically are separated by distances on the order of meters and may form dense, interconnected mosaics of small pools or a sparser scattering of larger pools. The crustacean is also found in a variety of natural, and artificial, seasonally ponded habitat types including: ephemeral drainages, stock ponds, reservoirs, ditches, backhoe pits, and ruts caused by vehicular activities (Nature Serve Explorer 2002). None are known to occur in running or marine waters or other permanent bodies of water. Vernal pools are unique seasonal wetlands that support a wide variety of wildlife, from waterfowl to amphibians– all of which rely on the protein-rich food sources found in these ecosystems.
>
> Vernal pool tadpole shrimp are ecologically dependent on seasonal fluctuations in their habitat, such as absence or presence of water during specific times of the year, duration of inundation, and other environmental factors that include specific salinity, conductivity, dissolved solids, and pH levels. Water chemistry is one of the most important factors in determining the distribution of tadpole shrimp (Belk 1977; Jamie King, University of California, in litt., 1992; Marie Simovich, University of San Diego, in litt., 1992). The pools at Jepson Prairie and Vina Plains have very low conductivity, total dissolved solids (TDS), and alkalinity (Barclay and Knight 1984; Eng et al. 1990)."

Is there suitable habitat for vernal pool tadpole shrimp within the areas in which the Proposed Project may have effects?

NO: There is no appropriate ephemeral pool habitat in the Flood Control Channel, and the perennial aquatic habitat is also (a) isolated from known populations and (b) occupied by predatory

amphibians and fish. The species cannot occur in the Flood Control Channel. In addition, the only known suitable habitat for the species is in a separate watershed (Laguna Creek) above the tidal zone of the Don Edwards San Francisco Bay National Refuge, about 4 miles southwest of the project could be considered suitable habitat for the species. Therefore, it is unlikely to be subject to the water quality effects from the Proposed Project. Specifically:

- There is no vernal pool habitat in the Flood Control Channel downstream of the ACFCD Drop Structure/BART Weir fish ladder. Habitats in this area consist of disturbed riverine floodplain, landscaped grassland, and concrete-rock levees and paved areas; and
- There is no vernal pool habitat in the downstream estuary, either in riverine and bay areas or in the active marsh.

Is there evidence that vernal pool fairy shrimp actually occurs within the areas in which the Proposed Project may have direct effects?

NO: Studies have been conducted by various agencies over the last 15 years; no evidence of vernal pool fairy shrimp have been found. The Proposed Project thus would have no effect on vernal pool fairy shrimp. There is no evidence from multiple surveys by ACWD, ACFCD, and others that the species actually exists in the Flood Control Channel or in the estuarine reach

8.8.2 Significance of Effect

Based on these considerations, potential Project effects on vernal pool tadpole shrimp were not evaluated in detail because there is no suitable habitat. The Proposed Project is likely to have no effects on the species.

8.8.3 No Action Alternative

No construction activity or changes would occur. No impacts to vernal pool tadpole shrimp or their habitat would occur under the no action alternative.

8.9.0 Green Sturgeon (Threatened, NMFS)

Green sturgeon are known to forage for extended periods of time in San Francisco Bay (NMFS 2011, http://www.nmfs.noaa.gov/pr/species/fish/greensturgeon.htm), utilizing estuarine/riverine habitats extending up to the freshwater zone. San Francisco Bay is considered critical habitat. In the Alameda Creek watershed, this would include the estuary and potentially the lower reach of the Flood Control Channel from the bay to the Union Pacific Railroad Bridge where the tide ends.

8.9.1 Habitat and Distribution

The NMFS species account (NMFS 2011) describes green sturgeon habitat and known distribution:

> "Green sturgeon utilize both freshwater and saltwater habitat. Green sturgeon spawn in deep pools or "holes" in large, turbulent, freshwater river mainstems (Moyle *et al*., 1992). Specific spawning habitat preferences are unclear, but eggs likely are broadcast over large cobble substrates, but range from clean sand to bedrock substrates as well (Moyle *et al*., 1995). It is likely that cold, clean water is important for proper embryonic development.
>
> Adults live in oceanic waters, bays, and estuaries when not spawning. Green sturgeon are known to forage in estuaries and bays ranging from San Francisco Bay to British Columbia.
>
> Green sturgeon are believed to spend the majority of their lives in nearshore oceanic waters, bays, and estuaries. Early life-history stages reside in fresh water, with adults returning to freshwater to spawn when they are more than 15 years of age and more than 4 feet (1.3 m) in size. Spawning is believed to occur every 2-5 years (Moyle, 2002). Adults typically migrate into fresh water beginning in late February; spawning occurs from March-July, with peak activity from April-June (Moyle *et al*., 1995). Females produce 60,000-140,000 eggs (Moyle *et al*., 1992). Juvenile green sturgeon spend 1-4 years in fresh and estuarine waters before dispersal to saltwater (Beamsesderfer and Webb, 2002). They disperse widely in the ocean after their out-migration from freshwater (Moyle *et al*., 1992).
>
> The actual historical and current distribution of where this species spawns is unclear as green sturgeon make non-spawning movements into coastal lagoons and bays in the late summer to fall, and because their original spawning distribution may have been reduced due to harvest and other anthropogenic effects (Adams *et al*., in press). Today green sturgeon are believed to spawn in the Rogue River, Klamath River Basin, and the Sacramento River. Spawning appears to rarely occur in the Umpqua River. Green sturgeon in the South Fork of the Trinity River were thought extirpated (Moyle, 2002), but juveniles are captured at Willow Creek on the Trinity River (Scheiff *et al*., 2001), and it is suspected that the fish could be coming from either the South Fork or the Trinity River (Adams *et al*., in press). Green sturgeon appear to occasionally occupy the Eel River."

Is there suitable habitat for green sturgeon within the areas in which the Proposed Project may have effects?

NO: Upstream of the Union Pacific Railroad Bridge, there is no suitable habitat. The Flood Control Channel is generally shallow during the period of green sturgeon spawning (March through July) and water temperatures are also high during the end of this period. Thus, spawning is not anticipated.

YES: There is potential green sturgeon foraging habitat in the estuary downstream of the Union Pacific Railroad Bridge. Green sturgeon may be able to forage in the estuary reach of lower Alameda Creek.

Is there evidence that the species actually occurs within the areas in which the Project may have effects?

YES (Estuary Reach): Green sturgeon are known to forage in the estuary and potentially downstream portions of the Proposed Project downstream limits at the Union Pacific Railroad Bridge. Summer low flows result in shallow water depths.

NO. (Flood Control Channel Reach): There is no record of green sturgeon upstream of the Union Pacific Railroad Bridge (upstream limit of tide) and green sturgeon have not been observed in surveys over 20 years. Green sturgeon were not found in the 2008 fish kill upstream of RD1. There have not been directed surveys for green sturgeon, but review of data from Alameda Creek Fisheries Restoration Workgroup (2000) contains no record of green sturgeon upstream of the Union Pacific Railroad Bridge.

Based on these considerations, the potential for the Proposed Project to affect green sturgeon is limited to construction-related chemical, sediment, and turbidity effects. Green sturgeon may occur in the vicinity of the Alameda Creek estuary as they forage in San Francisco Bay. They may thus be affected by water quality changes associated with Proposed Project construction.

Is the habitat designated as Critical Habitat for the species or is it a component of the species Recovery Plan (if one exists)?

YES: San Francisco Bay and the estuarine area of Alameda Creek are designated as Critical Habitat for the green surgeon.

Is there a probability of direct and indirect effects to the species and, if so, what is the potential magnitude of effect?

POTENTIAL: There is a potential direct effect. The Proposed Project construction and related on-going maintenance of the modified Grade Control Structures and low flow channel could result in accidental spills of petroleum compounds and leaks from construction equipment. Any spill of hydrocarbons or un-cured concrete grout could have an effect on sturgeon foraging, either directly or by contaminating benthic food resources. Spills would affect individuals and critical habitat.

NO: There are no potential indirect effects with either the low flow channel or modification of existing Grade Control Structures.

8.9.2 Proposed Avoidance and Minimization Measures

The implementation of rigorous hazardous materials avoidance and minimization protocols for both initial construction and on-going maintenance (measures **C1-7, HH1** and **HWQ1-10**, Table 7) would substantially preclude adverse water quality effects in the estuarine reach of the creek, and along the margins of San Francisco Bay.

The successful record of ACFCD in implementing such protocols is documented in recent monitoring reports from similar activities. Effects are thus highly unlikely to occur, and will be rapidly addressed and minimized if they do occur.

8.9.3 Significance of Effect

Green sturgeon could be adversely affected by the Proposed Project as a result of changes in water quality. The estuary is relatively turbid and turbidity associated with construction and maintenance is a small fraction of the typical turbidity from precipitation runoff in the urban environment. Spill of hydrocarbons or un-cured concrete grout could have an adverse effect on sturgeon foraging, either directly or by contaminating benthic food resources. Spills would affect individuals and critical habitat. Based on these considerations and the avoidance and minimization actions included in the Proposed Project it was concluded that construction and maintenance activities may affect, but are not likely to adversely affect, green sturgeon and their critical habitat. The Proposed Project would have a less-than-significant impact.

8.9.4. No Action Alternative

No construction activity or changes would occur. No impacts to green sturgeon or their habitat would occur under the no action alternative.

8.10.0 Delta Smelt (Threatened, USFWS)

Delta smelt (*Hypomesus transpacificus*) are slender-bodied fish, about 2 to 3 inches long. They are in the Osmeridae family (smelts). They have a steely blue sheen on the sides and seem almost translucent. Smelt live in open water habitat and feed on zooplankton (small invertebrates).

8.10.1 Species Habitat and Distribution

The USFWS species account describes the habitat and distribution of delta smelt as (http://www.fws.gov/sacramento/es/animal_spp_acct/acctfish.htm):

> "Delta smelt are an euryhaline species (tolerant of a wide salinity range). They have been collected from estuarine waters up to 14 ppt (parts per thousand) salinity. For a large part of their one-year life span, delta smelt live along the freshwater edge of the mixing zone (saltwater-freshwater interface), where the salinity is approximately 2 ppt.
>
> Shortly before spawning, adults migrate upstream from the brackish-water habitat associated with the mixing zone and disperse widely into river channels and tidally influenced backwater sloughs. They spawn in shallow, fresh or slightly brackish water upstream of the mixing zone.
>
> Most spawning happens in tidally influenced freshwater backwater sloughs and channel edge waters. Although spawning has not been observed in the wild, the eggs are thought to attach to substrates such as cattails, tules, tree roots and submerged branches."
>
> "Delta smelt are found only from the Suisun Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano and Yolo counties. Their historic range is thought to have extended from Suisun Bay upstream to at least the city of Sacramento on the Sacramento River and Mossdale on the San Joaquin River. They used to be one of the most common pelagic (living in open water away from the bottom) fish in the upper Sacramento-San Joaquin Estuary."

Delta smelt do not occur in Alameda County except at the northeast corner of the county, at Clifton Court Forebay and associated facilities, which are part of the designated Critical Habitat for the species. This area is outside of the Alameda Creek watershed and approximately 30-35 miles from the Flood Control Channel.

Is there suitable habitat for delta smelt within the areas in which the Proposed Project may have effects?

NO: The USGS (http://sfbay.wr.usgs.gov/hydroclimate/sal_variations/index.html) simulations of salinity in South San Francisco Bay show salinity above the tolerance of delta smelt (> 20 ppt) both at the San Mateo and Dumbarton bridge sampling/simulation sites. Delta smelt would thus be excluded from the estuarine habitats of the Flood Control Channel and downstream. It may be assumed that the species is listed for the Niles and Newark USGS Quads because of the potential

for State Water Project water operations to indirectly affect the species. The Proposed Project would not alter current diversions from the Delta.

Is there evidence that the species actually occurs within the areas in which the Project may have effects?

NO: Neither literature review nor recent ACFCD, ACWD, and East Bay Park District (2008) surveys encountered delta smelt.

Given the limited distribution of delta smelt, there is no mechanism by which the Project could have effects on the species or its Critical Habitat. The Project would not affect delta smelt.

8.10.2 Significance of Effect

Based on these considerations, potential Proposed Project effects on delta smelt were not evaluated in detail. It was concluded that the Proposed Project would have no effect on delta smelt or their critical habitat. The Proposed Project would have no impact on delta smelt.

8.10.3 No Action Alternative

No construction activity or changes would occur. No impacts to delta smelt or their habitat would occur under the no action alternative.

8.11.0 Central Valley Spring-run Chinook Salmon (Threatened, NMFS) and Sacramento River Winter-run Chinook Salmon (Endangered, NMFS).

Spawning adult Chinook salmon generally measure 75-80 cm SL (9-10 kg.) and are olive brown to dark maroon (Moyle 2002). Chinook salmon generally live 3 to 6 years and feed on aquatic and terrestrial invertebrates and salmon eggs in freshwater. In intertidal areas juvenile Chinook salmon feed on amphipods, insects, and fish larvae. During the oceanic life stage, Chinook salmon feed on fish, large crustaceans, and squid (Behnke 2002). The current range of Central Valley Chinook salmon extends up the Sacramento River to the Keswick Dam (a flow-regulating dam located 9 miles downstream of Shasta Dam). In addition, the range of Central Valley Chinook salmon extends up many of the Sacramento River tributaries up to significant migration barriers. Spring-run Chinook salmon are known to occur in the Feather River up to the Oroville Dam and the Yuba River up to Englebright Dam. Spring-run Chinook salmon are currently being reintroduced into the San Joaquin River as part of a restoration program downstream of Friant Dam.

There are two listed Evolutionary Significant Units (ESU's) of Central Valley Chinook Salmon listed for Endangered Species Act protection: Winter–run and Spring-run.

8.11.1 Habitat and Distribution

Sacramento River winter-run Chinook salmon historically occurred upstream as far as the headwater reaches in the Upper Sacramento, Pit, McCloud, and Calaveras rivers. Following the construction of dams on these rivers in the 1940s, these populations were limited to areas below the Shasta Dam. The Fall River, one of the premier salmonid streams in California, also supported spawning habitat for Chinook salmon prior to the construction of the Shasta Dam (NOAA Fisheries 2003). Currently, the Sacramento River winter-run Chinook salmon occur as far upstream as the Keswick Dam and depend on cold water releases from the Shasta Dam (located 9 miles upstream of Keswick Dam) to allow them to hold for several months until they spawn in early summer (Behnke 2002). This run is currently limited to the Sacramento River below Keswick Dam (Moyle 2002). The run size in 1969 was approximately 120,000, whereas run sizes averaged 600 fish from 1990 to 1997 (Moyle 2002).

Historically, spring-run Chinook salmon occurred up to elevations of approximately 1,500 feet. If these fish spawned early in the season, they occurred at elevations up to approximately 2,500 to 3,000 (NOAA Fisheries 2003). The Sacramento River drainage is reported to have supported more than 100,000 spring-run Chinook in many years through the 1940s (Moyle 2002). The installation of the Shasta Dam in 1945 prevented access by Chinook salmon to over 250 kilometers of the Sacramento River drainage (Moyle 2002) thereby causing a tremendous decline in their population numbers. Between 1969 and 1997, the mainstem of Sacramento River and several tributaries were estimated to support a range of 3,700 to 21,000 spring-run Chinook salmon per year (Moyle 2002). However, since 1990, the average Chinook salmon run size per year has dropped to 2,500.

There are concerns that the distribution of imported water supplies to Alameda Creek via the South Bay Aqueduct could induce Central Valley Chinook salmon to stray into Alameda Creek.

Is there suitable habitat for Chinook salmon within the areas in which the Proposed Project may have direct and indirect effects?

NO: Neither winter-run nor spring-run Chinook salmon occur in the South San Francisco Bay.

Is the habitat designated as Critical Habitat for the species or is it a component of the species Recovery Plan (if one exists)?

NO: The Proposed Project does not affect Critical Habitat of either winter-run or spring-run Chinook salmon.

Is there evidence that the species actually occurs within the areas in which the Proposed Project may have direct or indirect effects?

NO: There are no data suggesting that either run ever utilized Alameda Creek. There is evidence of fall-run Chinook salmon in South Bay streams, but there is no evidence of winter-run or spring-run Chinook salmon in Alameda County except at the northeast corner of the county, at Clifton Court Forebay and associated facilities, which are part of the designated Critical Habitat for both runs. This area is outside of the Alameda Creek watershed and approximately 30-35 miles from the Flood Control Channel.

8.11.2 Significance of Effect

There is no mechanism by which the Proposed Project could have direct or indirect effects on winter-run or spring-run Chinook salmon or its Critical Habitat. It may be assumed that the species is listed for the Niles and Newark USGS Quads only because of the potential for water operations to indirectly affect the species. As noted in the Proposed Project discussion of potential mechanisms for indirect effect, the Proposed Project would have no effect on water diversions or habitat within the Delta. The Proposed Project will have no effect on these two salmon ESUs. It was concluded that the Proposed Project would have no effect on winter-run or spring-run Chinook salmon or their critical habitat. The Proposed Project would have no impact on Chinook salmon.

8.11.3 No Action Alternative

No construction activity or changes would occur. No impacts to winter-run or spring-run Chinook salmon or their habitat would occur under the no action alternative.

8.12.0 California Tiger Salamander (Threatened, USFWS)

California tiger salamander is found in grasslands and foothills to elevations of 1,500 feet in central California and does not overlap the range of any other species of tiger salamander. Along the coast ranges, it occurs in southern San Mateo County south to central San Luis Obispo, and also in the vicinity of northwestern Santa Barbara County. The Santa Barbara population is considered a separate DPS and is "endangered." The population in Sonoma County is also considered a separate DPS and is "endangered." That these two populations have been classified as separate DPSs means that there has been little genetic exchange with the central California DPS for some time. In the Central Valley and the surrounding Sierra Nevada foothills the California tiger salamander occurs from northern Yolo County southward to northwestern Kern County and northern Tulare County.

Critical habitat has been designated in Yolo, Solano, Sacramento, San Joaquin, Amador, Calaveras, Stanislaus, Merced, Madera, Alameda, Fresno, Tulare, Santa Clara, San Benito, Monterey, Kern and San Luis Obispo counties.

8.12.1 Habitat and Distribution

USFWS provides the following description of California tiger salamander habitat and distribution (http://www.fws.gov/sacramento/es/animal_spp_acct/acctherp.htm):

> "The species is restricted to grasslands and low (typically below 2000 feet/610 meters) foothill regions where lowland aquatic sites are available for breeding. They prefer natural ephemeral pools or ponds that mimic them (stock ponds that are allowed to go dry). Larvae require significantly more time to transform into juvenile adults than other amphibians such as the western spadefoot toad (*Scaphiopus hammondii*) and Pacific tree frog (*Pseudacris regilla*). Compared to the western toad (*Bufo boreas*) or western spadefoot toad, California tiger salamanders are poor burrowers. They require refuges provided by ground squirrels and other burrowing mammals in which to enter a dormant state called *estivation* during the dry months."

Because California tiger salamanders dig poorly, tiger salamanders depend on the upland burrows of California ground squirrels and Botta's pocket gophers. Because the ground squirrel and pocket gopher tunnels collapse within 18 months of abandonment, new burrows are essential. California tiger salamanders require two distinct habitats. At the onset of the winter rains, they emerge from their burrows to feed and migrate as far as one mile to their wetland breeding ponds: vernal pools or seasonal ponds within the grasslands or oak savannah, or even stock ponds that mimic seasonal ponds. In years of "normal" amounts of rainfall these ponds will retain water long enough for salamanders to complete their larval stage and metamorphose, but not long enough, as in the case of permanent ponds, to be habitable by major predators such as fish and bullfrogs.

For California tiger salamanders to persist in an environment thus requires:

- The presence of burrowing animals such as ground squirrels;
- The presence of ephemeral wetlands/ponds within about 1 mile of available burrows;
- The absence of predatory fish or amphibians in the ponds; and
- The ability to move to and from these two distinct habitats.

Is there suitable habitat for the species within the areas in which the Project may have direct effects?

NO: Previous surveys have found some potential for burrowing ground squirrels along the flood-control levee and near adjacent bare ground and grasslands. However, there is no ephemeral pond habitat free of predatory fish and bullfrogs within the Flood Control Channel. The adjacent upstream recharge ponds are permanent, and occupied by predatory fish, and are thus unsuitable for breeding and rearing. Specifically, there is an active largemouth bass fishery in Quarry Lakes. The nearest vernal pool habitat is part of the Don Edwards San Francisco Bay National Refuge, located in an isolated sub-drainage separated from the Flood Control Channel location by miles of dense urban development.

There is no suitable habitat for California tiger salamanders in the Flood Control Channel or the estuary.

Is the habitat designated as Critical Habitat for the species or is it a component of the species Recovery Plan (if one exists)?

NO: California tiger salamander Critical Habitat in Alameda County is Unit 18 in the far northeastern portion of the county, about 20 miles from the Proposed Project area.

Is there evidence that the species actually occurs within the areas in which the Project may have direct or indirect effects?

NO: California tiger salamanders have not been found in past and recent surveys. The lack of California tiger salamander in the urbanized reaches of Alameda County is further confirmed by four system-wide intensive surveys at East Bay Regional Parks (Bobzien and DiDonato 2007). Surveys in 1990, 1996, 2000, and 2004 found no evidence of California tiger salamander in park ponds and pools in the urbanized alluvial plain west of the east Bay hills. California tiger salamander is also not a riverine species and is not found in the active Flood Control Channel or the estuary.

8.12.2 Significance of Effect

California salamanders are known to occur in vernal pools and ephemeral ponds in the upper Niles Canyon area, but tiger salamanders do not use rivers and streams. Given these conditions, the Proposed Project will not affect California tiger salamander or their critical habitat. No impacts would occur as a result of the Proposed Project.

8.12.3 No Action Alternative

No construction activity or changes would occur. No impacts to California tiger salamander or their habitat would occur under the no action alternative.

8.13.0 California Red-legged Frog (Threatened, USFWS)

California red-legged frog has the potential to occur in riverine-floodplain habitats, and the Proposed Project is within the broad general range of the species. The current distribution is in isolated patches in the Sierra Nevada, northern Coast, Santa Monica Mountains, and Central Coast hills. California red-legged frog is still common in the San Francisco Bay area and along the central coast (Santa Clara County Habitat Plan, 2011 Draft). The Proposed Project does not occur in Critical Habitat, which in Alameda County is entirely upstream of the Proposed Project construction sites.

8.13.1 Habitat and Distribution

The historic range of California red-legged frog extended from the Sierra Nevada foothills west to the Pacific coast and from Redding in the north into Baja California and included several desert slope drainages in southern California. The species occurs from near sea level to approximately 5,000 feet. Most documented occurrences of this species, however, are below 3,500 feet. Breeding sites include a variety of aquatic habitats—larvae, tadpoles, and metamorphs use streams, deep pools, and backwaters within streams and creeks, ponds, marshes, sag ponds, dune ponds, and lagoons. Breeding adults are commonly found in deep still or slow-moving water more than 2 feet deep, with dense, shrubby riparian or emergent vegetation and may also breed and rear in shallower aquatic habitats. Breeding generally occurs in March-April. The typical time from egg to tadpole is about three weeks and tadpoles require at least 11 weeks before they can utilize upland habitats. Eggs and tadpoles are thus generally limited to the aquatic zone until mid-summer.

The USFWS Species Account provides the following general description of the species habitat needs (http://www.fws.gov/sacramento/es/animal_spp_acct/acctherp.htm):

> "The California red-legged frog occupies a fairly distinct habitat, combining both specific aquatic and riparian components. Adults need dense, shrubby or emergent riparian vegetation closely associated with deep (greater than 2 1/3-foot deep) still or slow moving water. The largest densities of California red-legged frogs are associated with deep-water pools with dense stands of overhanging willows and an intermixed fringe of cattails. Well-vegetated terrestrial areas within the riparian corridor may provide important sheltering habitat during winter. California red-legged frogs estivate (enter a dormant state during summer or dry weather) in small mammal burrows and moist leaf litter. They have been found up to 100 feet from water in adjacent dense riparian vegetation."

The 2002 USFWS Recovery Plan and the 2005 Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog provide additional information related to parameters relevant to the Proposed Project sites and associated activities that determine habitat suitability for the species:

> "Contra Costa and Alameda Counties contain the majority of known California red-legged frog localities within the San Francisco Bay area, although they seem to have been nearly eliminated from the western lowland portions of these counties (west of Highway 80 and Highway 580), particularly near urbanization." (2002 Recovery Plan, page 8).

"During periods of wet weather, starting with the first rains of fall, some individuals may make overland excursions through upland habitats. Most of these overland movements occur at night. Evidence from marked and radio-tagged frogs on the San Luis Obispo County coast suggests that frog movements, via upland habitats, of about 1.6 kilometers (1 mile) are possible over the course of a wet season." (2002 Recovery Plan, page 13).

"During dry periods, the California red-legged frog is rarely encountered far from water (Jennings *et al. in litt.* 1992). However, California red-legged frogs will sometimes disperse in response to receding water which often occurs during the driest time of the year. For example, between September 20 and October 20 in 1999, 7 adults were observed moving through nearby uplands on the University of Santa Cruz campus as the breeding pond dried (M. Allaback *in litt.* 2000).

The manner in which California red-legged frogs use upland habitats is not well understood; studies are currently examining the amount of time California red-legged frogs spend in upland habitats, patterns of use, and whether there is differential use of uplands by juveniles, sub-adults, and adults. Dispersal distances are considered to be dependent on habitat availability and environmental conditions (N. Scott and G. Rathbun *in litt.* 1998)." (2002 Recovery Plan, page 14)

"California red-legged frogs often disperse from their breeding habitat to forage and seek summer habitat if water is not available. This summer habitat could include spaces under boulders or rocks and organic debris, such as downed trees or logs; industrial debris; and agricultural features, such as drains, watering troughs, abandoned sheds, or hay-ricks.

California red-legged frogs use small mammal burrows and moist leaf litter (Jennings and Hayes 1994); incised stream channels with portions narrower and deeper than 46 centimeters (18 inches) may also provide habitat (U.S. Fish and Wildlife Service 1996a). This depth may no longer be an accurate estimate of preferred depth for this species as individuals have been found using channels and pools of various depths. Most observations are associated with depths greater than 25 cm (10 inches)." (2002 Recovery Plan, page 14).

"California red-legged frogs are sensitive to high salinity, which often occurs in coastal lagoon habitats. When eggs are exposed to salinity levels greater than 4.5 parts per thousand, 100 percent mortality occurs (Jennings and Hayes 1990)." (2002 Recovery Plan, page 15).

In the summary of a discussion of the effects of non-native fish and amphibians on California red-legged frog, the 2002 Recovery Plan notes (page 26):

"Overall, while California red-legged frogs are occasionally known to persist in the presence of either bullfrogs or mosquitofish (and other non-native species), the combined effects of both non-native frogs and non-native fish often leads to extirpation of red-legged frogs (Kiesecker and Blaustein 1998, Lawler *et al.* 2000, S. Christopher *in litt.* 1998)."

The 2002 Recovery Plan (page 16) also addresses the potential effects of water temperature on habitat suitability:

> "Early embryos of northern red-legged frogs are tolerant of temperatures only between 9 and 21 degrees Celsius (48 and 70 degrees Fahrenheit) (Nussbaum *et al*. 1983). Study plots at Pescadero Marsh (San Mateo County) with the greatest number of California red-legged frog tadpoles had mean water temperatures between 15.0 and 24.9 degrees Celsius (60 to 75 degrees Fahrenheit). Observations by S. Bobzien (pers.comm. 1998) indicated that California red-legged frogs were absent when temperatures exceed 22 degrees Celsius (70 degrees Fahrenheit), particularly when the temperature throughout a pool was this high and there are no cool, deep portions."

Is there suitable habitat for the species within the areas in which the Proposed Project may have direct or indirect effects?

Potential: There is hypothetically suitable habitat in the Flood Control Channel, although there are multiple persistent stressors affecting habitat quality. Adjacent uplands are also hypothetically suitable, although the upland habitats are also heavily disturbed and suitable estivation habitat is limited by paving and residential developments.

Is the habitat designated as Critical Habitat for the species or is it a component of the species Recovery Plan (if one exists)?

NO: In Alameda County, Critical Habitat is located in the eastern foothills 10 to 20 miles upstream of the Proposed Project area of direct and indirect effects.

Is there evidence that the species actually occurs within the areas in which the Project may have direct or indirect effects?

NO (Flood Control Channel and Estuary Reaches): There is no recent evidence of California red-legged frog in the Flood Control Channel or estuarine reaches of Alameda Creek. East Bay Regional Park District (2007) described the species current distribution in its 97,000 acres of parks as excluding all parks to the west of the coastal foothills. None of the urban floodplain parks have California red-legged frogs, although there are local habitats that would be considered suitable for the species.

Results from the following surveys by multiple agencies resulted in negative findings: ACFCD surveyed for California red-legged frog in Crandall Creek in 2005, Alameda County Transportation Authority (2009) surveyed potentially suitable habitat at several bridge crossing site. Multiple surveys were conducted for the Patterson Ranch Project (2008); ACFCD surveys found no California red-legged frogs were observed pre, during and post monitoring of construction between Decoto Road and Ardenwood Boulevard in the Flood Control Channel between 1999-2010.

Similar results have occurred in other development sites in the alluvial, urbanized floodplain. There is no evidence that California red-legged frogs exist in the Proposed Project reach of the Flood Control Channel.

In summary, California red-legged frogs have probably been extirpated from the Flood Control Channel and the downstream estuarine areas (west of Niles Canyon) because of the cumulative effects of a variety of stressors:

- The Flood Control Channel between Mission Boulevard and Ardenwood Boulevard has documented abundant non-native predatory fish. For example, East Bay Park District surveys of the Alameda Creek channel in 2008 identified Sacramento pikeminnow and largemouth bass. There is a substantial potential for predation stress from these predatory fish;
- Bullfrogs are known to occur in the Flood Control Channel and in ACWD recharge basins, as well as nearby ponds on East Bay Regional Park District facilities and in Alameda Creek, upstream segment. There is a substantial potential for bullfrog predation to adversely affect California red-legged frog in the channel, terrace;
- Salinity in the estuarine portions of Alameda Creek downstream of the Union Pacific Railroad crossing precludes this area from use by California red-legged frog;
- The potential small population in vernal pool and wetland areas of the Don Edwards San Francisco Bay National Refuge are not connected to the Flood Control Channel. Overland movement to the Flood Control Channel is cut off by urban development and major highways;
- Potential aestivation habitat in the Flood Control Channel is limited because the floodplain is often inundated (bankfull) during periods when the California red-legged frog would be aestivating;
- Riprap along the channel does not generally provide suitable vegetation for egg masses and egg masses may thus be washed downstream during mid to late season high flow events; and
- Forage and aestivation habitats adjacent to the Flood Control Channel are highly limited and disturbed. Areas adjacent to the riprapped channel are limited, routinely disturbed, paved in many areas, and occupied by bullfrogs and terrestrial predators such as raccoons, domestic dogs, and domestic cats. In the urban area, upland habitats suitable for foraging and aestivation are (a) limited by development, and (b) where there may be small patches of barren ground, they are isolated from the channel by frontage roads and the levee crest maintenance road/recreational trail, blocked by fencing, and maintained and landscaped.

This suite of stressors – predation by fish and bullfrogs, poor aquatic habitat, high temperatures during tadpole development, lack of aestivation habitat, and isolation from other potential populations of California red-legged frogs represents substantial, continuous, and multi-factored stress. Alone, the combination of predation by native and non-native fish and bullfrogs has been hypothesized as the mechanism for local extirpation of California red-legged frogs in otherwise potentially suitable habitats in the regional park system (East Bay Regional Park District, see above). The combination of multiple habitat stressors, isolation from other populations, and predation stresses has probably locally extirpated California red-legged frog from the urban portions of their historic range in Alameda County.

Is there a probability of direct or indirect effects to the species and, if so, what is the potential magnitude of effect?

No: There is no evidence that California red-legged frogs exist in the Proposed Project reach of the Flood Control Channel. Multiple stressors exist within the Flood Control Channel and adjacent areas that combined have likely precluded a sustained red-legged frog population within the Flood Control Channel and estuary.

8.13.2 Significance of Effect

In summary, California red-legged frogs are highly unlikely to occur in the Flood Control Channel area of direct effects. No effects are anticipated in the Flood Control Channel or downstream estuary. No adverse effects to California red-legged frogs are thus anticipated. The Proposed Project would have no impact.

8.13.3 No Action Alternative

No construction activity or changes would occur. No impacts to California red-legged frogs or their habitat would occur under the no action alternative.

8.14.0 Alameda Whipsnake (Threatened, USFWS)

The Alameda whipsnake is a narrowly distributed subspecies of *Masticophis lateralis*, found in chaparral, scrub, and grasslands primarily in the East San Francisco Bay hills. As described in the Designation of Critical Habitat (2006), the species utilizes a broad spectrum of habitat conditions within its limited range and appears to be adapted to upland habitats of varying canopy cover. Designated Critical Habitat includes Unit 3 which abuts Alameda Creek along Highway 84 on the north side of Niles Canyon. The Proposed Project construction areas are downstream of this reach by approximately 1 to 12 miles and are isolated from the Critical Habitat area by Highway 84 and urban/suburban development.

8.14.1 Habitat and Distribution

The USFWS Species Account for this species describes habitat and distribution at http://www.fws.gov/sacramento/es/animal_spp_acct/acctherp.htm:

> "Alameda whipsnakes are typically found in chaparral—northern coastal sage scrub and coastal sage. Recent telemetry data indicate that, although home ranges of Alameda whipsnakes are centered on shrub communities, they venture up to 500 feet into adjacent habitats, including grassland, oak savanna, and occasionally oak-bay woodland.
>
> Telemetry data indicate that whipsnakes remain in grasslands for periods ranging from a few hours to several weeks at a time. Grassland habitats are used by male whipsnakes most extensively during the mating season in spring. Female whipsnakes use grassland areas most extensively after mating, possibly in their search for suitable egg-laying sites.
>
> The only evidence of Alameda whipsnake egg-laying is within a grassland community adjacent to a chaparral community. This egg-laying occurred within a few feet of scrub on un-grazed grassland interspersed with lots of scattered shrubs. At two sites, gravid females have been found in scrub. The current distribution of the subspecies has been reduced to five separate areas with little or no interchange due to habitat loss, alteration, and fragmentation:
>
> 1. Sobrante Ridge, Tilden/Wildcat Regional Parks to the Briones Hills, in Contra Costa County (Tilden-Briones population);
>
> 2. Oakland Hills, Anthony Chabot area to Las Trampas Ridge, in Contra Costa County (Oakland-Las Trampas population);
>
> 3. Hayward Hills, Palomares area to Pleasanton Ridge, in Alameda County (Hayward-Pleasanton Ridge population);
>
> 4. Mount Diablo vicinity and the Black Hills, in Contra Costa County (Mount Diablo-Black Hills population); and
>
> 5. Wauhab Ridge, Del Valle area to the Cedar Mountain Ridge, in (Sunol-Cedar Mountain population).

> Compared to the much more common chaparral whipsnake, the Alameda subspecies' historic range has always had a very restricted distribution. It most likely included all of the coastal scrub and oak woodland communities in the East Bay in Contra Costa, Alameda, and parts of San Joaquin and Santa Clara counties."

Is there suitable habitat for the species within the areas in which the Proposed Project may have direct effects?

NO: The Flood Control Channel and estuary are outside of the species range. Upland habitats needed by the species do not occur in the Flood Control Channel and adjacent park and urban development. Construction will occur only in the channel area between the levees, and no effects to upland habitats are anticipated to occur.

Is there evidence that the species actually occurs within the areas in which the Project may have direct or indirect effects?

NO: ACFCD have never found Alameda whipsnake in surveys and the species is not generally surveyed in the urban floodplain. This action would not affect the species.

8.14.2 Significance of Effect

Given the isolation of the Proposed Project area from suitable habitats and the extremely low likelihood of the species in the Flood Control Channel, the Proposed Project will not affect Alameda whipsnake or its habitat. No impacts are expected from the Proposed Project.

8.14.3 No Action Alternative

No construction activity or changes would occur. No impacts to Alameda whipsnake or their habitat would occur under the no action alternative.

8.15.0 Western Snowy Plover (Threatened, USFWS)

The western snowy plover is a small shorebird that nests adjacent to tidal waters of the Pacific Ocean and mainland coast, peninsulas, offshore islands, adjacent bays, estuaries, and coastal rivers. Pacific coast plovers typically forage for small invertebrates in wet or dry beach-sand, among tide-cast kelp, and within low foredune vegetation (U.S. Fish and Wildlife Service 2004). Some plovers use dry salt ponds and river gravel bars. The breeding season in the United States extends from March 1 through September 30, although courtship activities have been observed during February. The species breeds and nests above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries (U.S. Fish and Wildlife Service 2001). Less common nesting habitat includes bluff-backed beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and river bars (U.S. Fish and Wildlife Service 2001).

Breeding at river bars has been studied in Northern California on the Eel River (Colwell *et al*. 2005. Snowy Plover reproductive success in beach and river habitats. *J. Field Ornithology* 76(4):373–382). Colwell *et al.* (2005) describe the habitat characteristics of the riverine bar breeding area:

> "Plovers bred at gravel bars along the lower Eel River, from its confluence with the Pacific Ocean upriver approximately 14 km (Colwell *et al*. 2004). River-breeding plovers nested in coarse, heterogeneous substrates varying in size from sand to pea-sized gravel and large stones, which were sparsely vegetated by willow (*Salix* spp.) and white sweet clover (*Melilotus alba*)."

8.15.1 Habitat and Distribution

In the South San Francisco Bay, Western snowy plovers are known to breed and forage in the Don Edwards San Francisco Bay National Refuge. Review of annual breeding surveys at the refuge (San Francisco Bay Bird Observatory 2004 to 2010) documents breeding and foraging along levees and within the various salt marsh pond areas. There is no record of breeding upstream of the refuge and no record of foraging in the freshwater channel.

Is there suitable habitat for the species within the areas in which the Proposed Project may have direct or indirect effects?

The Proposed Project construction reach occurs upstream of known breeding habitat, and the open, sandy, beach and salt-marsh conditions typical of breeding and foraging habitat of the species does not occur in the Flood Control Channel. The species is known to use gravel bars in the tidal/freshwater interface in the Eel River estuary, but this is considered a localized anomaly. There is, however, a hypothetical potential for the species to forage in the lower reaches of the tidal/freshwater mixing zone which may be affected by construction-related runoff.

Is the habitat designated as Critical Habitat for the species or is it a component of the species Recovery Plan (if one exists)?

NO: The shoreline of the downstream marsh and Bay are designated critical habitat. The Flood Control Channel is outside of this designated critical habitat area.

Is there evidence that the species actually occurs within the areas in which the Proposed Project may have direct or indirect effects?

The species may forage in the lower reaches of the tidal/freshwater mixing zone.

Is there a probability of direct or indirect effects to the species and, if so, what is the potential magnitude of effect?

Potential: In the estuary, construction related runoff may affect water quality in foraging areas. This could occur if construction in the Flood Control Channel resulted in spills of hazardous materials, such as fuels and lubricants and uncured concrete grout. If a substantial spill occurs, it would be considered a significant adverse impact.

To avoid and minimize such effects, ACFCD will implement measures **HH1** and **HWQ1-10**, Table 7.

8.15.2 Significance of Effect

Given these considerations, the implementation of rigorous hazardous materials avoidance and minimization protocols is necessary to preclude direct water-quality effects. The successful record of ACFCD in implementing such protocols is documented in recent monitoring reports from similar activities. With these avoidance and minimization measures, the Proposed Project may affect, but is unlikely to adversely affect, Western snowy plover or its habitat. Impacts of the Proposed Project are considered to be less-than-significant.

8.15.3 No Action Alternative

No construction activity or changes would occur. No impacts to Western snowy plover or their habitat would occur under the no action alternative.

8.16.0 California Clapper Rail (Endangered, USFWS)

The California clapper rail is a large rail now found almost entirely in brackish marsh and coastal salt marsh within the San Francisco Bay area. California clapper rail breeding and nesting/rearing occurs from February through August. The species is sensitive to disturbance, changes in hydrology and salinity, and chemical contamination of its habitat (USFWS Species Account, http://www.fws.gov/sacramento/es/animal_spp_acct/acctbird.htm). The species is threatened, in part by loss of habitat: "Much of the East Bay shoreline from San Leandro to Calaveras Point is rapidly eroding, and many marshes along this shoreline could lose their clapper rail populations in the future, if they have not already."

Clapper rails are most active in early morning and late evening, when they forage in marsh vegetation in and along creeks and mudflat edges. They often roost at high tide during the day.

8.16.1 Habitat and Distribution

The USFWS Species Account described the habitat and distribution as follows (http://www.fws.gov/sacramento/es/animal_spp_acct/acctbird.htm):

> "Throughout their distribution, California clapper rails occur within a range of salt and brackish marshes. In south and central San Francisco Bay and along the perimeter of San Pablo Bay, rails typically inhabit salt marshes dominated by pickleweed (*Salicornia virginica*) and Pacific cordgrass (*Spartina foliosa*). Pacific cordgrass dominates the middle marsh zone throughout the south and central Bay. Clapper rails have rarely been recorded in nontidal marsh areas."
>
> "California clapper rails are now restricted almost entirely to the marshes of San Francisco estuary, where the only known breeding populations occur. In south San Francisco Bay, there are populations in all of the larger tidal marshes. Distribution in the North Bay is patchy and discontinuous, primarily in small, isolated habitat fragments. Small populations are widely distributed throughout San Pablo Bay. They are present sporadically and in low numbers at various locations throughout the Suisun Marsh Area (Carquinez Strait to Browns Island, including tidal marshes adjacent to Suisun, Honker, and Grizzly Bays)."

Is there suitable habitat for the species within the areas in which the Proposed Project may have direct or indirect effects?

YES: Recent (2010) surveys for California clapper rail by the San Francisco Estuary Invasive Spartina Project and the Point Reyes Bird Observatory (PRBO) generally limit surveys to areas under tidal influence, although PRBO surveys extend to the highest tidal marsh and channel boundaries. In lower Alameda Creek, maps of PRBO surveys indicate that surveys extend to approximately 0.8 miles downstream of Interstate 880 at the western end of the Don Edwards San Francisco Bay National Refuge. This is consistent with the clapper rail's primary use of salt marsh/estuarine habitats. There is no habitat within the Flood Control Channel, but downstream habitat may be affected by construction-related runoff.

Is the habitat designated as Critical Habitat for the species or is it a component of the species Recovery Plan (if one exists)?

There is no designated Critical Habitat. However, in the Central/South San Francisco Bay, recovery Units "r" and "s" extend from the mouth of Alameda Creek upstream to approximately the Union Pacific Railroad Bridge. This area may be affected by construction-related runoff.

Is there evidence that the species actually occurs within the areas in which the Proposed Project may have direct or indirect effects?

YES: There is some evidence from recent surveys that California clapper rail may forage in the tidal/freshwater mixing zone (San Francisco Estuary Invasive Spartina Project 2010 and Point Reyes Bird Observatory 2006-2010). These surveys confirm foraging along the channel in the reach downstream of the freshwater/tidal mixing zone. Also an ACFCD 2011 survey recorded presence below the UPRR crossing.

Is there a probability of direct or indirect effects to the species and, if so, what is the potential magnitude of effect?

Potential: The California clapper rail could forage in the downstream estuary reach. There is thus a potential for direct construction activity effects and effects associated with construction-related water quality, such as hydrocarbon spills that could affect foraging in the Recovery Plan area. Individuals and habitats could be harmed. If a substantial spill occurs, it would be considered a significant adverse impact.

To avoid and minimize such effects, ACFCD will implement measures **C1-7, HH1** and **HWQ1-10**, Table 7.

8.16.2 Significance of Effect

The implementation of rigorous hazardous materials avoidance and minimization protocols would substantially reduce the likelihood and magnitude of water quality effects. With these avoidance and minimization measures, the Proposed Project may affect, but is not likely to adversely affect, California clapper rail or its habitat. Impacts of the Proposed Project are considered to be less-than-significant.

8.16.3 No Action Alternative

No construction activity or changes would occur. No impacts to California clapper rail or their habitat would occur under the no action alternative.

8.17.0 California Least Tern (Endangered, USFWS)

The USFWS Five-Year Review of the California least tern (2006) provides a comprehensive evaluation of the species status, habitat, and distribution, and the following analysis is based primarily on this status review.

8.17.1 Habitat and Distribution

The California least tern is a migratory shorebird, breeding in defined colonies and nesting on open beach habitats from San Diego to the San Francisco Bay. The species nests in colonies on relatively open beaches kept free of vegetation by natural scouring from tidal action. California least terns forage primarily in near-shore ocean waters and in shallow estuaries and lagoons and may also forage close to shore in ocean waters. Foraging is generally within 2 miles of breeding/nesting sites.

In the San Francisco Bay Area, designated management areas are the Alameda Naval Station (Alameda Point), Alvarado Salt Ponds, and the Oakland Airport. The 2009 California Department of Fish and Wildlife surveys for California least terns identified breeding terns at five Bay Area locations (from north to south):

- Napa-Sonoma Marsh;
- Montezuma Wetlands;
- Alameda Point;
- Hayward Shore; and
- Eden Landing.

The Hayward Shore and Eden Landing sites are within 5 miles of the Flood Control Channel. At these sites, primary forage was top smelt, reflecting the tern's typical foraging patterns in saltwater environments.

Is there suitable habitat for the species within the areas in which the Proposed Project may have direct or indirect effects?

California least tern is not known to breed, nest, or forage in freshwater habitats and will not occur in the Flood Control Channel where the construction activity will occur. However, the tern may forage in the freshwater/tidal mixing zone downstream of Interstate 880 to the mouth of the creek.

Is the habitat designated as Critical Habitat for the species or is it a component of the species Recovery Plan (if one exists)?

There is no Critical Habitat designated. In the South San Francisco Bay, the shoreline and estuarine habitats of the Don Edwards San Francisco Bay National Refuge constitute a functional recovery unit and include the foraging areas along the Flood Control Channel estuarine reach downstream of the Union Pacific Railroad Bridge.

Is there evidence that the species actually occurs within the areas in which the Proposed Project may have direct or indirect effects?

California least tern is known to forage along the Bay and the estuary reach of Alameda Creek where construction runoff may have direct effects.

Is there a probability of direct or indirect effects to the species and, if so, what is the potential magnitude of effect?

Potential: No direct effects are anticipated upstream of Alvarado Boulevard, the area within the Flood Control Channel were construction would occur is located outside of the range of the species, and there is no suitable breeding or foraging habitat in the Flood Control Channel where construction would occur. Downstream of the Union Pacific Railroad Bridge, there is a potential for foraging, primarily in the lower end of the freshwater/tidal mixing zone.

There is thus a potential for direct construction activity effects and effects associated with construction-related water quality, resulting from accidental hydrocarbon spills that could affect foraging in the Recovery Plan area. Individuals and habitats could be harmed and it would be considered a significant adverse impact.

To avoid and minimize such effects, ACFCD will implement measures **C1-7, HH1** and **HWQ1-10**, Table 7.

8.17.2 Significance of Effect

The implementation of rigorous hazardous materials avoidance and minimization protocols would substantially reduce the likelihood and magnitude of water quality effects. With these avoidance and minimization measures, the Proposed Project may affect, but is unlikely to adversely affect, the California least tern or its habitat. Impacts of the Proposed Project are considered to be less-than-significant.

8.17.3 No Action Alternative

No construction activity or changes would occur. No impacts to California least tern or their habitat would occur under the no action alternative.

8.18.0 Salt Marsh Harvest Mouse (Endangered, USFWS)

As described in the USFWS Sacramento Office Species Account: "The salt marsh harvest mouse (*Reithrodontomys raviventris*), also known as the "red-bellied harvest mouse," is a small native rodent in the Cricetidae family, which includes field mice, lemmings, muskrats, hamsters and gerbils. There are two subspecies: the northern (*R. r. halicoetes*) and southern (*R. r. raviventris*). The northern subspecies lives in the marshes of the San Pablo and Suisun bays, the southern in the marshes of Corte Madera, Richmond and South San Francisco Bay."

8.18.1 Habitat and Distribution

The USFWS species account describes the habitat of the species as follows:

> "Salt marsh harvest mice are critically dependent on dense cover and their preferred habitat is pickleweed (*Salicornia virginica*). Harvest mice are seldom found in cordgrass or alkali bulrush. In marshes with an upper zone of peripheral halophytes grindella (salt-tolerant plants), mice use this vegetation to escape the higher tides, and may even spend a considerable portion of their lives there. Mice also move into the adjoining grasslands during the highest winter tides.
>
> The mice probably live on leaves, seeds and stems of plants. In winter, they seem to prefer fresh green grasses. The rest of the year, they tend toward pickleweed and Saltgrass. They have longer intestines than the western harvest mouse, which is a seed eater. The northern subspecies of the salt marsh mouse can drink sea water for long periods but prefers fresh water. The southern subspecies can't subsist on sea water but it actually prefers moderately salty water over fresh.
>
> The two subspecies are restricted to the salt and brackish marshes of San Francisco, San Pablo, and Suisun Bay areas. The southern subspecies inhabits central and south San Francisco Bay."

The USFWS 2010 Status Review describes the current distribution of the species;

> "The current known distribution (surveyed locations) of the salt marsh harvest mouse can be found in Figure 1 (California Natural Diversity Database 2009). Staff from CDFG are currently working with their vegetation group and will have all of the potential habitat in Suisun Marsh mapped soon (Barthman-Thompson, *in litt*. 2009). In general, distribution can be estimated from the remaining suitable diked and tidal marsh habitat, and the review of live-trapping surveys, although trapping data are limited (Zetterquist 1976; Larkin 1984; Shellhammer 1984; Bias and Morrison 1993). Much of the data on local abundance and distribution of the salt marsh harvest mouse have been derived from local short-term studies, usually conducted on privately owned diked baylands proposed for land use changes (Shellhammer, pers. comm. 2005). These data must be interpreted with caution as data become quickly outdated."

Regarding the southern population, the 2010 Status Review notes:

> "Studies by Shellhammer (Shellhammer, pers. comm. 2005) indicate that population size is generally correlated with the depth of the *Sarcocornia* plain (*i.e*., the middle zone of tidal marshes). There are indications that deep (from shore to bay) *Sarcocornia* marshes, especially if they have islands of *Grindelia* within them, may provide enough habitat for the mice such that they can compensate for extremely narrow high marshes at their upper edges. Corridors (sometimes referred to as strip or narrow fringing marshes, but also can be bands of appropriate vegetation between two larger marshes) tend to have narrower *Sarcocornia* zones, as well as extremely narrow high marsh zones, and support few to no salt marsh harvest mice (Shellhammer, *in litt*. 2009). In fact, the narrower the strip marsh, the more frequently and intensely it floods (Albertson *in litt*. 2009). Most of the marshes of the South San Francisco Bay are strip-like marshes and, as such, support few harvest mice. In strip-like marshes identified as marsh corridors to connect habitat areas, the relative value of the width and complexity of the high marsh zone increases as the width of the middle marsh, or pickleweed/*Sarcocornia* zone, diminishes (Shellhammer, pers. comm. 2005)."

Given the close linkage between pickleweed and the salt marsh harvest mouse, the range of pickleweed plays a large role in the species distribution. A recent report describes the relationship between salinity and pickleweed:

> "The biomass of pickleweed is mostly affected by salinity, flooding, and nutrients. The role of salinity has been examined extensively in halophyte biology (Barbour and Davis 1970). Although many halophytes grow faster and attain a higher biomass when freshwater is available (Barbour and Davis 1970, Snow and Vince 1984), pickleweed requires some salt for optimum growth (Barbour and Davis 1970, Griffith Unpublished data). Salinities of 10 ppt typically yield optimum growth (Josselyn 1983). In freshwater, plants often accumulate less biomass, are less succulent with weakened re-rooting capabilities (Griffith Unpublished data), and are easily outcompeted (Zedler 1982, Allison 1992). Thus, while reducing salt stress can lead to rapid establishment and growth (Allison 1996), prolonged periods of growth in freshwater can stunt growth (Allison 1992) and ultimately kill the plant (Zedler 1982)." (Griffith, KA. 2010 Elkhorn Slough Technical Report Series 2010. Pickleweed: factors that control distribution and abundance in Pacific Coast estuaries and a case study of Elkhorn Slough. California Elkhorn Slough National Estuarine Research Reserve and the Elkhorn Slough Foundation).

Based on CDFW surveys cited in the 2010 Status review and the salinity of the lower reaches of the creek, the known breeding distribution of the species in Alameda Creek ends in the high marsh area about a mile downstream the proposed project downstream limits at the UPRR. Some use of habitat in the vicinity of the Union Pacific Railroad Bridge is probable. Finally, Shellhammer (1998) describes the habitat requirements of the species:

> "Salt marsh harvest mice are what scientists call "cover dependent species" in that they only live under thick vegetation." (Shellhammer, Howard. 1998. A Marsh is a Marsh is a Marsh But not Always to a Salt Marsh Harvest Mouse. Tideline Vol 18 No. 4 1-3.)

Is there suitable habitat for the species within the areas in which the Proposed Project may have direct and indirect effects?

Potential: There is potential for salt marsh harvest mouse to occur in the estuary reach, at least as a transient forager or when escaping from inundation during periods of high tides. In this reach, (downstream of the UPRR crossing) there is a small potential for the species to be affected by runoff from construction activity while foraging along the shoreline.

Is the habitat designated as Critical Habitat for the species or is it a component of the species Recovery Plan (if one exists)?

NO: There is no Critical Habitat designated for salt marsh harvest mouse. The USFWS (2010) 5-year review maps areas of potential recovery units and shows potential use of Alameda Creek upstream to Ardenwood Boulevard.

Is there evidence that the species actually occurs within the areas in which the Proposed Project may have direct effects?

YES: Annual CDFW surveys confirm that the species may use channel levees in channel floodplain habitats intermittently from Ardenwood Boulevard to the mouth of the estuary. Post-construction runoff under high flows could therefore bring silt and contaminants from construction into the species habitat.

Is there a probability of direct and indirect effects to the species and, if so, what is the potential magnitude of effect?

Potential: There is thus a potential for direct construction activity effects and effects associated with construction-related water quality, such as hydrocarbon spills that could affect foraging in the lower reach of the Flood Control Channel and the estuary. Individuals and habitats could be harmed. If a substantial accidental spill occurs, it would be considered a significant adverse impact.

To avoid and minimize such effects, ACFCD will implement measures **C1-7, HH1** and **HWQ1-10**, Table 7. These protocols have been successfully implemented by ACFCD in similar previous projects.

8.18.2 Significance of Effect

The implementation of rigorous hazardous materials avoidance and minimization protocols would substantially reduce the likelihood and magnitude of adverse water quality effects. With these avoidance and minimization measures, the Proposed Project may affect, but is unlikely to adversely affect, the salt marsh harvest mouse or its habitat. Impacts of the Proposed Project are considered to be less-than-significant.

8.18.3 No Action Alternative

No construction activity or changes would occur. No impacts to the salt marsh harvest mouse or their habitat would occur under the no action alternative.

8.19.0 San Joaquin Kit Fox

The San Joaquin kit fox inhabited much of California's San Joaquin Valley prior to 1930. Its range extended from southern Kern County north to eastern Contra Costa County on the Valley's west side and to Stanislaus County on the east side. By 1930 its range may have been reduced to half, mostly in the southern and western San Joaquin Valley and foothills. In 1979 only 6.7% of land south of Stanislaus County remained undeveloped. Today the San Joaquin kit fox inhabits a highly fragmented landscape of scattered remnants of native habitat and adoptable, altered lands within and on the fringe of development. The largest extant populations are in western Kern County on and around the Elk Hills and Buena Vista Valley and in the Carrizo Plain Natural Area in San Luis Obispo County. The most northerly current distribution records include the Antioch area of Contra Costa County (EPA at www.epa.gov/espp/factsheets/san-joaquin-kitfox.pdf).

8.19.1 Habitat and Distribution

The USFWS species account describes the habitat of the species as follows:

> "Kit foxes are, however, found in grassland and scrubland communities, which have been extensively modified by humans with oil exploration, wind turbines, agricultural practices and/or grazing. The kit fox population is fragmented, particularly in the northern part of the range."

EPA describes San Joaquin Kit Fox (www.epa.gov/espp/factsheets/san-joaquin-kitfox.pdf):

> "Because the San Joaquin kit fox requires dens for shelter, protection and reproduction, a habitat's soil type is important. Loose-textured soils are preferable, but modification of the burrows of other animals facilitates denning in other soil types. The historical native vegetation of the Valley was largely annual grassland ("California Prairie") and various scrub and subshrub communities. Vernal pool, alkali meadows and playas still provide support habitat, but have wet soils unsuitable for denning. Some of the habitat has been converted to an agricultural patchwork of row crops, vineyards, orchards and pasture. Other habitat has been converted to urban areas and roads, wind farms, and oil fields. San Joaquin kit foxes can use small remnants of native habitat interspersed with development provided there is minimal disturbance, dispersal corridors, and sufficient prey-base."

Is there suitable habitat for the species within the areas in which the Project may have direct and indirect effects?

San Joaquin kit foxes are acclimated to urban areas as long as there is forage for them. There is a potential for the species to occur in habitat upstream of the Proposed Project but riverine habitats are not suitable habitats for the species. Therefore, it is unlikely that kit fox would be present in the Flood Control Channel where construction would occur.

Is there evidence that the species actually occurs within the areas in which the Proposed Project may have direct effects?

A survey of Contra Costa County and Alameda Counties within the known range of the San Joaquin kit fox found no evidence of recent occupancy (Clark *et al*. 2003 cited in the East Contra Costa Habitat Conservation Plan 2010). "This study used a combination of ground surveys on public lands using trained dogs to find fox scat, and aircraft surveys over the entire area in search of active dens. Detection dogs have been found to be extremely effective and efficient at locating scat of San Joaquin kit fox. The identity of all scat found was verified with DNA testing. Despite a total of 139.4 km surveyed by the detection dog in 2002 in Contra Costa and Alameda Counties (81.0 km in Contra Costa County), no sign of San Joaquin kit fox was found. Nine dens were observed on the 4 days of aerial surveys that had the potential to be kit fox dens. Of the six dens that could be field checked, none were active; the remaining dens were on private land or in inaccessible areas. These results do not prove absence of kit fox from the inventory area (e.g., no private land was surveyed with detection dogs), but do suggest that kit fox density is low or their occurrence is periodic in the inventory area."

There is thus no record of San Joaquin kit fox in the vicinity of the Flood Control Channel. Their presence in the Flood Control Channel is unlikely.

Is there a probability of direct and indirect effects to the species and, if so, what is the potential magnitude of effect?

NO: There is no mechanism for the Proposed Project to affect San Joaquin kit fox. The Proposed Project would not adversely affect the species, either directly or indirectly.

8.19.2 Significance of Effect

The Proposed Project will not affect San Joaquin kit fox. No impacts of the Proposed Project are expected to occur.

8.19.3 No Action Alternative

No construction activity or changes would occur. No impacts to San Joaquin kit fox or their habitat would occur under the no action alternative.

8.20.0 Contra Costa Goldfields

The USFWS Species Account for Contra Costa goldfields (*Lasthenia conjugens*) notes that the species "occurred historically in seven vernal pool regions: Central Coast, Lake-Napa, Livermore, Mendocino, Santa Barbara, Santa Rosa, and Solano-Colusa (Figure II-7) (Keeler-Wolf et.al. 1998). In addition, several historical occurrences in Contra Costa County are outside of the defined vernal pool regions (Keeler-Wolf *et al*. 1998, California Natural Diversity Data Base 2003)".

8.20.1 Habitat and Distribution

The USFWS species account describes the habitat of the species as follows:

> "*Lasthenia conjugens* typically grows in vernal pools, swales, moist flats, and depressions within a grassland matrix (California Natural Diversity Data Base 2003). However, several historical collections were from populations growing in the saline-alkaline transition zone between vernal pools and tidal marshes on the eastern margin of the San Francisco Bay (P. Baye in litt. 2000a). The herbarium sheet for one of the San Francisco Bay specimens notes that the species also grew in evaporating ponds used to concentrate salt (P. Baye in litt. 2000b). The vernal pool types from which this species has been reported are Northern Basalt Flow, Northern Claypan, and Northern Volcanic Ashflow (Sawyer and Keeler-Wolf 1995). The landforms and geologic formations for sites where *L. conjugens* occurs have not yet been determined. Most occurrences of *L. conjugens* are at elevations of 2 to 61 meters (6 to 200 feet), but the recently discovered Monterey County occurrences are at 122 meters (400 feet) and one Napa County occurrence is at 445 meters (1,460 feet) elevation (California Natural Diversity Data Base 2003)."

Is there suitable habitat for the species within the areas in which the Project may have direct and indirect effects?

NO: The USFWS Species Account identifies two extant sites in Alameda County, to the west of Interstate 880 at the border of Alameda and Santa Clara counties. These are the only sites known in Alameda County. The Alameda County sites are in a vernal pool complex. The Proposed Project action area does not include any suitable vernal pool area.

Is there evidence that the species actually occurs within the areas in which the Proposed Project may have direct effects?

NO: There is no record of Contra Costa goldfields outside of vernal pool habitat and no record of such habitat in the Proposed Project Action Area.

8.20.2 Significance of Effect

There is no potential for the Proposed Project to affect Contra Costa goldfields. The Proposed Project will not result in impacts to the species or its habitat.

8.20.3 No Action Alternative

No construction activity or changes would occur. No impacts to Contra Costa goldfields or their habitat would occur under the no action alternative.

8.21.0 Potential Effects on Unlisted Sensitive Species

The following six unlisted sensitive species that could occur in the Flood Control Channel are: Western pond turtle, California horned lizard, Pacific lamprey, Loggerhead shrike, Western burrowing owl and Raptors. Each species is discussed below

8.21.1 Western Pond Turtle

Western pond turtles have not been found in the numerous surveys conducted by ACFCD and ACWD in lower Alameda Creek.

If western pond turtles were found in the Flood Control Channel in areas where construction will occur, there is a potential for injury of individuals. Accordingly, within 15 days prior to construction activities, a qualified biologist will survey for western pond turtles. If turtles are found the biologist shall relocate the pond turtle to suitable habitat and an exclusion fence will be installed to prevent movement of turtles back into the construction area (**C13** in Table 7, above). Monitoring and relocation will reduce potential effects to a less-than-significant level.

8.21.2 Loggerhead shrike

Loggerhead shrike occur in grasslands and open woodland, nesting in dense, often thorny brush. They are likely to forage in and along Alameda Creek, but there is no suitable nesting habitat in the Proposed Project action areas. Loggerhead shrike have not been found in surveys in the Flood Control Channel. No construction activity will occur as part of the Proposed Project that would impact grasslands or open woodlands which precludes any mechanism for effect.

Given these considerations, the potential for the Proposed Project to affect loggerhead shrike is minimal. The species may be a transient forager in the area and there is a large area of foraging habitat in the Quarry Lakes. Significant effects are not anticipated.

8.21.3 Western Burrowing Owl

Western burrowing owls are known to utilize burrows in earthen levees, for example in the vicinity of San Jose Airport along Coyote Creek. They have never been found in surveys of lower Alameda Creek. Levees in the Flood Control Channel are generally paved and adjacent areas such as in Quarry Lakes Park are routinely maintained. Western burrowing owls may use the estuary reach along earthen levees and in upland portions of the marsh complex. This upland habitat is out of the potential area of effects associated with construction activities.

It is very unlikely that western burrowing owls would establish burrows along the levees of the Flood Control Channel, but likely for the species to forage in the vicinity. To avoid and minimize these potential effects, ACFCD will implement the following measures measure **C12** in Table 7. With this avoidance and minimization, the potential for the Proposed Project to adversely affect western burrowing owls will be reduced to less-than-significant.

8.21.4 California Horned Lizard

California horned lizard is typically found in open sandy areas in deserts, chaparral, grassland, often near ant hills, it is often seen basking on asphalt roads or low rocks in the morning or afternoon. The species has not been found in multiple surveys along the project area in the Flood Control Channel where construction would occur. It is not likely to occur in areas that may be affected by construction activity such as the Flood Control Channel or equipment access to the channel. Home range of this species is limited. Although the species is not likely to occur on site, measure **C15** in Table 7 (above) would be implemented to avoid and minimize any potential effect from construction activities.

8.21.5 Pacific Lamprey

Pacific lamprey are known to occur in the Flood Control Channel and estuary. They migrate into the upper reach to spawn and juveniles burrow into the channel bottom and rear in downstream channels for an extended period of time. They can pass over the existing barriers to migration at high flows and are anticipated to be able to utilize the ACFCD Drop Structure/BART Weir fish ladder. There is a potential for several adverse effects to Pacific lamprey:

- Construction activity may injure and kill juveniles that have burrowed into the sandy bottom of the Flood Control Channel; and

- Juveniles in the Flood Control Channel and estuary may be injured or killed by accidental spills of fuels, lubricants, uncured concrete, and other materials.

These adverse effects are likely to occur in the active channel. ACFCD will avoid and minimize these effects with a fish rescue program (measure **C11** in Table 7)

- Following installation of barriers to isolate construction sites from the active channel a qualified fisheries biologist and team will conduct a fish rescue for the stranded fish prior to initiation of construction activities. Fish removed from the site will be returned up or downstream of the temporary dewatered zone.

8.21.6 Raptors

There is a potential for raptors in the Flood Control Channel and estuary reach to forage in the Proposed Project areas of these reaches. Nesting is unlikely due to the high levels of ambient disturbance, and there is no mechanism for effects to trees and terrestrial vegetation outside of the channel. Foraging may result in raptors entering the areas during project activities. Although raptors may nest and forage in the Quarry Lakes area, they have not been identified in surveys in the Flood Control Channel. Dense and isolated nesting habitat is most likely to occur in the less-used areas of the Quarry Lakes Recreation Area. There is no raptor habitat adjacent to the Flood Control Channel, dominated by heavy residential and industrial development. To the extent that raptors may forage, and the less likely extent that they nest, in the vicinity of the Flood Control Channel, potential effects would be:

- Construction disturbance may temporarily preclude foraging raptors from Flood Control Channel areas where they may incidentally have found prey; and

- In the unlikely event that raptors nest in the trees adjacent to the Flood Control Channel, nesting could be affected. Noise and other disturbance may result in nest abandonment.

To address these potential adverse effects, ACFCD will:

Within 15 days prior to construction activities, a qualified biologist would survey for raptor nests in areas within 500 feet of proposed construction sites (measure **C14** in Table 7, above). Any raptors found nesting in the vicinity of the Proposed Project would necessarily be in areas with high existing levels of human noise and visual disturbance. In consultation with CDFW, ACFCD would determine the appropriate measures for addressing nesting raptors, including the possibility that no construction would be initiated until young have fledged as determined by a qualified biologist. The non-occupied nest could be removed during the nonbreeding season. If an active nest of the species is found within 100 feet of a planned construction site, if feasible, ACFCD would establish appropriate no disturbance clearly marked buffers around the nest sites until young have fledged in consultation with CDFW.

8.21.7 No Action Alternative

No construction activity or changes would occur. No impacts to species and habitats listed in section 8.21.1 – 8.21.7 would occur under the no action alternative.

8.21.8 Significance of Effect

The potential for adverse effects to species and habitat listed above (section 8.21.1 – 8.21.7) is low and the implementation of the avoidance and minimization measures (Tables 6 and 7) will reduce any effects to a level of less-than-significant.

9.0 CULTURAL RESOURCES

This section discusses cultural resources in the Action/Project vicinity, potential effects resulting from the proposed Action/Project, and mitigation measures needed to reduce any potentially significant effects to cultural resources. A Cultural resource is the term used to describe several different types of resources and properties, including archaeological, architectural, and traditional cultural properties. Archaeological sites may include both prehistoric and/or historic deposits. In addition to requiring evaluation under NEPA and CEQA, such resources may be subject to various federal and state laws, and local statutes such as Section 106 of the National Historic Preservation Act (NHPA) of 1966.

NEPA: NEPA directs federal agencies to prepare a detailed statement of the environmental impacts of any "major federal action significantly affecting the quality of the human environment." The "human environment" consists of many aspects, including what NEPA terms "cultural resources." Under NEPA, cultural resources include historic properties as defined under Section 106 of the National Historic Preservation Act. Cultural resources also include the cultural use of the physical and natural environment, social institutions, lifeways, religious practices, and other cultural institutions. According to the NEPA regulations, in considering whether an action may "significantly affect the quality of the human environment," an agency must consider:

- Unique characteristics of the geographic area such as proximity to historic or cultural resources (40 CFR 1508.27(b) (3)); and
- The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places (40 CFR 1508.27(b)(8)).

Section 106: Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and afford the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation a reasonable opportunity to comment. Section 101 of the NHPA authorizes the Secretary of the Interior to expand and maintain a National Register of Historic Places composed of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture.

CEQA: CEQA provides for the documentation and mitigation of significant cultural resources. Prior to the approval of discretionary projects and the commencement of agency undertakings, the potential impacts of a Project on archaeological and historical resources must be considered (Public Resources Code Sections 21083.2 and 21084.1 and the CEQA Guidelines [California Code of Regulations Title 14, Section 15064.5]). The CEQA Guidelines define a significant historical resource as "a resource listed or considered eligible for listing on the California Register of Historical Resources" (CRHR) (Public Resources Code Section 5024.1). Eligibility for listing on the CRHR is similar to eligibility for listing on the National Register.

Would the project:

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

9.1 Environmental Setting

The configuration of the San Francisco Bay margins has changed through time due to climatic change and geologic events. Cultural modification of the project area landscape includes aboriginal habitat modification, bay fill and later, water management generally completed as part of flood control and increasing urban development. Land filling related to historic industrial development over the past 125 years has resulted in the reduction of the bay by as much as one- third.

The project APE is on the alluvial plain approximately one mile east of the former marsh bordering southern San Francisco Bay with the Mission Hills/Mount Diablo Range to the east. The project's proximity to the bay margin and associated marshlands, the Coyote Hills to the west, the passes through Niles Canyon to the east and Mission Pass to the south and the presence of numerous seasonal streams and ponds as well as other water resources and a diverse vegetation mosaic, undoubtedly influenced both the prehistoric and historic use of the area. Project alignment elevation ranges from 24 feet to 9 feet above sea level moving downstream. Coyote Hills rise 300 feet above the surrounding marshland and alluvial plain, while the canyon and pass through Niles Canyon would have allowed major links to the interior.

Natural habitat prior to the filling of San Francisco Bay and urbanization included grasslands and pockets of oak woodland with a variety of small, medium and large mammals, shorebirds

and various invertebrates along the bay including the native California oyster (*Ostrea lurida*), bay mussel (*Mytilus edulis*), and bent-nosed clam (*Macoma nasuta*) among others. The general project area involved small freshwater marshes, tidal sloughs, and salt marshes along the bay margin. The local climate is characterized as Mediterranean with mild, rainy winters and dry, warm summers. The average annual precipitation is 16 inches; mean annual temperature is 57 degrees. The cold water of the bay also creates frequent fog, and relative humidity remains high most of the time.

Major drainage projects, including the channelization of creeks, have altered the alluvial landscape in the study area. The native grasses interspersed with thin scatters of trees have been replaced by a landscape of introduced European grasses and thistles with Coastal Live Oak, willow, and sycamore along the banks of the drainages. In addition, introduced trees such as eucalyptus, Black and English Walnut trees have generally replaced the natural vegetation in the area. Agriculture and urbanization have had a major impact on the Project area.

The old Alameda Creek channel meandered north and south of the channelized APE which cuts the former channel in numerous areas (see Sowers 1999). Just past I-880 the channel intersects the former alignment of Patterson Creek and flows southwest to a series of intersections with the former Crandall and Patterson creeks at the intersection with Union City Boulevard/Ardenwood Boulevard roughly 3,500 feet southwest of the UPRR tracks. At this point the channel and former creeks flow west forming an alluvial fan into San Francisco Bay.

The Alameda Creek Flood Control Channel passes through several soil types including Laugenour loam, Sycamore silt loam, and Yolo site loam as well various gravel pits due to commercial sand and gravel extraction.

Cultural resources are traces of human occupation and activity. In northern California, human occupation extends back in time for at least 9,000-11,500 years with Native American occupation and use of the Bay Area extending over 5,000-8,000 years and possibly longer. Evidence for early occupation along the bay shores has been hidden by rising sea levels from about 15,000 to 7,000 years ago, or was buried under sediments caused by bay marshland infilling along estuary margins from about 7,000 years onward. The locations of the shoreline, marshlands, and creeks within the project area have changed over the past 6,000 years due to either natural factors or urban development including flood control. In general, the prehistoric archaeological sites associated with the bay and inland areas are located close to water (e.g., creeks, marshes, and the shoreline).

The Project area was within an environmentally advantageous area for Native Americans during the prehistoric period prior to white contact. Prehistoric use of the general area was heavily influenced by the presence of various seasonal creeks, the San Francisco Bay marshlands around the bay margin, and the foothills to the east of the project. Local creeks would have provided a year-round source of water and riparian resources. In addition, travel would have been relatively easy between the bay shoreline and interior. The foothills would have provided access to acorns, seed, game, tool stone, etc. while San Francisco Bay and its margins along with the many perennial and seasonal creeks and sloughs would have been sources of shellfish, fish, waterfowl, and riparian vegetation.

Prehistoric site types in the general Project area include habitation sites ranging from villages to temporary campsites, stone tool and other manufacturing areas, quarries for tool stone procurement, cemeteries usually associated with large villages, isolated burial sites, rock art locations, bedrock mortars or other milling feature sites and trails. Archaeological sites in the general area appear to have been selected for relative accessibility, protection from seasonal flooding, and proximity to a diversified resource base. The majority of the prehistoric shellmounds and associated sites in the area are situated at the ecotone (boundary) between the salt marsh and alluvial plain ecozones.

Archaeological information suggests a slow steady increase in the prehistoric population over time with an increasing focus on permanent settlements with large populations in later periods. This change from hunter-collectors to an increased sedentary lifestyle is due both to more efficient resource procurement as well as a focus on staple food exploitation, the increased ability to store food at village locations, and the development of increasingly complex social and political systems including long-distance trade networks.

Several chronological schemes based on stratigraphic differences and the presence of various cultural traits have been developed to explain the archaeological record. A three-part cultural chronological sequence, the Central California Taxonomic System (CCTS) was developed by archaeologists to explain local and regional cultural change in prehistoric central California from about 4,500 years ago to the time of European contact.

Ethnographically the area is within the boundaries of the group known as the "Costanoan", derived from the Spanish word *Costanos* ("coast people" or "coastal dwellers") who occupied the central California coast as far east as the Diablo Range. The descendants of these Native Americans now prefer to be called Ohlone. In 1770, the Ohlone lived in approximately 50 separate and politically autonomous tribelets with each group having one or more permanent villages surrounded by a number of temporary camps. Physiographic features usually defined the territory of each group which generally supported a population of approximately 200 persons with a range of between 50-500 individuals. The camps were used to exploit seasonally available floral and faunal resources.

The Project area was probably utilized by pre-European peoples for thousands of years. In a 1981 EIR for reconfiguration of the recharge pits, ACWD literature searches indicated that there were significant known archeological sites in the general area of the Niles Quarries, including two sites located about a mile southeast and one site located about 350 yards east of Mission Boulevard. There are historic sites preserved as part of the Quarry Lakes Park and adjacent to several recharge pits. However, they are not located in the Proposed Project site and would not be affected by the project construction activities. The field surveys conducted by Basin Research Associates (2019) did not find surface evidence of archeological resources. Similar re-excavation and levee enhancement was undertaken by the Corps of Engineers when levees were re-constructed in 1969-1972. Recent EIRs, such as the City of Union City's 2005 EIR for its Intermodal Station Passenger Rail Project, found similar results, identifying the same suite of known sites but found no evidence of archeological resources within the area of potential impact for this project.

The Proposed Project will occur in the highly disturbed area between the existing Flood Control Channel levees. Excavations for the Flood Control Channel and bridge piers would have had similar effects. The flood control levees themselves were constructed using borrowed sand and gravel from the channel excavation (ESA 1989). These prior activities, along with on-going maintenance, have obliterated any potential surface evidence of archeological resources. The only corridors where land has not been disturbed to significant depths are the rail and road corridors, which were constructed along the crest of the gravel extraction pits. None of these areas would be affected by any of the Proposed Project elements regardless of the timing and schedule of construction.

9.2 Mechanisms for Effect

The Proposed Project would be constructed in soils that have previously been completely disturbed by excavation, grading, and re-contouring for levees and the constructed Flood Control Channel and/or at depths below those where use by prehistoric peoples is probable. Given the repeated and profound disturbance of the Flood Control Channel, there is virtually no mechanism by which the Proposed Project could affect a known significant cultural resource of any type. Excavations would not extend below levels of prior disturbance and there is thus no potential for these elements of the Proposed Project to affect buried resources.

9.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

As part of the Proposed Project a cultural resources survey was conducted by Basin Research Associates (2019). The survey included a review of available literature, contacts with local experts and Native American consultations, records searches, review of historic maps, and a field site inspection. Based on results of the surveys it was concluded that a finding of no historic properties affected was recommended since the Proposed Project was not expected to result in adverse impacts to historic cultural resources. This finding is consistent with a conclusion that there is no potential for the Proposed Project to encounter buried paleontological materials and/or Native American burials during construction.

9.4 No Action Alternative

Under the No Action alternative no construction activities would be conducted which precludes impacts associated with significance of an archeological resource**,** potential destruction of a unique paleontological resource or site or unique geologic feature, or disturbance of human remains.

9.5 Significance of Effect

The Proposed Project would not affect known archeological or paleontological resources. No significant impacts are anticipated.

ACFCD does not anticipate impacts to cultural and paleontological resources. The Alameda Creek channel within the Proposed Project limits is man-made. Construction of the Proposed Project would occur within the inboard levees and limited to the existing channel, would not have the potential to cause significant impacts to archeological or paleontological resources. Thus, no mitigation is proposed.

Potential project impacts to cultural resources are not anticipated.

10.0 GEOLOGY AND SOILS

Would the project:

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

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

ii) Strong seismic ground shaking?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

iii) Seismic-related ground failure, including liquefaction?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

iv) Landslides?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation

❒ Less-than-significant Impact ☒ No Impact

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?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

10.1 Environmental Setting

The Project is located on the Niles Cone alluvial fan, on coarse-grained to moderate-grained alluvium about 300 feet thick (ESA 1989). Soils are unconsolidated sands and gravels with intermittent lenses of fines. The levee consists of sands and gravels excavated from the creek bed (ESA 1989). The Proposed Project area is crossed by the active north-south trending Hayward Fault and a splay fault of the Mission Fault. The Alquist-Priolo Earthquake Fault Zoning Map for the Proposed Project area shows the Hayward Fault passing through the area. A Maximum Credible Earthquake of 7.5 on the open-ended Richter scale is feasible at the site. The Hayward Fault acts as a hydrologic barrier and groundwater levels are about 30 feet higher on the upstream side of the fault. General mapping of liquefaction zones (California Geological Survey 2004) shows the Flood Control Channel located in an area that has not been mapped, but ESA (1989) notes that liquefaction is unlikely given the coarse nature of the alluvium. General mapping confirms this, and there is no portion of the Flood Control Channel that is located in a zone where liquefaction is likely. Soils are coarse, well drained, resistant to erosion, and non-expansive. Recent alluvium in the stream channel includes some finer soil components which are deposited when flow rates in the channel are reduced.

10.2 Mechanisms for Effect

The Proposed Project would not alter fundamental geologic conditions at the construction sites. All portions of the creek channel and the levee locations degraded for access would be re-constructed to USACE standards. Thus, there is no mechanism by which the low flow channel or modifications to the existing Grade Control Structures could result in fundamental seismic and related hydrologic processes, or the risks associated with them. In addition, the Proposed Project would be constructed during dry periods (June through October) and there is only a remote potential for precipitation and runoff during this period. Potential for soil erosion during or following construction is thus virtually zero, except in the low-flow channel modification where initial wet season flows would probably scour the newly formed channel, a beneficial effect. Recruitment and downstream transport of sediments are natural stream processes and are contained within the Flood Control Channel. This aspect of the Proposed Project would have no effect on adjacent lands outside of the existing levees.

10.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA. The Proposed Project would have no adverse effects on geology and soils because:

- The coarse, well-drained soils in the Flood Control Channel are not subject to liquefaction;
- The riprapped levees have a high resistance to disturbance and modifications to the levees associated with the Proposed Project will not affect levee stability; and
- There is no urban or residential development within the Flood Control Channel.

10.4 No Action Alternative

No construction activity or changes would occur. No impacts to geologic features or soil would occur under the no action alternative.

10.5 Significance of Effect

The Proposed Project would not affect geology and soils and would not cause any of the effects which would be deemed significant under CEQA or NEPA. No adverse impacts are expected and no mitigation is proposed.

11.0 HAZARDS AND HAZARDOUS MATERIALS

Would the project:

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

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?

❒ Potentially Significant Impact ☒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ❒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

11.1 Environmental Setting

The lower Alameda Creek Flood Control Channel is located in an area that has historically been used for agriculture, followed by residential and commercial development, flood management, and recreation. There is residential housing and commercial development on both sides of the creek channel, vehicle bridges, and there is railroad-related industrial and commercial development south of the Flood Control Channel. There are no solid waste sites and no identified hazardous materials (superfund) sites (EPA 2005) within 2 miles of the Flood Control Channel. There are no schools within 0.25 miles and no airports within 2 miles of the Flood Control Channel. None of the planned modifications are in a designated fire zone.

11.2 Mechanisms for Effect

The Proposed Project does not involve routine storage, handling, emissions, or transport of hazardous materials. Project construction would occur outside of public roads and could not affect implementation of plans for addressing emergencies. Material hauling, such as hauling of concrete grout and rock to work sites or hauling excess sediment from the construction site to upland storage site would marginally increase local traffic. However, this traffic would be suspended during an emergency. All work within the Flood Control Channel levees would be conducted during periods of generally dry conditions (June-October) and levees and the Flood Control Channel would be reconstructed to specifications. There is minimal combustible material in and around the Proposed Project site and there is no potential for the Proposed Project to cause wildfires. To the extent that there is construction in or adjacent to the channel, there is a potential that fluid leaks from construction equipment could percolate through the soil and enter groundwater.

11.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

The Proposed Project has the potential to result in release of fuel and oil into the creek channel and into groundwater.

11.4 No Action Alternative

No construction activity or changes would occur. No increase in the risk of accidental spills would occur under the no action alternative.

11.5 Significance of Effect

Well maintained, modern construction equipment has a low potential for fuel, oil, and other fluid leaks, but if such leaks occur, they could be considered significant under CEQA and NEPA. During construction activities, ACFCD would implement Best Management Practices (Avoidance and Minimization measures), as outlined in measures **C1-7, HH1** and **HWQ1-10 in** Table 7.

Implementation of Best Management Practices would reduce the potential for significant hazards and hazardous materials impacts associated with construction of the Proposed Project to a level of less-than-significant.

12.0 HYDROLOGY AND WATER QUALITY

Would the project:

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

f) Otherwise substantially degrade water quality?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

j) Inundation by seiche, tsunami, or mudflow?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

12.1 Environmental Setting

The construction would take place in the Flood Control Channel. In the project reach, Alameda Creek is listed as an impaired water body by the Regional Water Quality Control Board for Diazinon related to urban runoff to the Flood Control Channel. Recent studies (SFEI 2005) show that diazinon and alternatives to Diazinon such as pyrethroids may concentrate in areas of fine sediments.

Diazinon and other pesticides have been found in the upper layers of creek sediments, in concentrations above established and proposed Total Maximum Daily Levels (TMDL). The SF Bay Area Regional Water Quality Control Board has proposed a TMDL for Diazinon of 100 ng/l (nanograms/liter or parts per trillion). Water quality in the creek is suitable for groundwater recharge. In the Project reach, flow is contained within a trapezoidal rip-rapped and leveed channel that varies in width in places from about 200 to 300 feet. The levees contain the calculated 100 and 500-year floods. Flows in the channel are completely modified by Rubber Dams 3 and 1, the BART Weir Structure, Grade Control Structures, road and rail bridge support pilings. These structures reduce flow rates and become impediments when flows are low.

12.2 Mechanisms for Effect

a. The Proposed Project has no mechanism for affecting housing or its placement within the 100-year flood zone in any way.

b. During construction of the in-channel facilities modifications may involve use of construction equipment in the creek channel, with site grading and excavation generally in the initial construction period of a few weeks. After configuration of the foundation for these facilities, construction would occur on or immediately adjacent to the levee and in low flow channel side slopes to restore the temporary access ramps.

c. There is general potential for fuel and lubricant leaks and spills during construction.

12.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

Construction of In-Channel Facility Modifications

Construction in the channel may expose sediments to runoff. In this area, it is not likely that various pesticides such as Diazinon are concentrated in the gravel and sand sediments which settle out when upstream dams are raised. In one study (SFEI 2005), concentrations of Diazinon in stream sediments were found to increase with depth.

Although these finer sediments would be scoured and routinely transported downstream during periods of high flow, it is possible that these pesticides may be found in the sediments below a few inches depth. Construction would disturb these sediments and post construction re-connection of disturbed areas to the active channel could result in remobilization of pesticides such as Diazinon. A potential construction area would be a short-term pulse of residual pesticides during the initial wetting of disturbed soils. However, fine-grained sediments (e.g., silt and clay) are likely to have been washed downstream during high winter-spring flows.

In addition, new concrete work may leach lime into the channel prior to curing. Properly mixed and treated concrete cures in 6-7 days, after which leaching rates decline. Leaching of alkali into the water may create localized areas of high pH downstream, and thus proper curing of concrete is essential.

Construction in the channel creates a potential for fuel and lubricant spills and leaks, which could have a potentially adverse impact on water quality.

12.4 No Action Alternative

No construction activity or changes would occur. No impacts to hydrology or water quality would occur under the no action alternative.

12.5 Significance of Effect

Mobilization of Diazinon during in-channel work could potentially occur. Except for residual use of stockpiles, the pesticide was banned for outdoor use in 2004. Assuming that Diazinon use declined to near zero in the 3 years following the ban and that the concentrations in soils identified in the SFEI (2005) study persisted through 2007, then the current range of potential Diazinon concentrations in the channel soils can be estimated using the maximum half-life of Diazinon in soil (103 days; National Pesticide Information Center, 2011). By 2016, the concentration of Diazinon could have gone through 32 half-lives.

The lowest concentration in the SFEI (2005) study of 2,000 µg/l in 2007 would therefore be reduced to well below 0.01 µg/l. Similarly, the high range from the SFEI study (55,000 µg/l) would be reduced to well below 0.04 µg/l. These levels of potential contamination, based on the

longest in-soil half-life estimate, are very low when compared to the LC_{50} for fish of 90 to 7800 µg/l, and the level at which salmonids exhibit behavioral responses to Diazinon, 1.0 µg/l (National Pesticide Information Center 2011).

It is thus likely that Diazinon in the soil that may be disturbed by various aspects of the Flood Control Channel modifications would not cause adverse effects to fish and wildlife when flow in the creek encounters exposed soils in the channel.

The potential for leaching of concrete to increase the pH of the water downstream of new facilities is a function of the curing time. There is a small potential for precipitation during the construction, which could leach lime from curing concrete into the channel and cause an increase in pH which could be a potentially significant impact. These potential effects would be reduced by site containment using the cofferdams.

If fuels and lubricants were spilled within the channel or at adjacent recharge ponds, they could adversely impact water quality and these impacts could be significant.

ACFCD would implement appropriate best management practices (BMPs) (measure HWQ1, HWQ2 and HWQ3, Table 7) for all work to ensure that Project construction does not adversely affect water quality. Implementation of the above construction best management practices would reduce the potential for impacts to hydrology and water quality to a level of less-than-significant.

13.0 LAND USE AND PLANNING

Would the project:

a) Physically divide an established community?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

13.1 Environmental Setting

Land uses adjacent to the Flood Control Channel are a mix of public utility, commercial, industrial, residential, and recreational. The predominant channel use is flood protection of the adjacent development and recreation. Rights-of-way for rail transportation and road crossings are also a significant feature of local land use. The estuary is characterized by natural wetland vegetation with no significant development.

13.2 Mechanisms for Effect

The Proposed Project would occur entirely within the Flood Control Channel and there is no mechanism by which it would alter existing land uses. No public property would be acquired and no existing land uses would be changed.

13.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

The Proposed Project would not affect the existing community structure or linkages between elements of the community. The Proposed Project would not change land use.

13.4 No Action Alternative

No construction activity or changes would occur. No impacts to land use would occur under the no action alternative.

The Proposed Project area is owned and maintained by ACFCD in accordance with established Section 408 guidelines and policies of the USACE.

13.5 Significance of Effect

The Proposed Project would not affect land use, physically divide an established community, conflict with existing land use plans, or conflict with conservation plans. No significant impacts would occur.

14.0 MINERAL RESOURCES

Would the project:

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

14.1 Environmental Setting

The Proposed Project is located in an area that has been modified for flood control and is subject to routine maintenance and periodic removal of sediment by the ACFCD. Excess sand and fine sediment removed from the Flood Control Channel will be transported at an existing ACFCD upland site for beneficial reuse. All areas outside of the Proposed Project areas are fully developed and no additional exploitation of sand and gravel resources is anticipated. The alluvial soils beneath the Proposed Project area are underlain by basalt and there are no known oil and gas resources of commercial significance in the Proposed Project areas of effect.

14.2 Mechanisms for Effect

The Proposed Project is not located in areas where commercially exploitable mineral resources may be obtained. No mineral extraction is feasible at the Proposed Project sites because such extractions would compromise the function of the Flood Control Channel. There is therefore no mechanism by which the Proposed Project may affect mineral resources.

14.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

The Proposed Project would not affect mineral resource availability or exploitation.

14.4 No Action Alternative

No construction activity or changes would occur. No impacts to mineral resources would occur under the no action alternative.

14.5 Significance of Effect

The Proposed Project would not result in loss of availability of any known mineral resources. No significant impacts would occur. No mitigation is proposed.

15.0 NOISE

Would the project result in:

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

b) Exposure of persons to or generation of excessive ground borne vibration or ground-borne noise levels?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

15.1 Environmental Setting

The City of Fremont General Plan addresses noise effects using the most common measure $dB_{(A)}$, or decibels using the generally accepted measure of human hearing.

The Proposed Project facilities are located in the Flood Control Channel adjacent to urban areas crossed by arterial roads and railroad bridges. The Proposed Project occurs within levees about 20 feet below the level crest. The rail transport systems typically generate intermittent noise levels of over 80 decibels (dB(A)), and recent studies for the City of Union City Intermodal Station Passenger Rail Project (City of Union City 2005) demonstrate that ambient average day-night noise levels in the area along the Alameda Creek Channel are in the 59 to 61 $dB_{(A)}$ range. The ambient noise environment adjacent to the Flood Control Channel is variable.

There is also substantial ambient noise from traffic on the major arterials and crossings adjacent to the creek banks. There are no airports or schools in the vicinity of the Proposed Project.

15.2 Mechanisms for Effect

All of the Proposed Project modifications to sills and the low flow channel in the existing Flood Control Channel levee crest would largely block construction related noise from local residences. Construction activity would be limited to daytime hours only (7:00 AM to 6:00 PM) Monday through Friday. There is no mechanism by which the long-term operations within the Flood Control Channel would generate significant noise. Thus, noise generated from the Proposed Project's construction activities may exceed the ambient noise. During construction and future major repairs, the Proposed Project would involve use of backhoes, loaders, excavators, small water trucks, small cranes, trucks, jack hammers, and associated machinery and tools.

Estimates of noise levels from typical construction equipment (USDOT 1976) are often used as a basis for impact analysis associated with multiple pieces of equipment, with noise levels generally predicted to decline by 6 dB(A) for each doubling of distance from the point of origination (Hoover and Keith 1996). Typical construction activities thus generate noise levels that decline with distance from the site:

- 50 feet 78 $dB_{(A)}$ to 89 $dB_{(A)}$
- 100 feet 72 $dB_{(A)}$ to 83 $dB_{(A)}$
- 200 feet 66 $dB_{(A)}$ to 77 $dB_{(A)}$
- 400 feet 60 $dB_{(A)}$ to 71 $dB_{(A)}$
- 800 feet 54 $dB_{(A)}$ to 65 $dB_{(A)}$
- 1,600 feet 48 $dB_{(A)}$ to 59 $dB_{(A)}$
- 3,200 feet 42 $dB_{(A)}$ to 53 $dB_{(A)}$

Impacts associated with the Proposed Project are in the mid-range of these USDOT estimates because modern construction equipment design has been improved and is designed with technology to minimize noise. Based on manufacturer's specifications, a typical modern backhoe/small dozer generates 75 $dB_{(A)}$ at 50 feet, 69 $dB_{(A)}$ at 100 feet and 63 $dB_{(A)}$ at 200 feet. Similar noise reductions have been made for other newer-model equipment. In addition:

- Existing Grade Control Structure demolition and removal would generally be intensive for only a few hours per day;
- Noise from work in the channel would occur below grade and would be buffered by the levees; and

- The sandy-gravel soils in the area would also not transmit sound well, and there is therefore no mechanism by which ground borne vibrations would affect residential development adjacent to project.

Construction noise effects were based on a conservative initial equipment noise of 86 $dB_{(A)}$, resulting in noise levels declining to:

- 80 $dB_{(A)}$ at 50 feet
- 74 $dB_{(A)}$ at 100 feet
- 68 $dB_{(A)}$ at 200 feet
- 62 $dB_{(A)}$ at 400 feet
- 56 $dB_{(A)}$ at 800 feet
- 50 $dB_{(A)}$ at 1600 feet
- 44 $dB_{(A)}$ at 3200 feet

Existing wooden fences/sound walls at residences are assumed to reduce noise by about 5 $dB_{(A)}$ (Washington Department of Transportation).

15.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

As a result of limiting construction activity to daytime hours only and limiting construction to only those areas in the bottom of the Flood Control Channel no significant noise impacts to local residences are expected. All major construction equipment will be equipped with mufflers to reduce sound impacts.

15.4 No Action Alternative

No construction activity or changes would occur. No noise related impacts would occur under the no action alternative.

15.5 Significance of Effect

The noise effects of the Proposed Project construction activities and long-term maintenance would be considered significant if:

- Construction activity resulted in an increase in exterior ambient noise levels; or
- Construction activity resulted in exterior noise levels in excess of the acceptable level of 60 L_{dn}.

The potential for construction and long-term maintenance to cause significant effects on residential areas will be limited to daylight hours. Ambient daytime noise levels in urban areas are generally higher than the L_{dn} level. In urban areas, the ***average*** daytime noise level is generally about 10 $dB_{(A)}$ higher than the ***average*** night level (Bishop and Simpson 1975). Thus an L_{dn} of 60 reflects

a weighted daytime average of about 66 to 67 dB (A). Noise levels will peak during work hours and begin to decline after the commute period is over, or about 6 PM to 7 PM.

The City of Fremont General Plan (2011) defines acceptable exterior noise levels in residential areas as from 60 dB(A) to 75 $dB_{(A)}$, with a target of 60 $dB_{(A)}$. None of the elements of the Proposed Project are expected to exceed 68 $dB_{(A)}$, but noise from construction could potentially be in excess of the target of 60 $dB_{(A)}$ intermitently.

The City of Fremont (General Plan 2011) policy related to construction noise is:

"Control construction noise at its sources to maintain existing noise levels, and in no case to exceed acceptable noise levels"

This is essentially a requirement to reduce construction noise to ambient levels and not to exceed acceptable exterior noise levels for residential areas, which ranges 60 to 70 $dB_{(A)}$. The General Plan also limits construction activity hours to the period beginning at 7 AM and ending at 10 PM.

To reduce potential noise effects to a level of less-than-significant at all sites, ACFCD would comply with these City of Fremont noise policies, including scheduling of construction to avoid times when people are most sensitive to noise to the extent practical (measure **N1**, Table 7). Based on a consideration of these avoidance and minimization measures, it is concluded that noise impacts of the Proposed Project would be less-than-significant.

16.0 POPULATION AND HOUSING

Would the project:

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

16.1 Environmental Setting

The City of Fremont is the fourth largest city in the San Francisco Bay Area, with a population of over 200,000 people. It is one of many generally affluent communities that surround the South San Francisco Bay area, with an average household income in 2000 of $110,000 and 61% of households earning more than $75,000 per year (City of Fremont 2005). Education levels are high and the City has expanded along with the rest of the South Bay communities such that there is little available land for development.

Union City had a population in 2016 over 75,000. Estimated median household income in 2016 was: $98,367 (it was $71,926 in 2000). Estimated median house or condo value in 2016 was $677,900 up from a median price in 2000 of $296,600.

16.2 Mechanisms for Effect

Construction is in the public right-of-way entirely within the Flood Control Channel. Housing is neither created nor removed by the Proposed Project. There are no mechanisms for the Proposed Project to effect population growth or housing.

16.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

The Proposed Project would not result in need to provide increased flood conveyance capacity within the Flood Control Channel in support of population and Housing increase demands. The Proposed Project would therefore not directly or indirectly result in substantial increases (or decreases) in flood protection needs. No mitigation is proposed.

16.4 No Action Alternative

No construction activity or changes would occur. No population or housing impacts would occur under the no action alternative.

16.5 Significance of Effect

No aspect of the Proposed Project would induce growth or displace existing housing or people. No significant impacts would occur, and no mitigation is proposed.

17.0 PUBLIC SERVICES AND SAFETY

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

a) Fire protection?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

b) Police protection?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

c) Schools?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

d) Parks?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

e) Other public facilities?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

17.1 Environmental Setting

In addition to ACFCD flood protection functions, other public services are provided by the City of Fremont, Union City, the Alameda County Transportation Authority, Alameda County Water District, and East Bay Regional Park District including police, fire, and emergency services. The bridges across Alameda Creek are: BART, Sequoia Terrace, Isherwood Way, Decoto Road, I-880 Freeway, Alvarado Boulevard and Union Pacific Railroad Bridge. The Proposed Project is not located in the vicinity of schools or hospitals:

- The nearest school is located on Mission Boulevard about 0.65 miles from the Flood Control Channel, separated from the construction by commercial, industrial, and residential development; and

- The nearest sensitive health facility (residential living complex) is located about 0.35 miles from the project upstream limit and is separated from the construction by residential and commercial development.

17.2 Mechanisms for Effect

There is no mechanism by which the Proposed Project could require new or altered government facilities to be constructed. No aspect of the project would involve activities that would block access to hospitals or schools, or would prevent emergency services from accessing residential or commercial buildings.

During construction, construction traffic could affect traffic on Sequoia Terrace, Isherwood Way, Decoto Road, Alvarado Boulevard and frontage roads to the I-880 freeway. Emergency vehicle response times could be affected during short periods of hauling of materials. However, due to the low volume of construction-related traffic, this effect would probably be undetectable. See the more detailed discussion of traffic, below.

17.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

The project would have no significant impacts on public services.

17.4 No Action Alternative

No construction activity or changes would occur. No impacts to public services or safety would occur under the no action alternative.

17.5 Significance of Effect

No impacts are anticipated to public services. No mitigation is proposed.

18.0 RECREATION

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

18.1 Environmental Setting

Lower Alameda Creek in the general Proposed Project area is used for recreational purposes. The Quarry Lakes Regional Recreation Area provides boating, fishing, hiking, biking, swimming, and picnic areas. There are smaller historical parks and community centers scattered around this core. The channel levees were constructed with maintenance roads which incorporated into a system of recreational trails frequented by hikers and cyclists. The Alameda Creek Trail system provides an extended trail connection through the area, with an unpaved maintenance road/trail on the north levee and a paved maintenance road/trail on the south levee. There are connections to this trail at Isherwood Way, Decoto Road, and I-880 via Sequoia Bridge, Alvarado and Ardenwood Blvd.

18.2 Mechanisms for Effect

Once constructed, the Proposed Project would not affect recreation. However, during construction, one of the levee access maintenance road/trail will be used for construction access and for temporary equipment staging requiring temporary closure and redirecting public to the unused levee.

18.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

Biking and hiking would be diverted around construction sites to the extent feasible. The project will require trail closure in the vicinity of active work sites for several months each year. During construction at a site, the maintenance road/trail use may be accommodated, to the extent compatible with public safety, by providing a fenced corridor along the levee that can be closed during construction and re-opened during non-construction hours. Re-routing or closures of the maintenance road/trail will be coordinated with the East Bay Regional Park District and notices

informing the public posted. The Proposed Project will not affect the Quarry Lakes Regional Recreational Area.

18.4 No Action Alternative

No construction activity or changes would occur. No impacts to recreation would occur under the no action alternative.

18.5 Significance of Effect

Although construction of the Proposed Project will require trail closures or diversions around project activities, the impact is considered to be less-than-significant because alternative trail routes are available; it does not result in accelerated deterioration of nearby park facilities or require new facilities to be constructed near the project. Trails will be accessible weekends and holidays during construction. Following construction, trails will be restored to pre-construction conditions.

Although no CEQA-significant or NEPA-significant impacts to recreation would occur, ACFCD recognizes the importance of the Alameda Creek trails to the local community. To address this temporary public inconvenience, ACFCD would attempt to accommodate public use of trails during construction, coordinate with City of Fremont, Union City and with the East Bay Regional Park District as outlined in Table 7.

With these avoidance and minimization actions, impacts related to construction on trails would be less-than-significant.

19.0 TRANSPORTATION AND TRAFFIC

Would the project:

a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?

❒ Potentially Significant Impact ☒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ❒ No Impact

b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

e) Result in inadequate emergency access?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

f) Result in inadequate parking capacity?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

19.1 Environmental Setting

A number of major transportation corridors pass through the general area, including a north-south BART line, the Union Pacific Railroad line, Interstate 880, Interstate 680, State highways 84 and 238, and a number of major arterial roads. With only major north-south transportation crossings in the Flood Control Channel (Sequoia Terrace, Isherwood Way, Decoto Road, I-880 Freeway, Alvarado Boulevard and Union Pacific Railroad Bridge), the area near the Proposed Project is an existing bottleneck for traffic.

19.2 Mechanisms for Effect

The Proposed Project does not involve construction in or around public roads, except in the flood control channel under bridges and crossings. The only mechanism for effect is an increase in total traffic associated with daily construction crews and materials hauling including the volume of materials hauled to and from the construction sites.

19.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

Project would be located in the Flood Control Channel entirely outside of public roads. Construction traffic would include:

- Hauling of construction equipment to the construction sites;
- Hauling of materials to and from the construction sites; and
- Construction crews commuting to the site.

The general level of traffic generated by on-site construction is in the range of 4 crew round trips per day up to 8 round trips per day for all of the activities in each year of construction. This traffic would probably be distributed along Niles Boulevard, Decoto Road, Paseo Padre Parkway, Isherwood Way, I Street, Riverwalk Drive, and Mission Boulevard, where combined average daily traffic is about 85,000 vehicles. Construction workers commuting to the site and sediment hauling to the ACFCD upland storage area would represent about 0.009 percent of total traffic. If it is assumed that about 40 percent of total daily traffic occurs during the extended rush hour, then the maximum commute traffic generated by the Proposed Project would add approximately 0.02% to peak rush hour traffic. Average daily traffic varies by day, by week, by season, and in response to weather and other factors. An increase in traffic of about 0.02% in peak traffic would fall well within the average variability and thus be statistically insignificant. This change in traffic should not significantly affect response times for emergency service vehicles.

Truck traffic involved in hauling materials and equipment to and from the site is generally of greater concern because large trucks do not merge into traffic as well as cars and because hauling concrete grout and excavated soils from the work areas may involve a concentrated effort. During the construction window from June 1 to October 31 each year construction activities may add approximately 12 truck trips per day to daily traffic. This assumes use of trucks with 10 cubic

yards of capacity. This truck traffic may add approximately 0.01 percent to total traffic. For hauling associated with removal of materials from the channel and delivery of heavy equipment, riprap, and concrete grout, this traffic may be concentrated on the route from the construction site and the (a) existing upland sediment storage location or (b) the boulder and concrete grout supplier.

19.4 No Action Alternative

No construction activity or changes would occur. No impacts to transportation or traffic would occur under the no action alternative.

19.5 Significance of Effect

The Proposed Project would result in additions to peak traffic volumes on local arterial roads as a result of construction crews traveling to the site. The additional traffic would fall within the normal range of traffic variation. Its effects would not be detectable. Materials hauling may intermittently increase traffic, adding an estimated 12 truck trips per day during the June-October construction period each year. This is approximately 0.01 % of daily traffic, but may increase local traffic on roads accessing the Flood Control Channel especially during peak hours. This extra truck traffic would be predictable and spread out over the work day.

There is no mechanism by which the Proposed Project may affect air traffic patterns, alter a road design feature, or result in inadequate parking capacity. Emergency access would not be blocked. The Proposed Project would comply with adopted transportation plans.

The City of Fremont and Caltrans both require transportation permits for construction projects. Union City also has local transportation policies and a designated traffic engineer will consult as part of permitting and authorizing the Proposed Project. Designated routes for movement of construction equipment and for hauling of materials to and from construction sites will be identified. Caltrans recommends impact reduction measures that include use of roads during off-peak hours. Accordingly, ACFCD would seek to minimize the project's impacts on traffic, and therefore on emergency response times for public services (measure **Trans1**, Table 7).

With proposed avoidance and minimization measures, the Proposed Project's impacts on traffic and transportation would be less-than-significant.

20.0 USE OF ENERGY

CEQA requires an energy use analysis, addressing construction and project operations, but does not specify significance criteria for evaluation of impacts. Energy use analysis is also applicable to NEPA.

20.1 Environmental Setting

The Proposed Project would occur in the context of declining climate change effect of the traditional fossil energy use, worldwide energy supplies and increasing energy prices. CEQA and NEPA require an energy use analysis.

20.2 Mechanisms for Effect

The Proposed Project would not use energy during operations. Flow in the Flood Control Channel is by gravity.

20.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

Construction Energy Use

Construction energy use can be estimated based on the estimates of CO_2 production from the California Emissions Estimator Model (CalEEMod), version 2016.3.2 because there is a well-established ratio of CO_2 production *per* gallon of diesel fuel:

Burning 1 gallon of diesel fuel = 22.2 pounds of CO_2

This standard ratio (a key element of the model analysis) allows a simple back-calculation:

Total pounds of CO_2 generated by construction/22.2 = gallons of diesel used

Using the data from the air quality analysis in Section 7, the estimated total energy use for the Proposed Project is calculated

1899.5 tons of CO_2 x 2000 = 3,799.000 pounds of CO_2
3,799,000 pounds of CO2/22.2 pounds/gallon = 171,113 gallons of diesel fuel
171,133 gallons of diesel fuel/4 = 42,780 gallons of gasoline per construction year

Operational Energy Use

There will be no energy use (other than natural kinetic flow).

Maintenance Energy Use

Energy use during post construction maintenance of the project will vary from year to year in response to debris loading, low flow channel stability, and sediment erosion and deposition. ACFCD is responsible for maintenance of the existing Flood Control Channel. Maintenance of the Flood Control Channel is expected to be similar or less than pre-construction (baseline) conditions, and therefore maintenance energy use is expected to be similar or reduced.

20.4 No Action Alternative

No construction activity or changes would occur. No impacts to energy use would occur under the no action alternative.

20.5 Significance of Effect

CEQA does not specify significance criteria for energy use and the BAAQMD CEQA Guidelines do not identify a construction-related energy use significance criterion. The significance of Project on-going energy use can be estimated by comparing it to other annual energy use in the region (BAAQMD 2008):

> Annual construction energy use of 42,780 gallons of diesel fuel is equal to 117 gal/day compared to 1,759,000 gal/day used in Alameda County = 0.00067%;

There is no operational energy use by the Proposed Project; and Maintenance energy use is expected to be similar or less than under current conditions.

The energy use from construction, operation, and maintenance is a small fraction of typical energy use levels in Alameda County. This reflects the relatively low intensity of construction and the passive nature of the low flow channel. Such energy use is statistically insignificant.

ACFCD would minimize construction-related energy use by including in all construction contracts (measure **E1**, Table 7)

Construction energy use would constitute an insignificant portion of total energy use in the region and minimization actions would further reduce energy use. No significant impacts are anticipated.

21.0 UTILITIES AND SERVICE SYSTEMS

Would the project:

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

e) 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?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ☒ No Impact

21.1 Environmental Setting

Although the Proposed Project sites are within an urban matrix, the sites for construction have some unique characteristics. The construction sites are limited to locations within the lower Alameda Creek Flood Control Channel. The channel was constructed originally by USACE. Major utility lines in the area are typically located along transportation corridors which will not be affected by the Proposed Project. Major power transmission lines, SFPUC's Hetch Hetchy Aqueduct, and major oil and gas lines are located outside of the Flood Control Channel. PG&E gas main crossing the channel upstream of UPRR will be protected while providing unimpeded fish passage.

21.2 Mechanisms for Effect

The Proposed Project has no mechanism by which it would affect public utilities.

21.3 Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA. Protection of the existing PG&E gas main within the project limits will not be adversely affected.

21.4 No Action Alternative

No construction activity or changes would occur. No impacts to public utilities would occur under the no action alternative.

21.5 Significance of Effect

The CEQA *Guidelines* do not consider temporary effects to utility service to be significant effects. The Proposed Project would not have significant impacts on utilities and service systems. Project engineers would coordinate with PG&E to secure the existing gas main line during construction. No significant impacts would occur. No mitigation is proposed.

22.0 CUMULATIVE IMPACTS

22.1 Activities Evaluated for Cumulative Effects Analysis

Projects with impacts like those of the Proposed Project include other fish passage projects being constructed upstream at the RD1/BART Weir and RD3 and consolidation of two unscreened diversions in Shinn Pond with a screened intake, and ACFCD on-going maintenance of the Alameda Creek Flood Control Channel. Such projects would be almost completely contained within the Flood Control Channel and have similar habitat and construction-related impacts. The context for the Proposed Project thus includes the activities shown in Table 11.

Table 11. Projects Addressed in Cumulative Effects Analysis*

PROPOSED ACTION	RESPONSIBLE PARTIES	REACH
A. JOINT FISH PASSAGE PROGRAM FACILITIES		
Construction and operation of a fish ladder at the BART Weir	ACWD & ACFCD	Mission Boulevard to immediately upstream of BART Weir/RD 1
Installation and operation of a positive barrier fish screen on the Shinn Pond water diversion	ACWD	
Construction and operation of a fish ladder at the ACWD RD 3 rubber dam	ACWD	
B. JOINT FISH PASSAGE PROGRAM FLOW BYPASS RULES AND RELATED WATER MANAGEMENT		
BYPASS FLOW OPERATIONS	ACWD	DOWNSTREAM OF BART RD1
C. RELATED PROJECTS EVALUATED IN CUMULATIVE EFFECTS ANALYSIS		
1a. Facility Modifications		
Decommissioning of RD2/ Larinier Fishway	ACFCD	Downstream of RD1
Diversion pipes replacement		Upstream of RD1
1b. ACWD future projects		
Vallecitos Channel Maintenance and Repairs		Upstream Reach
2. Other Potential Agency Facilities		
Union City Intermodal Station Passenger Rail Project	Union City	South of the Flood Control Channel
Alameda Creek Recapture Project (ACRP)	SFPUC	Sunol Valley Reach
Conservation Plan For Sunol Quarry SMP-30 Site	Sunol Quarries	Sunol Valley Reach
Niles Mixed Use Project	City of Fremont	Adjacent to RD3

***The projects identified are subject to separate environmental review and permitting.**

The most substantial change to the urban reach of Alameda Creek has been construction of the Federal flood control project from Mission Boulevard downstream to the estuary, which re-routed the creek and confined it within riprapped levees. On-going maintenance has maintained the general configuration of the Flood Control Channel. This is a permanent change. The subsequent commercial and residential development and major transportation facilities (roads and railroads) adjacent to and within the channel floodplain must now be protected. This protection depends on a stable Flood Control Channel configuration.

The recurrent maintenance activities effectively eliminated a natural stream/floodplain habitat that could function as habitat for a suite of fish, amphibians, and birds. Installation of concrete grouted

rock Grade Control Structures and energy dissipation structures in the channel and under major bridges also created barriers to fish and wildlife movement.

22.2 Recent Projects and Their Cumulative Effects

Recently completed projects in lower Alameda Creek include initial ACWD actions to improve conditions in the channel for steelhead and salmon, primarily efforts to (a) remove barriers to migration and (b) reduce stress and potential for diversion of salmonids into the recharge basins. The effects of these recent projects have been minimal. Implementation of the Joint Fish Passage Project which included construction of fish ladders at BART Weir/RD1 and RD3 would further restore conditions that are needed for stress-free timely salmonid upstream and downstream migration.

22.3 Anticipated Future Projects

- In addition to support of the larger steelhead restoration program throughout the watershed ACFCD would also continue to maintain the flood control channel on an as needed basis of damaged or eroded levees and riprap to maintain the flood protection function of the channel.

- Substantial construction in the vicinity is also anticipated for expansion of the Union City Intermodal Station Passenger Rail Project.

- ACWD is also anticipating a project to address on-going maintenance, including bank stability issues, within Vallecitos Channel.

- The SFPUC has proposed a project in the Sunol Valley to annually re-capture up to 6,300 AF/yr. of the water released/bypassed at Calaveras Dam and the Alameda Creek Diversion Dam. This project, identified as the "Alameda Creek Recapture Project" or "Alameda Creek Fisheries Enhancement Project", was included on a programmatic level in SFPUC's Water Supply System Improvement Program Final Programmatic EIR. (SFPUC, 2008) and discussed as the "Upper Alameda Creek Filter Gallery" (UACFGP) in the Calaveras Dam Replacement Project Environmental Impact Report (CDRP EIR, 2011).

- The SFPUC recently issued a Notice of Preparation for an alternative project, known as the Alameda Creek Recapture Project (ACRP NOP, 2015). Water would be recaptured from a quarry pit, Pit F2, in the Sunol Valley located approximately 6 miles downstream of Calaveras Reservoir and 0.5-mile south of the Interstate 680/State Route 84 interchange. The ACRP is proposed to recapture an amount of water equivalent to that which is released and/or bypassed. The proposed project components for recapture of the water from Pit F2 include pumps mounted on barges, pipelines extending from the pumps to shore; a new pipeline connecting to the existing Sunol Pump Station Pipeline; and ancillary facilities such as throttle valves, a flow meter, and electrical facilities. No work would occur in the bed, bank, or channel of Alameda Creek. The Project is proposed to recapture an annual average of up to 9,820 AF/yr. of water that will be released from Calaveras Reservoir and/or bypassed around the Alameda Creek Diversion Dam during future operation of Calaveras Reservoir.

The future operation of the ACRP may result in changes to the quantity of SFPUC water released and/or bypassed that may reach the Niles Gage. However, the level of detail in the NOP is insufficient to integrate into existing analyses on fisheries, flood control, and water supply, which are analyzed on a daily time step.

In addition, in compliance with lease terms for the SFPUC lease for Sunol Quarry mining, a conservation plan has been prepared for gravel quarry operations in the Sunol Valley ("Conservation Plan For Sunol Quarry SMP-30 Site"). This Conservation Plan was prepared by Oliver de Silva, Inc., the Alameda Creek Alliance, and the Center for Biological Diversity, to protect and enhance the biological resources in the vicinity of the Sunol Quarry Site in the Sunol Valley. As described in the Conservation Plan, Oliver de Silva ("ODS") will "fund, implement and monitor the avoidance, mitigation, and restoration measures to best protect and conserve special-status species and their habitats prior to and during the development of quarry operations at the Sunol Quarry, under Surface Mining Permit 30 ("SMP-30"), Revised SMP-30 and Further Revised SMP-30. Consistent with the terms of Revised SMP-30, an element of this plan includes: "Minimizing percolation losses of water from Alameda Creek to benefit habitat for steelhead trout, through installation of a bentonite cutoff wall to eliminate inflow through the shallow alluvium into mining pits". Environmental impacts of the Revised SMP-30 are contained in the "SMP-30 Revised Use Permit Sunol Valley Aggregate Quarry Project Final EIR" (SMP-30 EIR, 2012). Although the amount of increased flows has not been quantified, an element of the SPM-30 project according to the EIR is the installation of a soil/bentonite slurry cutoff along the northerly portion of Alameda Creek, and another slurry cutoff wall installed along a portion of San Antonio Creek to prevent creek in-flow into the quarry pit and basins. The intent of the slurry wall is to reduce the amount of groundwater that seeps from the adjacent creeks into the quarry basin through the alluvium, which will increase stream flows through Sunol Valley.

- The City of Fremont has proposed a project (known as the Niles Gateway Mixed-Use Project) in the Niles area of Fremont. The project proposes development of up to 82 townhomes, 13 creative-retail-artist-flex-tenancy homes, and small-scale retail and restaurant spaces. The proposed project is located on a 6.07 acre site with a General Plan Amendment for a change in the designated use. Environmental documentation of this proposed project is provided in the City of Fremont Niles Mixed-Use Project Initial Study (City of Fremont 2018) and a Final Environmental Impact Report (City of Fremont 2018).

22.4 Mechanisms for Effect

Cumulative effects that involve substantial modifications of the existing Flood Control Channel are not anticipated; the flood protection elements of the channel are assumed to remain as they are. Modifications may enhance low-flow channel characteristics for improved fish passage, but the Flood Control Channel would not otherwise be substantially altered. This reflects the necessity for maintenance of design-level protection for urban development. There are three categories of cumulative effects associated with the above activities:

- Construction-related effects of modifications to enhance fish passage and for on-going Flood Control Channel maintenance, such as temporary noise, dust/combustion-related emissions, potential water quality impacts, and potential for impacts to sensitive species downstream in the estuary;
- Cumulative improvement of conditions in support of fish passage through the Flood Control Channel to the upper Alameda Creek watershed; and
- Upstream projects that result in changes to the quantity of SFPUC fisheries bypasses/releases that reach the downstream Flood Control Channel.

22.5 Cumulative Effects

The assessment of potential effects takes into consideration the significance of an action in terms of its context and intensity and whether or not significant impacts would occur as required by CEQA and/or NEPA.

The Proposed Project is a part of the overall Alameda Creek program to restore fish passage and enhance creek functions and values. The proposed project elements are isolated activities. There are no mechanisms by which elements would contribute to cumulative effects of other projects on aesthetics, agriculture, biological resources, cultural resources, geology and soils, hydrology and water quality, hazards and hazardous materials, land use, mineral resources, population and housing, public services and safety, recreation, traffic, and utilities and service systems. The Proposed Project's effects in terms of these categories of impact are so low that their additive effect in combination with other projects is inconsequential.

The Proposed Project and other planned construction work in the Alameda Creek channel would have additive or cumulative effects on the following:

- Construction-related trail closures may continue beyond the construction period for the Proposed Project; thus, detouring trail users through Niles Community Park and Quarry Lakes may occur intermittently in the future.

- Proposed Project will at times involve low levels of construction and closure of some areas adjacent to the creek and trails during such actions. Seasonal installation and demobilization of equipment will continue, such as removal of rubber dams and fish screens. Maintenance of fishways will routinely involve removal of debris and sediment. These routine activities will periodically create noise, traffic, and disturbance of trails and other recreation activities. All of these activities will generate emissions from diesel engines and from fugitive dust that would contribute to temporary increases in particulates, NOx, ROG, CO, and CO2;

- Construction associated with sediment management and channel rehabilitation would cause intermittent but on-going disturbance to habitats in the channel, potentially resulting in low levels of stress and injury to wildlife using the increasingly functional channel habitats that result from channel rehabilitations. The Proposed Project would thus contribute to the cumulative enhancement of conditions for steelhead and other fish in the watershed. This contribution would be a significant effect, but the effect would be beneficial, not adverse;

- Avoidance and minimization measures outlined in Table 7, including adherence to all local requirements and permitting for construction vehicle traffic will reduce the incremental and cumulative impacts of the Proposed Project. Larger trucks may be used when practical to reduce vehicle trips to and from the site;

- Avoidance and minimization measures outlined in Table 7, including noise monitoring during construction at local residential sites to quantify noise levels are included in the Proposed Project description. Construction activity will be limited to daylight hours (7:00 AM to 6:00 PM) and only at the bottom of the Flood Control Channel to further reduce and avoid potential noise impacts; and

- The implementation of projects in the Sunol Valley (i.e. ACRP and SMP-30) may result in changes to the quantity of SFPUC fishery bypass/releases that reach the Flood Control Channel. The analysis in this Mitigated Negative Declaration considers all information currently available for upstream projects.

22.6 No Action Alternative

No construction activity or changes would occur. No cumulative impacts resulting from the proposed project would occur under the no action alternative.

22.7 Significance of Effect

CEQA does not specify criteria for determining the significance of Cumulative Impacts. Given the scale of local and regional infrastructure projects, the Proposed Project's less-than-significant construction and very low maintenance effects on air quality would not be cumulatively significant. Operation of the Proposed Project will have no significant effect on air quality or energy use. The large scale of proposed infrastructure and other development projects in the region means that the Proposed Project's air quality effects are a small fraction of a percent of total construction-related effects on air quality.

The completion of the Proposed Project would disrupt trail use at major recreational trails for the City of Fremont and Union City over a period of approximately 7-10 years (albeit only about 7 months of each year), but following construction, the frequency and duration of this inconvenience would be reduced because the needed projects in-channel to enhance fish passage would be in place. In addition, access to recreation trails will be restored once construction is completed at each location. For trail users, disruption of activity would decrease following construction. In addition, except for the Intermodal Station project, trail use impacts would be minimal in the future. The trend would be to lower impacts. In addition, the enhancement of the low flow channel and improved fish passage will provide an added recreation feature. The presence of steelhead is likely to draw people to the Proposed Project area to view them during their migrations. This recreational benefit will occur throughout the migration season. Over the long-term, recreational activities will be restored and enhanced by the presence of steelhead inhabiting Alameda Creek.

For wildlife, and particularly for steelhead, the cumulative impacts of continued enhancement of the channel and maintenance of the sills and low flow channel would be beneficial and off-sets the

adverse effects of historic modifications of the channel. The Proposed Project would make a significant but beneficial contribution to this aspect of cumulative effects. The Proposed Project modifications are also expected to increase sediment transport and reduce maintenance requirements within the Flood Control Channel which will be beneficial. The potential take of species during construction and maintenance of enhanced reaches of the channel would not be cumulatively significant, because BMPs would reduce and avoid adverse impacts and the improved habitat would more than offset short-term individual losses that are always associated with restoration.

Implementation of the proposed minimization and avoidance measures for traffic and noise effects during construction are expected to be effective in reducing incremental and cumulative impacts to a less-than-significant level.

The SFPUC CDRP EIR, (2012) indicates that the slurry walls proposed by the SMP-30 project are expected to reduce seepage from the channel into the adjacent quarry pits, thereby increasing flows in the channel. The SFPUC also released an NOP for the Alameda Creek Recapture Project (ACRP) and has prepared an EIR. Unlike the Upper Alameda Creek Recapture Project (UACFGP) which would utilize an underground network of pipes to collect percolation from Alameda Creek, the proposed ACRP will rely on groundwater-surface water interactions within the Sunol Valley to capture bypasses and releases described in the CDRP BO. While the components and location of the ACRP are different than the UACFGP, it is anticipated that the magnitude of potential impact to surface water flows through Sunol Valley may be similar to what was analyzed in the CDRP EIR for the UACFGP.

There is currently no publicly available technical information or formal studies that analyze the effects of either the slurry walls or ACRP to calculate impacts on Alameda Creek flows through Sunol Valley. Therefore, the magnitude and timing of impacts on stream flows through Sunol Valley resulting from either SMP-30 or from the ACRP are unknown.

Recognizing that the Proposed Project, in combination with the future planned steelhead restoration projects and the Intermodal Station project may result in re-routing of trail users to other local parks, ACFCD will monitor the potential effects of this diversion. ACFCD would work with East Bay Regional Parks to help minimize impacts on trail users. The primary avoidance and minimization measure would be to re-route and modify the Alameda Creek Trail as necessary to maintain its function during and following construction.

Consistent with Tables 6 and 7, all channel enhancement projects now, and in the future, would implement surveys and species take avoidance protocols recommended by NMFS, CDFW, and USFWS (as appropriate) at the time of the proposed activity. This would minimize adverse impacts associated with passage enhancement and reduce the impacts to less-than-significant. The net cumulative effects of in-channel enhancements would be to reduce and offset historic impacts.

With the avoidance and minimization measures included in the Project Description, the Proposed Project's cumulative effects would be less-than-significant, and no mitigation is proposed.

23.0 MANDATORY FINDINGS OF SIGNIFICANCE

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

❒ Potentially Significant Impact ☒ Less-than-significant with Mitigation
❒ Less-than-significant Impact ❒ No Impact

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)?

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

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

❒ Potentially Significant Impact ❒ Less-than-significant with Mitigation
☒ Less-than-significant Impact ❒ No Impact

1) The project would have only minor effects on wildlife and wildlife habitat, except to substantially enhance the potential for steelhead restoration and enhancement of fish passage in the Flood Control Channel reach of Alameda Creek. These effects are less-than-significant.

2) The project's cumulative impacts relative to other construction projects in the region are insignificant. The project would contribute to potential cumulative impacts (benefits) on fish passage in Alameda Creek.

3) The project avoids and minimizes significant construction-related effects and the long-term effects of project maintenance are less-than-significant.

24.0 ASSURANCE OF MITIGATION

Prior to adoption of a Mitigated Negative Declaration (MND), ACFCD would consider and adopt a Mitigation and Monitoring Plan cataloging all proposed mitigation measures (Table 7) and specifying the parties responsible for their implementation. Monitoring, reporting, and record-keeping requirements would be specified. The Mitigation and Monitoring Plan would further specify that (a) compliance with terms of the Mitigation and Monitoring Plan shall be made a term of all construction contracts, and (b) that construction-contractor compliance with mitigation and monitoring protocols delegated to construction contractors would be subject to oversight by ACFCD. In its resolutions adopting the proposed Project, ACFCD's Board of Supervisors would direct and authorize the ACFCD to take all actions necessary for compliance with the Mitigation and Monitoring Plan.

25.0 CONCLUSIONS

1. The Proposed Project consists of construction and maintenance of a low flow channel and modifications to existing Grade Control Sills within the Flood Control Channel to improve conditions to facilitate adult and juvenile steelhead passage between San Francisco Bay and the ACFCD Drop Structure/BART Weir/RD1 fish ladder. These activities would enhance fish and wildlife movement in the reach.

2. Given the low intensity of construction and subsequent on-going maintenance of the proposed measures to avoid and minimize associated impacts, impacts would be minimal at a level of less-than-significant.

3. The Proposed Project would have less-than-significant cumulative effects. Construction impacts would not make a significant contribution to the larger scale effects of channel maintenance and/or projects like the on-going Intermodal Station. Cumulative effects associated with wildlife would partially reduce the long-term cumulative effects of urbanization on steelhead and other migratory fish. The Proposed Project would, however, contribute significantly and positively to the regional recovery of steelhead fish in Alameda Creek watershed.

26.0 REPORT PREPARERS

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Sandra Hanson

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APPENDICES

APPENDIX A: PLAN & PROFILE VIEW. LOWER ALAMEDA CREEK RESTORATION (BART WEIR TO UPRR), FREMONT, CALIFORNIA

PLAN - PHASE 3 (Sta 38+00 to 65+00)

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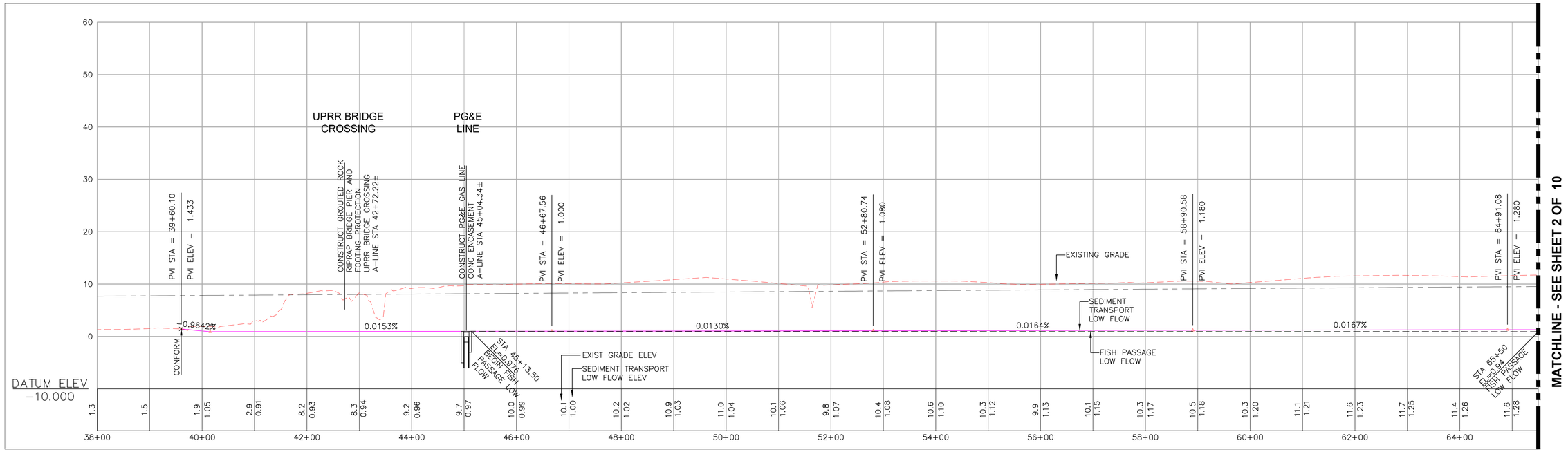
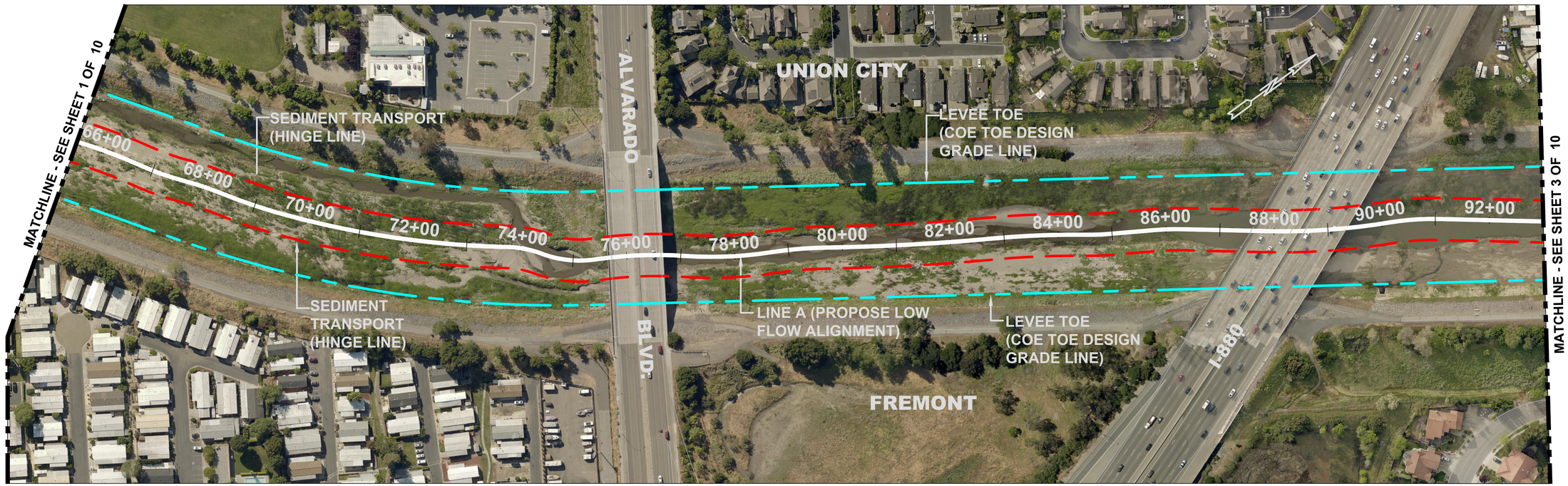


PROFILE

SCALE: HOR 1"=100'
VER 1"=10'

APPENDIX A: PLAN & PROFILE VIEW. LOWER ALAMEDA CREEK RESTORATION (BART WEIR TO UPRR), FREMONT, CALIFORNIA



PLAN - PHASE 3 (Sta 65+00 to 93+00)

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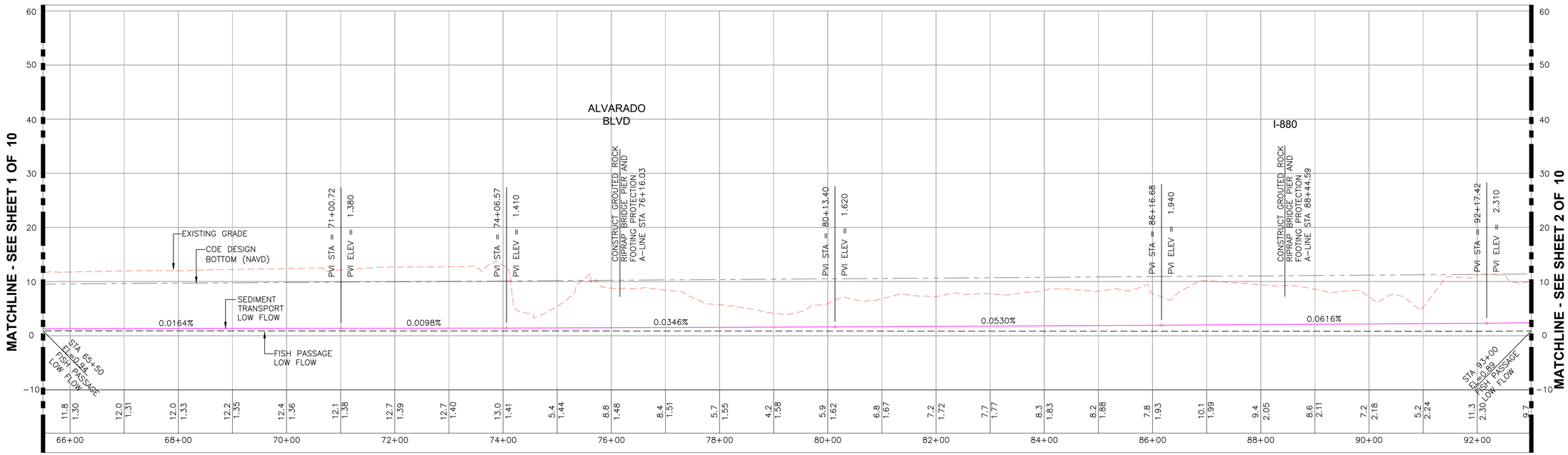

PROFILE

SCALE: HOR 1"=100'
VER 1"=10'

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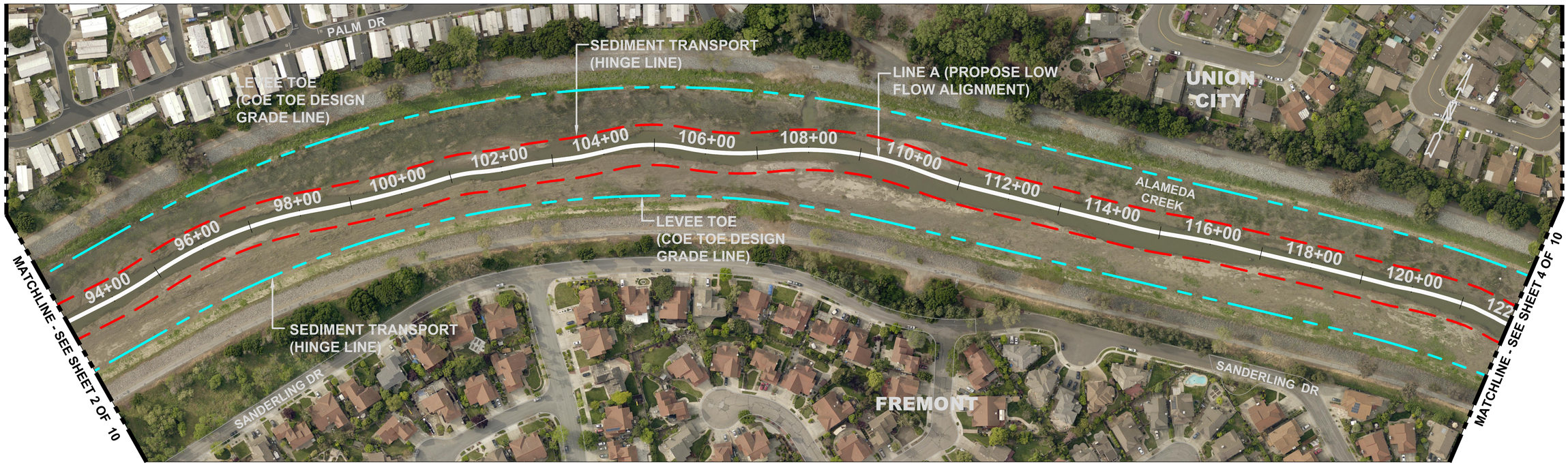

PLAN - PHASE 3 (Sta 93+00 to 122+00)

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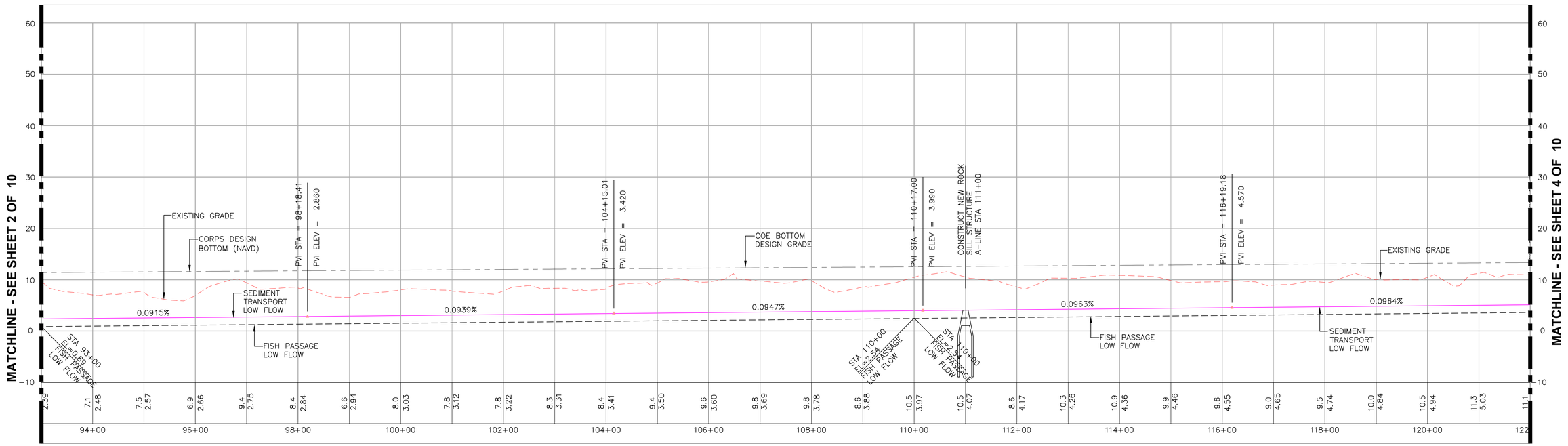

PROFILE

SCALE: HOR 1"=100'
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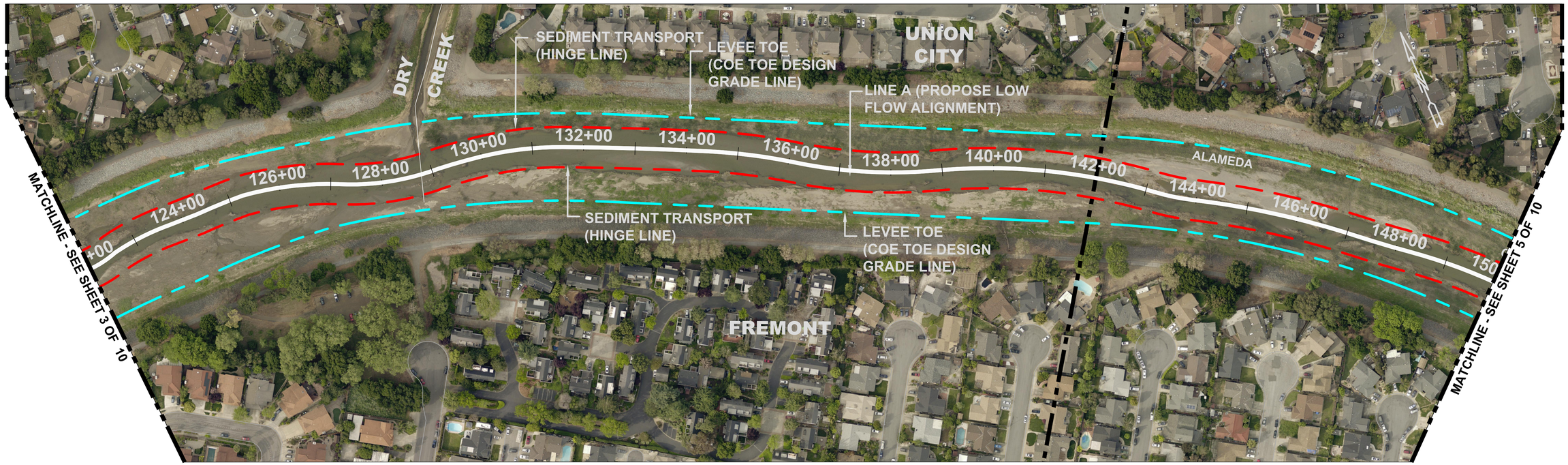


PLAN - PHASE 3 (Sta 122+00 to 150+00)

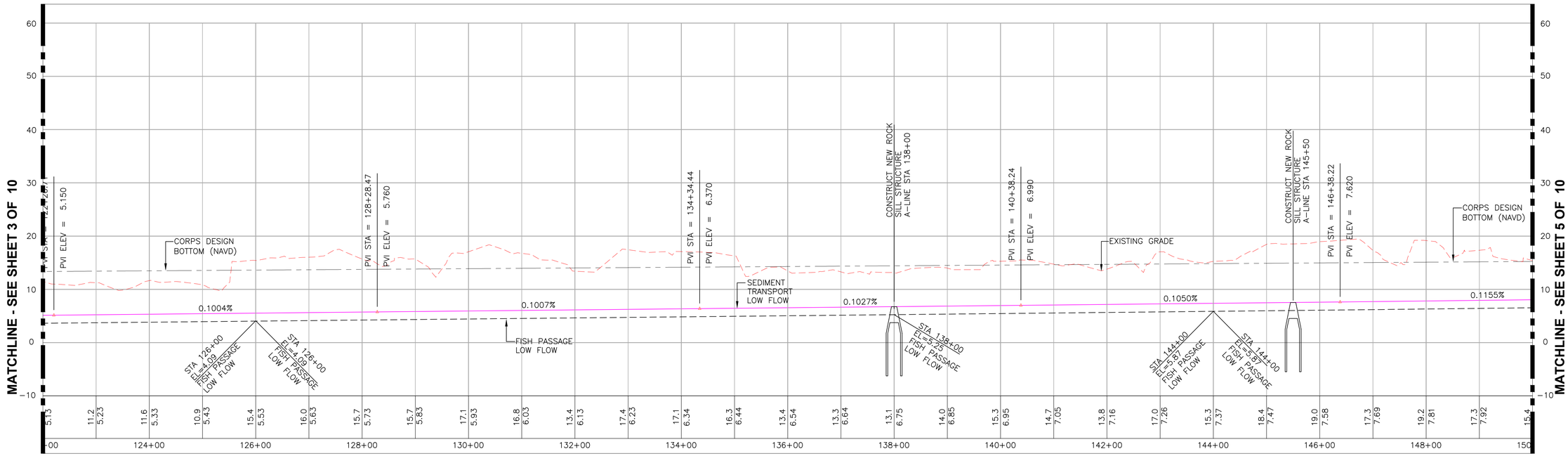
SCALE: 1"=100'

PLAN - PHASE 2 and 3 TRANSITION (Sta 142+00 to 150+00)

SCALE: 1"=100'

PLAN - PHASE 2 (Sta 142+00 to 150+00)

SCALE: 1"=100'



PROFILE

SCALE: HOR 1"=100'
VER 1"=10'

APPENDIX A: PLAN & PROFILE VIEW. LOWER ALAMEDA CREEK RESTORATION (BART WEIR TO UPRR), FREMONT, CALIFORNIA

PLAN - PHASE 3 (Sta 150+00 to 177+00)

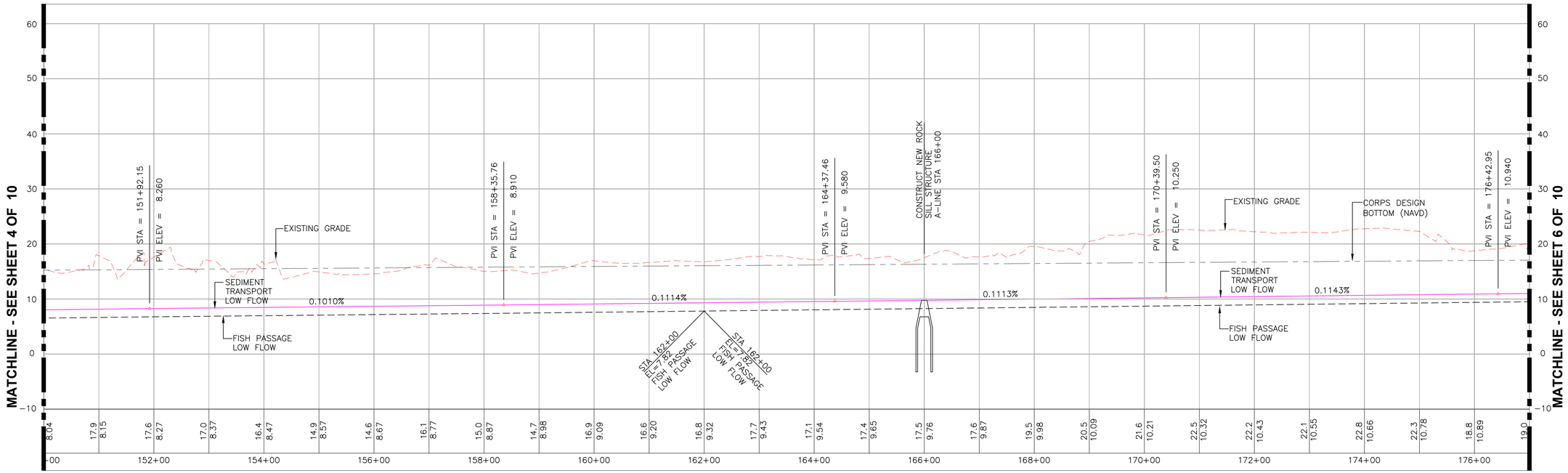
SCALE: 1"=100'

PLAN - PHASE 2 and 3 TRANSITION (Sta 150+00 to 177+00)

SCALE: 1"=100'

PLAN - PHASE 2 (Sta 150+00 to 177+00)

SCALE: 1"=100'



PROFILE

SCALE: HOR 1"=100'
VER 1"=10'

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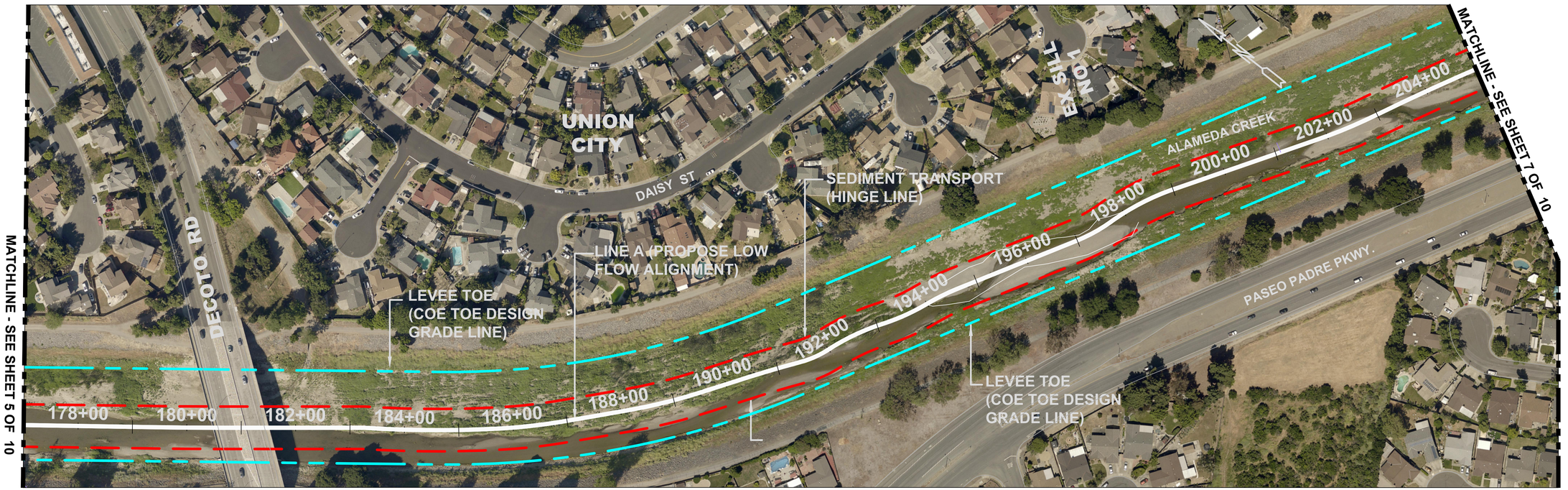
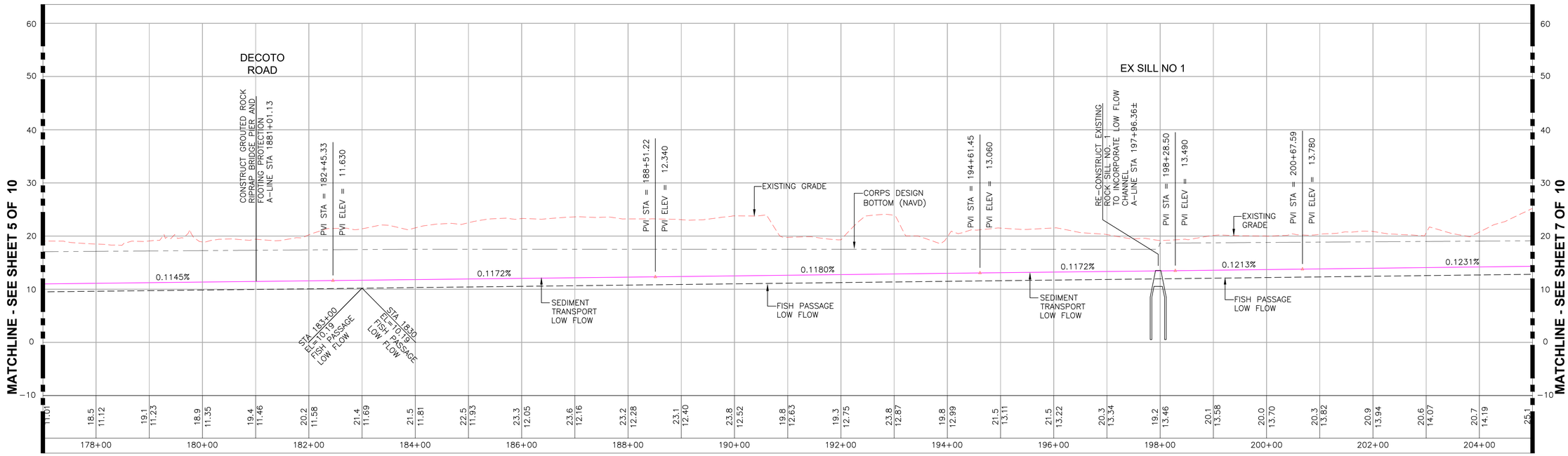


PLAN - PHASE 3 (Sta 177+00 to 198+00)
SCALE: 1"=100'

PLAN - PHASE 2 and 3 TRANSITION (Sta 177+00 to 198+00)
SCALE: 1"=100'

PLAN - PHASE 2 (Sta 177+00 to 205+00)
SCALE: 1"=100'



PROFILE

SCALE: HOR 1"=100'
VER 1"=10'

APPENDIX A: PLAN & PROFILE VIEW. LOWER ALAMEDA CREEK RESTORATION (BART WEIR TO UPRR), FREMONT, CALIFORNIA

PLAN - PHASE 2 (Sta 205+00 to 233+00)

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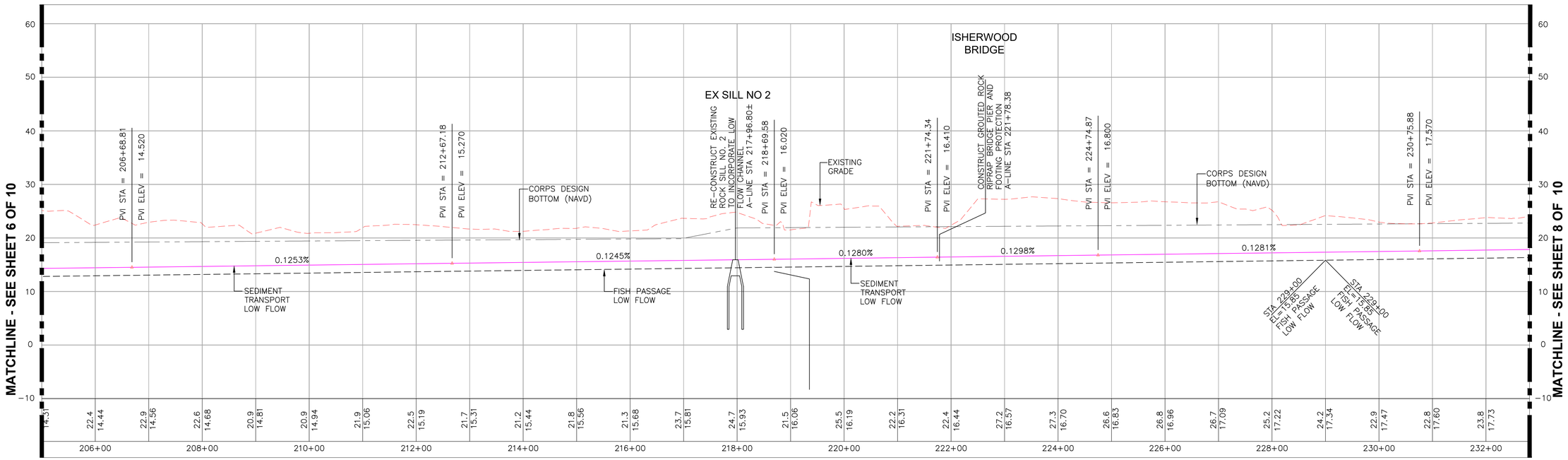

PROFILE

SCALE: HOR 1"=100'
VER 1"=10'

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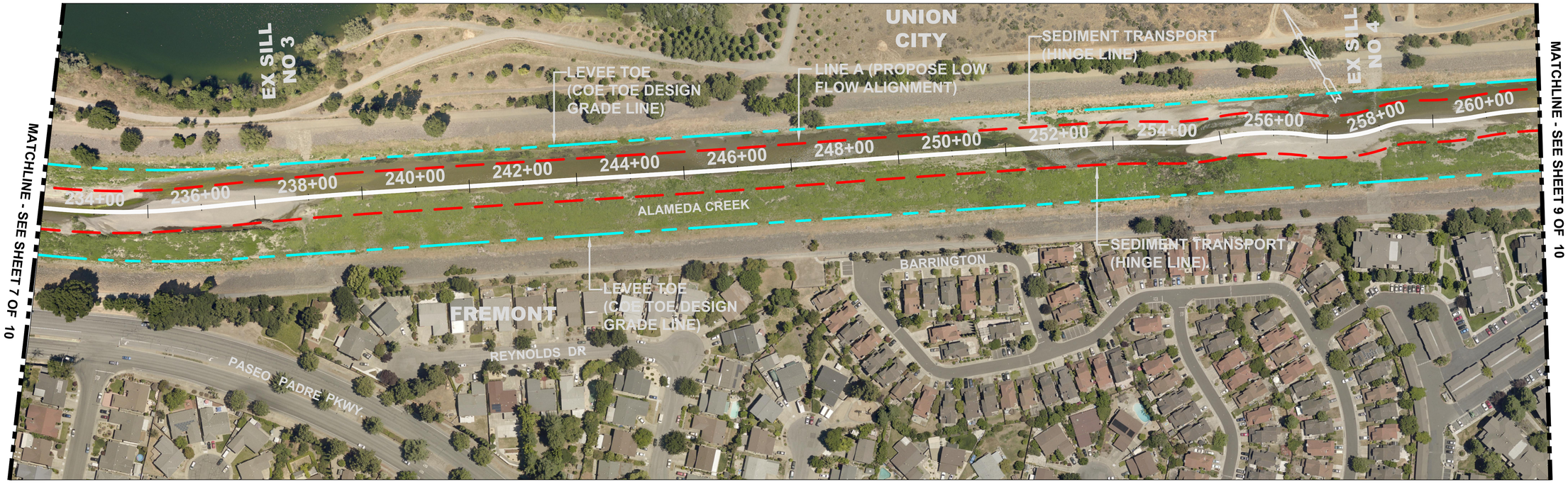

PLAN - PHASE 2 (Sta 233+00 to 261+00)

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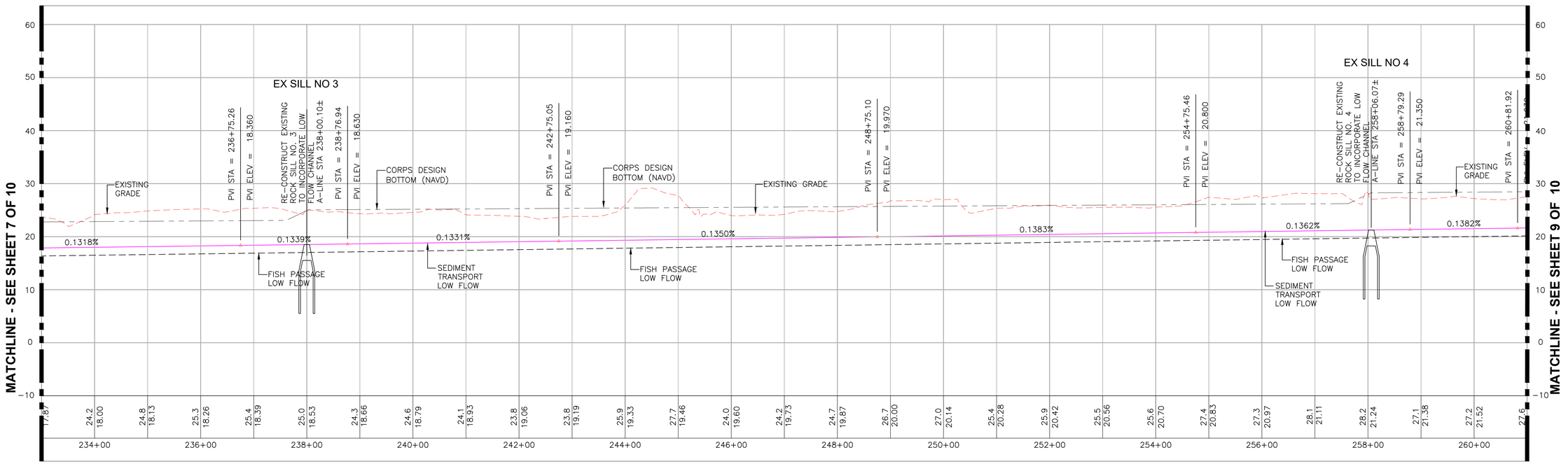

PROFILE

SCALE: HOR 1"=100'
VER 1"=10'

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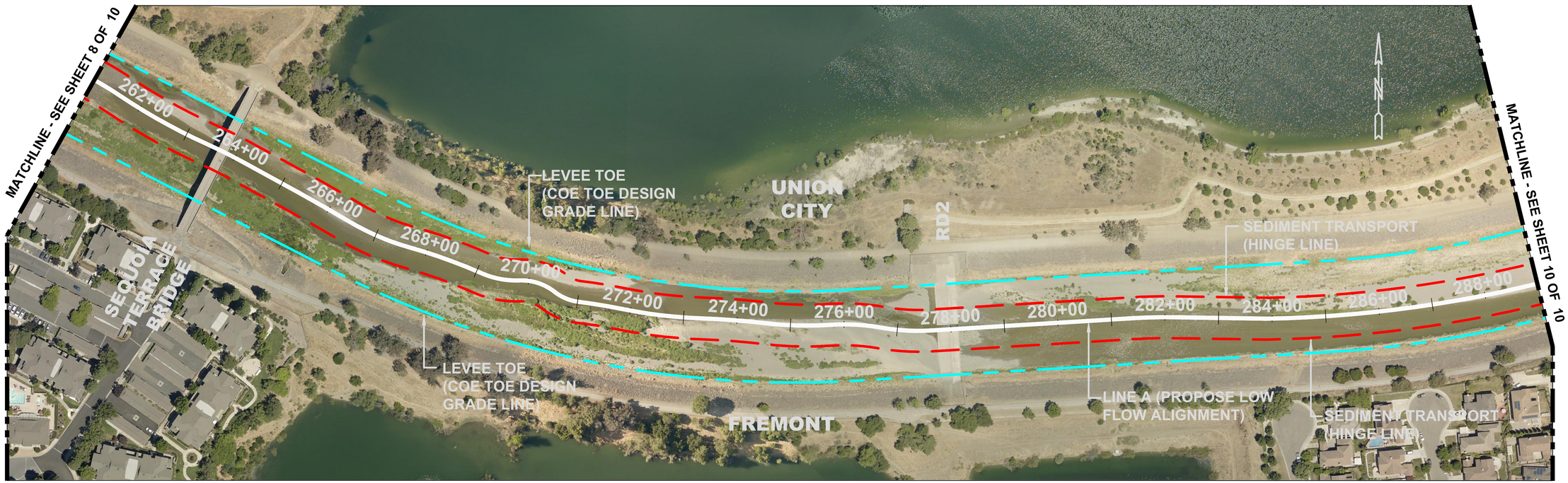
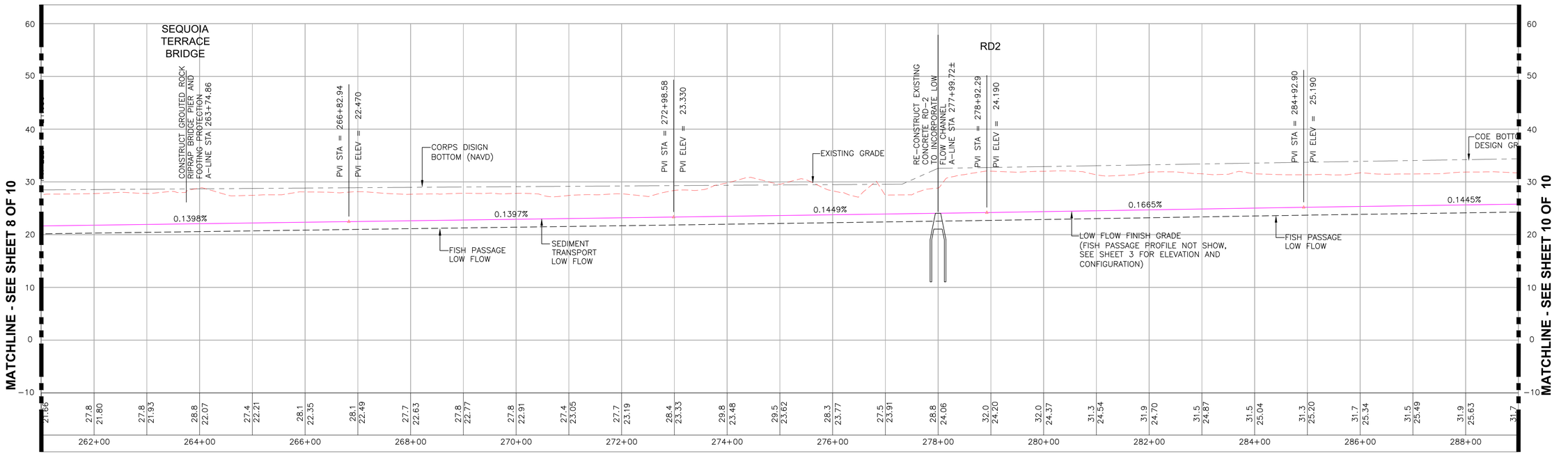


PLAN - PHASE 2 (Sta 261+00 to 278+00)

SCALE: 1"=100'

PLAN - PHASE 1 (Sta to 278+00 to 289+00)

SCALE: 1"=100'



PROFILE

SCALE: HOR 1"=100'
VER 1"=10'

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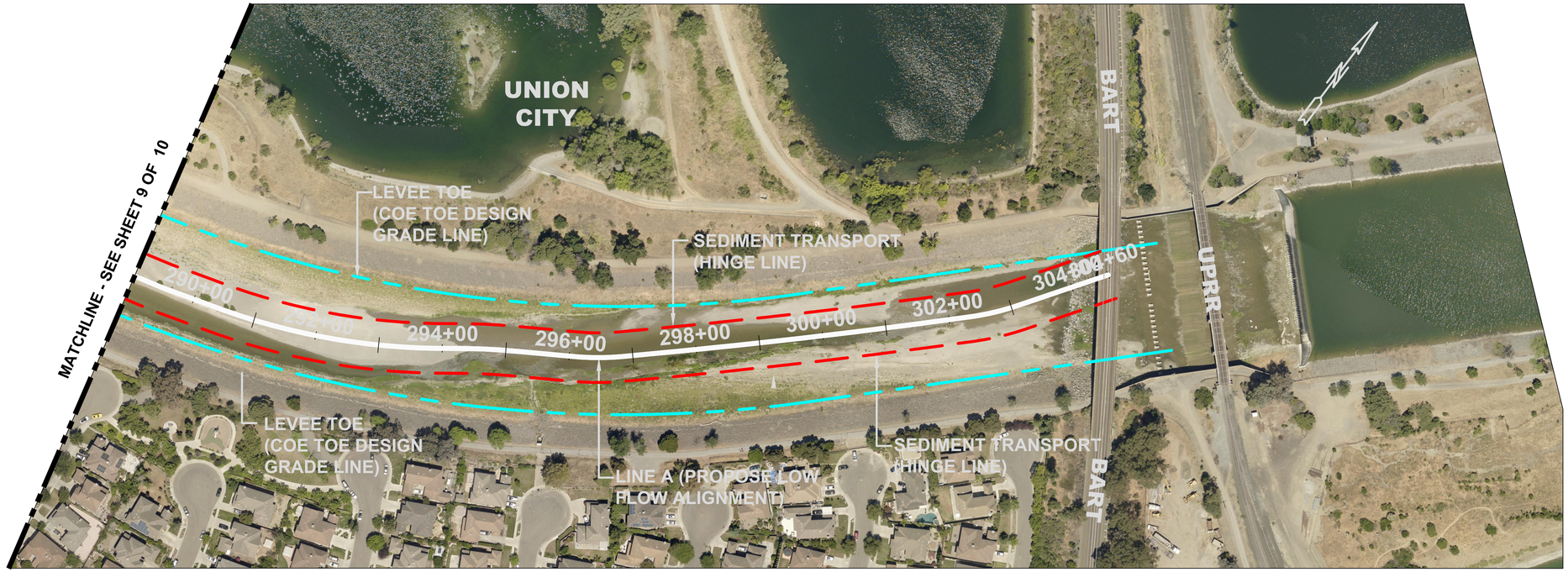

PLAN - PHASE 1 (Sta 289+00 to 305+58.43)

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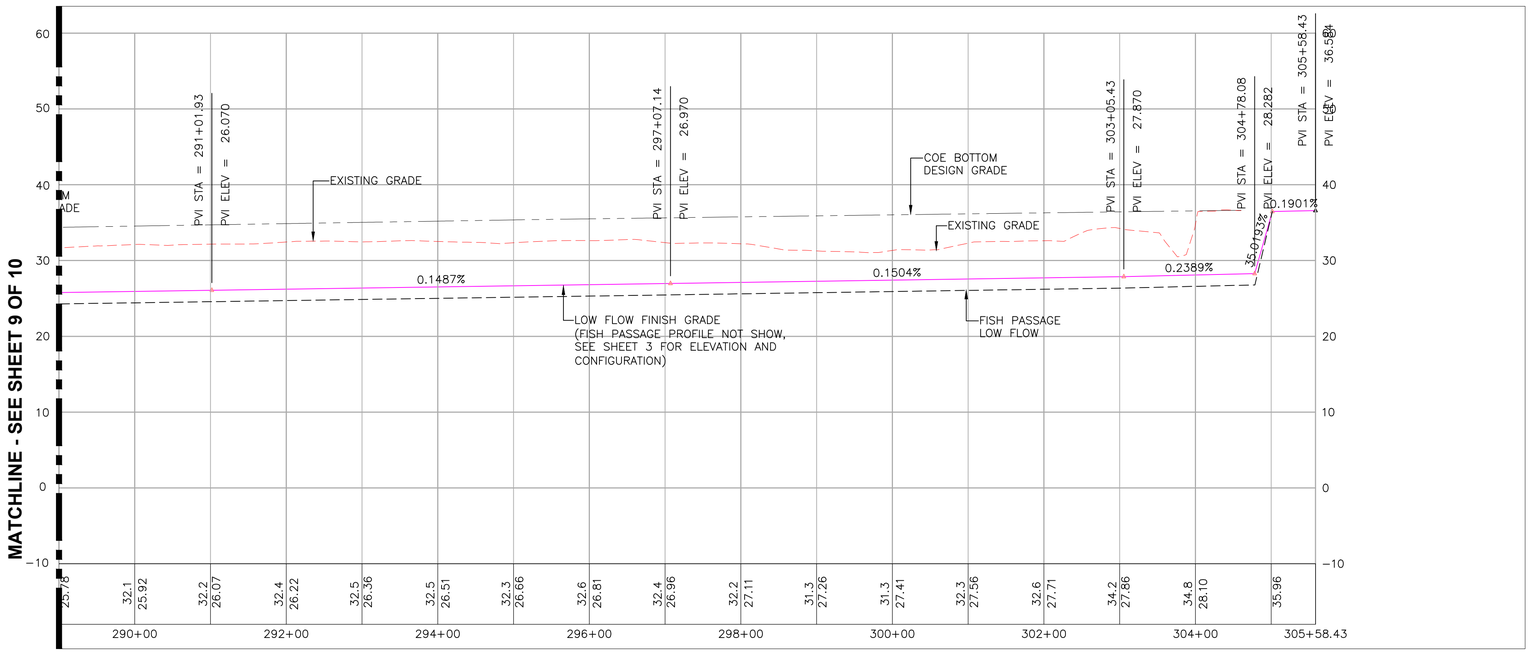

PROFILE

SCALE: HOR 1"=100'
VER 1"=10'