Lower Penitencia Creek Improvements Project

Final Environmental Impact Report

State Clearinghouse No. 2015062026

VOLUME 2: MAIN BODY

October 2017

Horizon
WATER and ENVIRONMENT

Santa Clara Valley
Water District

SANTA CLARA VALLEY WATER DISTRICT

Lower Penitencia Creek Improvements Project Milpitas, California

Final Environmental Impact Report

Volume 2 – Main Body

State Clearinghouse No. 2015062026

Prepared for:

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

Prepared by:

Horizon Water and Environment, LLC
180 Grand Avenue, Suite 1405
Oakland, California 94612

Contact: Ken Schwarz
(510) 986-1851

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Acronyms and Abbreviations

A	
AAI	All Appropriate Inquiries
AB	Assembly Bill
ABAG	Association of Bay Area Governments
AC Transit	Alameda–Contra Costa Transit District
AIS	Aerial Information Systems, Inc.
APE	area of potential effect
ASTM	American Society for Testing and Materials
ATCM	Airborne Toxic Control Measure
B	
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
Basin Plan	Water Quality Control Plan for the San Francisco Basin
the Bay	San Francisco Bay
Bay Area	San Francisco Bay Area
BCDC	San Francisco Bay Conservation and Development Commission
bgs	below ground surface
BIA	U.S. Bureau of Indian Affairs
BMP	best management practices
C	
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CalEEMod	California Emissions Estimator Model
Cal EMA	California Emergency Management Agency
Cal/EPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
Cal-IPC	California Invasive Plant Council
Cal OES	Governor’s Office of Emergency Services
Cal/OSHA	California Occupational Safety and Health Administration
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBC	California Building Standards Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDOC	California Department of Conservation

CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund Act)
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH_4	methane
CIWMA	California Integrated Waste Management Act of 1989
cm	centimeter
CMP	Congestion Management Program
CNEL	Community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
cy	cubic yards
D	
dB	decibel
dBA	A-weighted decibel
DEIR	draft environmental impact report
District	Santa Clara Valley Water District
DPM	diesel particulate matter
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
E	
EFH	Essential Fish Habitat
EIR	environmental impact report
EO	Executive Order
ESA	Endangered Species Act
F	
F&G Code	California Fish and Game Code
FEIR	final EIR
FEMA	Federal Emergency Management Agency
FMP	fishery management plan
FTA	Federal Transit Administration

G

GC	General Commercial
GHG	greenhouse gas
GIS	geographic information system
GPS	global positioning system
GWP	global warming potential

H

H_2S	hydrogen sulfide
Handbook	*Santa Clara Valley Water District Best Management Practices Handbook*
HAP	hazardous air pollutant
HCM	*Highway Capacity Manual*
HCP	habitat conservation plan
HFCs	hydrofluorocarbons
HSLA	Hazardous Substance Liability Assessment
HTL	high tide line
Hz	Hertz

I

I-	Interstate
in/sec	inches per second
IP	Industrial Park
IPCC	International Panel on Climate Change

L

L_{dn}	day-night average sound level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
L_{min}	minimum sound level
LOS	level of service
LUST	leaking underground storage tank

M

MBTA	Migratory Bird Treaty Act
MCLs	Maximum Contaminant Levels
MFH	Multi-family Residential, Very High Density
MFM	Multi-family Residential, Medium Density
mgd	million gallons per day
MHHW	mean high high water
MHW	mean high water
MLD	Most Likely Descendent
MLLW	mean lower low water
MMI	Modified Mercalli Intensity
MMRP	Mitigation Monitoring and Reporting Program

MMT CO_2e	million metric tons of carbon dioxide equivalent
MS_4	municipal separate storm sewer system
msl	mean sea level
MT CO_2e	metric tons of carbon dioxide equivalent
MTC	Metropolitan Transportation Commission
MUTCD	*California Manual on Uniform Traffic Control Devices*
MW	Manufacturing and Warehousing

N

N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NAVD88	North American Vertical Datum of 1988
NCCP	natural community conservation plan
NEHRP	National Earthquake Hazards Reduction Program
NFP	Natural Flood Protection
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation of an EIR
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act of 1977
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Resources
NSF	National Science Foundation
NWIC	Northwest Information Center

O

O_3	ozone
OEHHA	California Governor's Office of Environmental Health Hazard Assessment
OHW	ordinary high water mark
OSHA	U.S. Department of Labor, Occupational Safety and Health Administration

P

Pb	lead
PCE	passenger car equivalents
PFCs	perfluorocarbons
PG&E	Pacific Gas and Electric Company
Phase I ESA	Phase I Environmental Site Assessment

$PM_{2.5}$	particulate matter of aerodynamic radius of 2.5 microns or less
PM_{10}	particulate matter of aerodynamic radius of 10 microns or less
Porter-Cologne	Porter-Cologne Water Quality Control Act
POS	Parks and Open Space
ppb	parts per billion
ppd	pounds per day
ppm	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
Program	Lower Berryessa Creek Program
Program EIR	*Lower Penitencia Creek Program Environmental Impact Report*
proposed project	Lower Penitencia Creek Improvements Project
PVC	polyvinyl chloride

R

RCPS	Regional Climate Protection Strategy
RCRA	Resource Conservation and Recovery Act of 1976
REC	recognized environmental condition
RMP	risk management plan
ROG	reactive organic gases
ROW	right-of-way
RWQCB	Regional Water Quality Control Board

S

Santa Clara Permittees	Santa Clara Valley Urban Runoff Pollution Prevention Program
SAR	Second Assessment Report
SB	Senate Bill
SBWR	South Bay Water Recycling Program
SCVWD	Santa Clara Valley Water District
SF_6	sulfur hexafluoride
SFEI	San Francisco Estuary Institute
SFPUC	San Francisco Public Utilities Commission
SHMA	Seismic Hazards Mapping Act of 1990
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMP	Stream Maintenance Program
SO_X	sulfur dioxide
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board

T

TAC	toxic air contaminant
TCP	traditional cultural properties
TCR	tribal cultural resource

TDB	travel demand management
TFCA	Transportation Fund for Clean Air
U	
USA North	Underground Service Alert–Northern California
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
V	
V/C	volume to capacity
VdB	vibration decibels
VegCAMP	Vegetation Classification and Mapping Program
VOC	volatile organic compound
vph	vehicles per hour
VTA	Santa Clara Valley Transportation Authority
W	
WRCC	Western Regional Climate Center
°F	degrees Fahrenheit
$\mu g/m^3$	micrograms per cubic meter
µin/sec	micro-inch per second

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EXECUTIVE SUMMARY

Introduction

The Santa Clara Valley Water District (District) prepared this ~~Draft~~ Environmental Impact Report (~~D~~EIR) to provide the public, responsible agencies, and trustee agencies with information about the environmental effects of the proposed Lower Penitencia Creek Improvements Project (proposed project). This ~~D~~EIR was prepared in compliance with the California Environmental Quality Act (CEQA) of 1970 (as amended) and the State CEQA Guidelines (California Code of Regulations [CCR] Title 14, Section 15000 et seq.).

Project Objectives

The proposed project is necessary to avoid flooding in the project area during the projected future 1-percent (or 100-year) flow. The proposed project would meet the following objectives:

- Convey the Lower Berryessa Creek 1-percent design flow that is delivered to Lower Penitencia Creek;
- Meet required water surface elevations at the confluences of Lower Penitencia Creek with Coyote Creek and Berryessa Creek;
- Minimize the need for seasonal removal of sediment and non-woody vegetation;
- Maintain existing FEMA accreditation of the east levee located between California Circle and Berryessa Creek; and
- Ensure the project improvements meet FEMA certification requirements.

Project Location

The proposed project is located on Lower Penitencia Creek within a developed area in the City of Milpitas. **Figure ES–1 and Figure ES–2** show the project location. The proposed project area extends from just upstream of the confluence with Berryessa Creek downstream to the confluence with Coyote Creek. The land surrounding the proposed project is a mix of residential and office park/commercial land uses.

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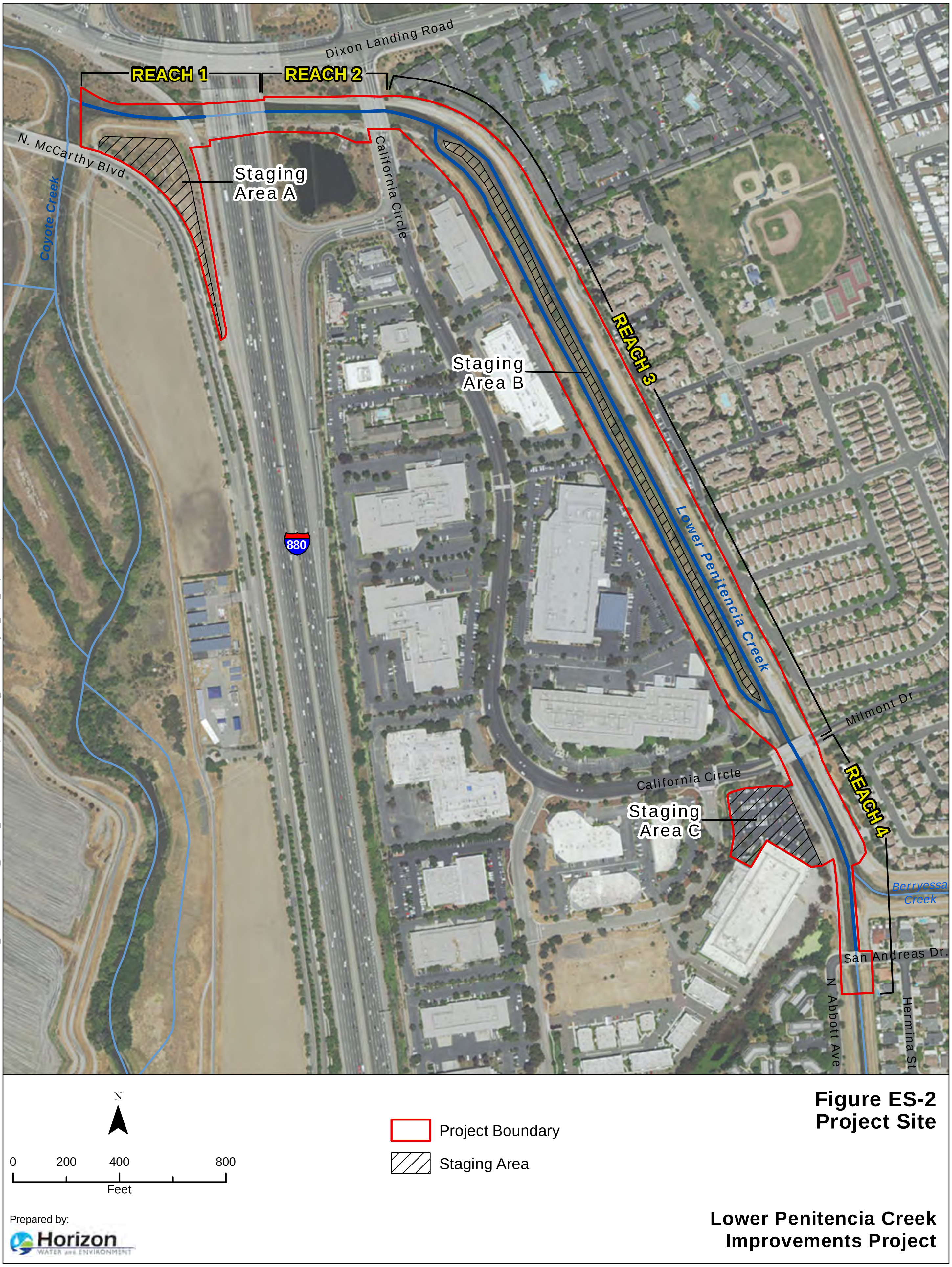
Figure ES-1
Project Location

Prepared by:
Horizon Water and Environment

Lower Penitencia Creek Improvements Project



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Prepared by: Horizon WATER and ENVIRONMENT

Figure ES-2
Project Site

Lower Penitencia Creek Improvements Project

Project Planning and Development

Lower Penitencia Creek Improvements Project is one of six elements evaluated in the *Lower Berryessa Creek Program Environmental Impact Report* (Program EIR). The District prepared this Program EIR in 2011, and evaluated the Lower Penitencia Creek Project reach at a a programmatic level of detail.

At the time the Program EIR was prepared, future water surface elevations and flow rates during the 1% flow (i.e., the streamflow rate with a 1-percent estimated likelihood to be equaled or exceeded in any given year) on Lower Penitencia Creek Project could only be estimated at a general level of detail. Upstream improvement projects (i.e., the District's Lower Berryessa Creek and Lower Calera Creek Flood Protection Improvements Project and the USACE's Upper Berryessa Creek Flood Risk Management Project) are currently under construction and will increase the future 1% flow of Lower Penitenica Creek. Now that the detailed designs of the upstream projects are known, the future 1% flow and resulting water surface elevations can be estimated with precision. The proposed project would accomodate the increased future 1% flow without overtopping of the Lower Penitencia Creek banks.

The District developed and analyzed various conceptual design alternatives to achieve the project objectives. These conceptual design alternatives included different combinations of infrastructure upgrades, which were refined through the District's Natural Flood Protection (NFP) evaluation processto develop four potentially feasible design alternatives:

- Design Alternative 1: widen the California Circle crossing, construct floodwalls, raise a levee, and construct wetland bench in Reach 2;
- Design Alternative 2A: widen the California Circle and Milmont Drive crossings, construct floodwalls, relocate and raise the Reach 1 levee, and construct wetland benches in Reaches 1 and 2;
- Design Alternative 4: widen the California Circle and Milmont Drive crossings, construct floodwalls, relocate and raise the Reach 1 levee, and construct wetland benches in Reaches 1 and 3; and
- Design Alternative 6: widen the California Circle crossing, construct floodwalls, raise the Reach 1 levee, remove the central berm in Reach 3, and line the channel with concrete.

Based on the NFP evaluation process, District staff initially determined that Design Alternative 2A would best meet the project objectives. As part of the design process, the District modeled the 1-percent flow that would occur under "interim" and "ultimate" conditions. The interim condition is defined as the future flow that would result after construction of the District's Lower Berryessa Creek Flood Protection Project and the USACE's Upper Berryessa Flood Risk Management Project had been completed. These two projects are currently under construction and will be completed in 2018, at which time the 1-percent (or 100-year) interim flow at the confluence of Lower Penitencia Creek with Coyote Creekwill increase from 4,830 cubic feet per second (cfs) to 6,900 cfs. The ultimate condition is the future flow that would result after the channel improvements to Upper Berryessa Creek upstream of I-680 are completed. The 1 percent ultimate flow is 8,720 cfs, which is 26 percent greater than the interim flow. Construction of channel improvements to Upper Berryessa Creek upstream of I-680 are not expected to occur for at least 10 years or longer. Due to the uncertainty as to when the ultimate flow condition would be achieved, Alternative 2A was refined such that the proposed project would convey the 1-percent interim flows of 6,900 cfs without overtopping of the Lower Penitencia Creek banks.

For all of the project design alternatives, interim flows could be conveyed without modifying the existing bridges at California Circle and Milmont Drive. Thus, modifications of those two bridges, which were originally considered as part of Design Alternative 2A, are not proposed as part of the proposed project or project alternatives (described further in Chapter 5, *Alternatives*). As described above, throughout the initial planning phase, the District refined Alternative 2A to develop the proposed project. Proposed project elements are described in more detail in the following sections.

Proposed Project

The proposed project would include various improvements along the four reaches included in the project area, including: sheetpile floodwalls, earthen fill, a wetland bench, a relocated and raised levee, bridge headwalls, sediment removal, maintenance road improvments, and revegetation. **Table ES–1** summarizes the project elements proposed for each reach.

Table ES–1. Proposed Project Elements

Reach or Bridge	Project Elements
Reach 1 Coyote Creek to I-880	Relocated and raised south bank levee with maintenance road on crest Wetland bench on south bank <u>Approximately 50 feet of sheetpile floodwall to the north of channel</u>
Reach 2 I-880 to California Circle	Sheetpile floodwall on top of existing south/west bank levee <u>Approximately 25 feet of sheetpile floodwall on top of existing north/east bank levee near I-880</u> Removal of about 70 cy of sediment from the concrete-lined channel) Relocated access ramp to City's pump station Maintenance road improvements
Reach 3 California Circle to Milmont Drive	Sheetpile floodwalls on top of existing west and east bank levees Earthen fill to floodwall to allow the existing Penitencia Creek Trail to cross over the new floodwall Removal of about 1,500 cy of accumulated sediment from low-flow channel Maintenance road improvements
Reach 4 Milmont Drive to San Andreas Drive	Sheetpile floodwalls on top of existing west bank levee Raising of existing east bank levee by up to 6 ft Removal of about 730 cy of sediment from the concrete-lined channel Maintenance road improvements
San Andreas Drive Bridge	Headwalls on the downstream and upstream faces of San Andreas Drive bridge

Project Construction

Construction Activities

Construction activities and processes would differ based on the type of improvement. Construction of floodwalls would generally entail shallow excavation and fill to create a working platform for installation of sheetpiles. A specialized piece of equipment called a Giken silent piler would be used to install the sheetpile walls. Construction of the wetland bench would involve excavation in the existing south bank of Reach 1 to lower the ground surface elevation to below mean high tide level. Excavated soil would either be used to create the replacement levee in Reach 1 and raise Reach 4 east bank levee or disposed of at an offsite location. Construction of the new south bank levee in Reach 1 would entail removal of the existing levee down to grade level and preparation of the ground surface to receive new fill.

In-channel work would occur between mid-June and mid-October when channel flow is lowest. Dewatering would be temporary and would be necessary throughout the project area. In total, about 5,100 linear feet of channel would be dewatered. During in-channel work, water would be diverted into pipes and routed around the work areas by a temporary cofferdam. Diverted water would be returned to the creek downstream of the project area. At the end of each dry-period construction season, disturbed areas would be hydroseeded to provide erosion protection and prevent eroded sediment being washed into the creek.

Construction Staging Areas and Access

Construction would generally occur within existing District right-of-way (ROW) and easements along the channel. Three staging areas adjacent to the project site may be used during project construction for staging of equipment and construction materials.

I-880, Dixon Landing Road, and California Circle would be the primary construction access routes to the project area.

Construction Workers and On-haul and Off-haul Estimates

The proposed project would require up to 40 construction workers on site, although less than 20 workers would likely be on site on a typical workday. It is expected that all excavated soil would be reused on site, and approximately 3,430~~3,500~~ cubic yards (cy) of fill~~concrete~~ would be delivered and placed on site. About 2,300 cy of sediment would be removed from the low-flow channel for disposal off-site.

Construction Schedule

Project construction is anticipated to occur over 2 years, during 2018 and 2019. In-channel construction activities, as described above, would occur between June 15 and October 15 each year, while activities on the levee crests or outside the channel may occur outside the June 15 to October 15 dry season. Project construction would primarily occur on weekdays between the hours of 7:00 a.m. and 7:00 p.m. Less frequently, construction may also occur on weekend days between the hours of 7:00 a.m. and 7:00 p.m, which is allowed by the Milpitas Noise Abatement Ordinance. On rare occasions, construction may be necessary before 7:00 a.m. or after 7:00 p.m; construction during those hours would be very infrequent and would occur only with advance approval from the City of Milpitas. No construction activities would occur on the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

Project Operations

Following project construction and similar to current practice, routine maintenance activities would be conducted within the project area as needed. These activities include trash and debris removal, vegetation management (e.g., mowing the channel banks, removing vegetation along maintenance roads), maintenance road grading, management of wildlife conflicts, graffiti removal, and fence repair. These routine maintenance activities would continue to occur under the District's Stream Maintenance Program (SMP), an ongoing countywide program that provides maintenance standards and guides maintenance activities for the District to meet its designated flood protection mandates throughout Santa Clara County. In addition, the newly installed floodwalls and San Andreas Drive bridge headwalls would be visually inspected on a periodic basis (one to two times per year) and would be repaired as-needed. Once constructed, the proposed project would reduce the need for routine sediment removal in the channel.

Public Involvement Process

EIR Scoping

An NOP for the proposed project was prepared in accordance with State CEQA Guidelines Section 15082 and circulated to the State Clearinghouse on June 11, 2015. The scoping period continued for 30 days and concluded on July 10, 2015. During the scoping period, the District received comment letters from the California Department of Transportation and the San Francisco Bay Regional Water Quality Control Board. All of the comments contained in the scoping letters have been incorporated and/or addressed as appropriate in this EIR.

Draft EIR Public Comment Period

The District ~~is circulating this~~ circulated the DEIR for a 45-day public review and comment period.

Interested parties ~~are~~were encouraged to submit written comments on ~~this~~the DEIR. All comments ~~must be received~~were due by 5:00 p.m. on July 3, 2017 and directed to:

Michael Coleman, Environmental Planner II
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95115
mcoleman@valleywater.org

Written comments on the DEIR received by the Distirict during the public review period ~~will be~~were addressed in ~~the~~this Final EIR (Volume 1, Response to Comments on the Draft EIR).

Areas of Known Controversy and Issues to Be Resolved

State CEQA Guidelines Section 15123(b) requires that an Executive Summary identify "areas of controversy known to a lead agency including issues raised by agencies and the public."

The following issues were raised by agencies in response to the EIR NOP and may be considered controversial:

- Possible flooding effects due to sea-level rise in the vicinity of the I-880/Dixon Landing Road interchange;
- Construction-period impacts on I-880 and other highways (e.g., vehicle queues on ramps);
- Accurate description of project components not evaluated in the Lower Berryessa Program EIR; and
- Potential effects on the I-880 creek crossing.

Each issue is addressed in this EIR.

Significant Impacts

This section presents the significant impacts that were identified in the DEIR. This is not a comprehensive discussion of impacts of the proposed project; the reader is directed to Table ES-2 (Summary of Impacts and Mitigation Measures) which is presented at the end of this chapter for additional information. Environmental resource topics with the potential for significant environmental impacts are as follows:

- Air Quality
- Biological Resources
- Geology, Soils, and Seismicity
- Hazards and Hazardous Materials
- Noise and Vibration
- Traffic and Transportation

Sections 3.2 through 3.14 of this ~~D~~EIR address each of these environmental resource topics and the environmental consequences of the proposed project in more detail.

Significant and Unavoidable Impacts

The following impacts have been identified as significant and unavoidable:

- Impact NOI-1: Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in the applicable standards of other agencies
- Impact NOI-2: Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels
- Impact NOI-4: A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The project would also make a cumulatively considerable contribution to significant cumulative noise impacts during project construction.

Alternatives Considered

The District considered the following alternatives to the proposed project:

- No Project Alternative
- Alternative 1: Reach 1 Raised Levee, Floodwalls, and Ongoing Sediment Removal
- Alternative 2: Reach 1 Raised Setback Levee, Reaches 1 and 3 Wetland Benches, and Floodwalls
- Alternative 3: Reach 1 Raised Levee, Reach 3 Concrete Channel Lining, and Floodwalls

In addition, during project planning, the District considered several additional alternatives, but ultimately dismissed them from further analysis for one or more of the following reasons: (1) they would not sufficiently meet the proposed project objectives; (2) they were determined to be infeasible; or (3) they would not avoid or substantially reduce one or more significant impacts of the proposed project.

No Project Alternative

Under the No Project Alternative, no new construction activities would occur. The flood control channel would remain in its current condition. Ongoing maintenance activities, including sediment removal and vegetation management currently occurring under the District's SMP, would continue in the future. Although this alternative would avoid all impacts associated with construction of the proposed project, this alternative would not meet project objectives. Flood hazards and flooding impacts would increase under this alternative. In the event of a 100-year flood event, substantial damage to nearby land uses including residential, office space, the District's maintenance roads, nearby public roads, I-880, and the Penitencia Creek Trail. Flood damage and subsequent clean-up efforts could also result in adverse effects related to water quality, geology and soils, biological resources, cultural resources, recreational resources, noise, traffic and circulation, utilities and service systems, and air quality.

Alternative 1: Reach 1 Raised Levee, Floodwalls, and Ongoing Sediment Removal

Under this alternative, the south bank levee in Reach 1 would be raised but would not be relocated. Floodwalls would be constructed in Reaches 2, 3, and 4 and would be of similar height as those for the proposed project. As with the proposed project, headwalls would be constructed on both sides of the existing San Andreas Drive bridge.

Alternative 1 would result in similar construction-related impacts as the proposed project, including temporary transportation and traffic impacts, use of hazardous materials, air emissions, noise and vibration, and impacts on hydrology and water quality. Alternative 1 also would increase operational impacts associated with increased sediment removal in Reaches 2 and 4 compared to the proposed project, resulting in periodic disturbance of aquatic and riparian habitat that would be greater than if the proposed project were implemented. Additionally, the enhancements to Reach 1 tidal wetlands included in the proposed project would not be achieved, and the current degraded and isolated conditions of Reach 1 wetlands, which provide marginal habitat value, would continue indefinitely.

Alternative 2: Reach 1 Raised Setback Levee, Reaches 1 and 3 Wetland Benches, and Floodwalls

Under Alternative 2, the south bank levee in Reach 1 would be relocated and raised, which would create space for establishing a 50-foot-wide wetland bench immediately south of the existing channel. Floodwalls would be constructed in Reaches 2, 3, and 4. In Reach 3, the west bank floodwall would have a total height of 18.5 feet when viewed from inside the channel, but it would be partially below grade and extend about 4 feet above the crest of the existing levee. This alternative would create enhanced tidal wetlands in Reach 1, similar to the proposed project. In Reach 3, a 25 to 45-foot-wide wetland bench and depressed channel access road would be constructed.

Alternative 2 would meet the primary objective of conveying Lower Penitencia Creek's 1-percent design flow, would meet the required water surface elevations at the confluences with Coyote and Lower Berryessa creeks, would maintain certification of the east levee, and would meet FEMA certification standards. However, this alternative would not minimize the need for removal of sediment and non-woody vegetation.

This alternative would result in increased construction-related impacts due to excavation of the depressed maintenance road and Reach 3 wetland bench, and therefore would result in greater construction-related traffic, air quality, and noise impacts than the proposed project. Additionally, this alternative would involve greater excavation work than the proposed project and would therefore result in greater effects on existing landfill capacity. The increased hardscape in the channel due to the Reach 3 floodwall and depressed maintenance road could result in increased pollutant flows to the creek, adversely affecting water quality. This would be partially offset by the wetland bench between the road and the creek channel, which would help to filter pollutants from storm runoff before they reach the creek.

In the long term, up to 3 acres of wetland habitat would be established in Reach 3, which would provide habitat for common and special-status species. This wetland bench would offset loss of riparian habitat loss due to elimination of the Reach 3 central berm.

Alternative 3: Reach 1 Raised Raise, Reach 3 Concrete Channel Lining, and Floodwalls

Under Alternative 3, the south levee in Reach 1 would be raised and floodwalls would be constructed in Reaches 2, 3, and 4. The central berm in Reach 3 would be excavated and removed, and the entire channel would be lined with concrete. Alternative 3 would meet the primary objective of conveying Lower Penitencia Creek's 1-percent design flow, would meet the required water surface elevations at the confluences with Coyote and Lower Berryessa creeks, would maintain certification of the east levee, and would meet FEMA certification standards. This alternative would only partially meet objectives to minimize the need for removal of sediment and non-woody vegetation. Alternative 3 would minimize vegetation removal because about 8 acres of vegetation would be permanently replaced with concrete lining, but the need for future sediment removal would not be minimized.

Alternative 3 would result in greater construction-related traffic, noise, vibration, and air quality impacts due to excavation and removal of the Reach 3 berm and installing concrete lining in the Reach 3 channel. These activities would require substantially more haul truck trips in comparison to the proposed project. Lining the channel with concrete also would result in loss of about 8 acres riparian and aquatic habitat throughout Reach 3, most of which occurs on the berm and some of which is used by special-status species; this would adversely affect the ecological functions the existing creek channel may provide.

Environmentally Superior Alternative

Among the alternatives considered in this EIR (not including consideration of the proposed project), Alternative 2 is considered the environmentally superior alternative. When considering the proposed project against Alternative 2, however, the proposed project is environmentally superior. Alternative 2 would permanently create greater wetlands in the project area than the proposed project, but would also result in permanent removal of more riparian habitat and creation of more in-stream hardscape than the proposed project. Alternative 2 would also result in greater construction-related impacts associated with traffic, noise, vibration, hazards and hazardous materials, utilities and service systems, and air quality. While the proposed project would expose of residents to significant and unavoidable construction noise and vibration impacts, Alternative 2 would increase the severity of those impacts.

Summary of Impacts and Levels of Significance

Table ES–2 summarizes the impact of the proposed project, mitigation measures, and levels of significance.

Table ES–2. Summary of Impacts and Mitigation Measures for the Proposed Project

Impact	Significance Level Before Mitigation	Applicable Mitigation Measures	Significance Level After Mitigation
Aesthetics			
AES-1: Have a substantial adverse effect on a scenic vista	NI	None	NI
AES-2: Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway	NI	None	NI
AES-3: Substantially degrade the existing visual character or quality of the site and its surroundings	LS	None	LS
AES-4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area	LS	None	LS
Air Quality			
AQ-1: Conflict with or obstruct implementation of the applicable air quality plan	LS	None	LS
AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation	S	Mitigation Measure AQ-1	LM
AQ-3: 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)	S	Mitigation Measure AQ-1	LM
AQ-4: Expose sensitive receptors to substantial pollutant concentrations	LS	None	LS
AQ-5: Potential to create objectionable odors affecting a substantial number of people during construction	S	Mitigation Measure AQ-2	LM

Impact	Significance Level Before Mitigation	Applicable Mitigation Measures	Significance Level After Mitigation
Biological Resources			
BIO-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service	S	Mitigation Measures BIO-1 through BIO 12	LM
BIO-1a: Impacts on longfin smelt and steelhead	S	Mitigation Measure BIO-1	LM
BIO-1b: Impacts on essential fish habitat	LS	None	LS
BIO-1c: Impacts on western pond turtles	S	BIO-2	LM
BIO-1d: Impacts on burrowing owls	LS	None	LS
BIO-1e: Impacts on the Alameda song sparrow and San Francisco common yellowthroat	S	Mitigation Measures BIO-3 and BIO-4	LM
BIO-1f: Impacts on non-nesting special-status birds	LS	None	LS
BIO-1g: Impacts on salt marsh harvest mouse	S	Mitigation Measures BIO 5 through BIO-8	LM
BIO-1h: Impacts on special-status bats	LS	None	LS
BIO-1i: Impacts on Congdon's tarplant	S	Mitigation Measures BIO-9 and BIO-10	LM
BIO-1j: Introduction of invasive species	S	Mitigation Measures BIO-11 and BIO-12	LM
BIO-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service	LS	None	LS
BIO-3: 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.), waters of the U.S., and waters of the state through direct removal, filling, hydrological interruption, or other means	S	Mitigation Measure BIO-13	LM

Impact	Significance Level Before Mitigation	Applicable Mitigation Measures	Significance Level After Mitigation
BIO-4: 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	LS	None	LS
BIO-5: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance	LS	None	LS
BIO-6: Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan	NI	None	NI
Cultural Resources			
CR-1: Cause a substantial adverse change in the significance of a historical resource as defined in section 15064.5	NI	None	NI
CR-2: Cause a substantial adverse change in the significance of an archaeological resource pursuant to section 15064.5	LS	None	LS
CR-3: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	NI	None	NI
CR-4: Disturb any human remains, including those interred outside of formal cemeteries.	LS	None	LS
CR-5: Cause a substantial adverse change in the significance of a tribal cultural resource as defined in public resources code Section 21074	~~NI~~LS	None	~~NI~~LS
Geology, Soils and Seismicity			
GEO-1: Expose people or structures to potential substantial adverse effects, including, the risk of loss, injury, or death involving: 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); or strong seismic ground shaking	LS	None	LS

Impact	Significance Level Before Mitigation	Applicable Mitigation Measures	Significance Level After Mitigation
GEO-2: Expose people or structures to potential substantial adverse effects, including, the risk of loss, injury, or death involving: seismic-related ground failure, including liquefaction; or landslides	S	Mitigation Measure GEO-1	LM
GEO-3: Result in substantial soil erosion or the loss of topsoil	LS	None	LS
GEO-4: 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	S	Mitigation Measure GEO-1	LM
GEO-5: 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	LS	None	LS
GEO-6: 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	NI	None	NI
Greenhouse Gas Emissions			
GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment	LS	None	LS
GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases	NI	None	NI
GHG-3: Cause wasteful, inefficient, and unnecessary consumption of energy or cause a substantial increase in energy demand and increase the need for energy resources	LS	None	LS
Hazards and Hazardous Materials			
HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials	S	Mitigation Measure HAZ-1	LM
HAZ-2: 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	LS	None	LS

Impact	Significance Level Before Mitigation	Applicable Mitigation Measures	Significance Level After Mitigation
HAZ-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or wastes within one-quarter mile of an existing or proposed school	LS	None	LS
HAZ-4: 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	NI	None	NI
HAZ-5: 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, such that the project could result in a safety hazard for people residing or working in the project area	NI	None	NI
HAZ-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan	NI	None	NI
HAZ-7: 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	LS	None	LS
Hydrology and Water Quality			
HYD-1: Violate any water quality standards or waste discharge requirements; or otherwise substantially degrade water quality	LS	None	LS
HYD-2: 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)	LS	None	LS
HYD-3: 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	LS	None	LS

Impact	Significance Level Before Mitigation	Applicable Mitigation Measures	Significance Level After Mitigation
HYD-4: 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	LS	None	LS
HYD-5: 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	LS	None	LS
HYD-6: 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; or place structures within a 100-year flood hazard area structures which would impede or redirect flood flows	NI	None	NI
HYD-7: 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	B	None	B
HYD-8: Inundation by seiche, tsunami, or mudflow	NI	None	NI
Land Use and Planning			
LU-1: Physically divide an established community	LS	None	LS
LU-2: 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	LS	None	LS
LU-3: Conflict with any applicable habitat conservation plan or natural community conservation plan	NI	None	NI
Noise and Vibration			
NOI-1: 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	S	Mitigation Measure NOI-1	SU

Impact	Significance Level Before Mitigation	Applicable Mitigation Measures	Significance Level After Mitigation
NOI-2: Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels	S	Mitigation Measure NOI-1	SU
NOI-3: A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project	LS	None	LS
NOI-4: A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project	S	Mitigation Measure NOI-1	SU
NOI-5: 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	NI	None	NI
NOI-6: 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	NI	None	NI
Recreation			
REC-1: 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	LS	None	LS
REC-2: Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment	LS	None	LS
Traffic and Transportation			
TRA-1: Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel, and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit	S	Mitigation Measure TRA-1	LM

Impact	Significance Level Before Mitigation	Applicable Mitigation Measures	Significance Level After Mitigation
TRA-2: Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways	LS	None	LS
TRA-3: 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	NI	None	NI
TRA-4: Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)	S	Mitigation Measure TRA-1	LM
TRA-5: Result in inadequate emergency access	S	Mitigation Measure TRA-1	LM
Utilities and Service Systems			
UTL-1: Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board	LS	None	LS
UTL-2: 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	NI	None	NI
UTL-3: 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	LS	None	LS
UTL-4: Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed	LS	None	LS
UTL-5: 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	LS	None	LS
UTL-6: Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs	LS	None	LS

Impact	Significance Level Before Mitigation	Applicable Mitigation Measures	Significance Level After Mitigation
UTL-7: Comply with federal, state, and local statutes and regulations related to solid waste	LS	None	LS
UTL-8: Potential disruption and/or relocation of existing utilities	LS	None	LS
Significant Cumulative Impacts			
CUM-1: Cumulative Impacts on Air Quality	S	Mitigation Measure AQ-1	NCC
CUM-2: Cumulative Impacts on Biological Resources	S	Mitigation Measures BIO-1 through BIO-13	NCC
CUM-3: Cumulative Impacts on Hydrology and Water Quality	S	None	NCC
CUM-4: Cumulative Impacts on Noise and Vibration	S	Mitigation Measure NOI-1	CC
CUM-5: Cumulative Impacts on Traffic Patterns and Safety Hazards	S	Mitigation Measure TRA-1	NCC

Notes:

LS = Less than Significant; LM = Less than Significant with Mitigation; N/A = Not Applicable; CC = Cumulativetly Considerable Contribition; NCC = Not Cumulatively Considerably; B = Beneficial; NI = No Impact; S = Significant; SU = Significant and Unavoidable

Chapter 1
INTRODUCTION

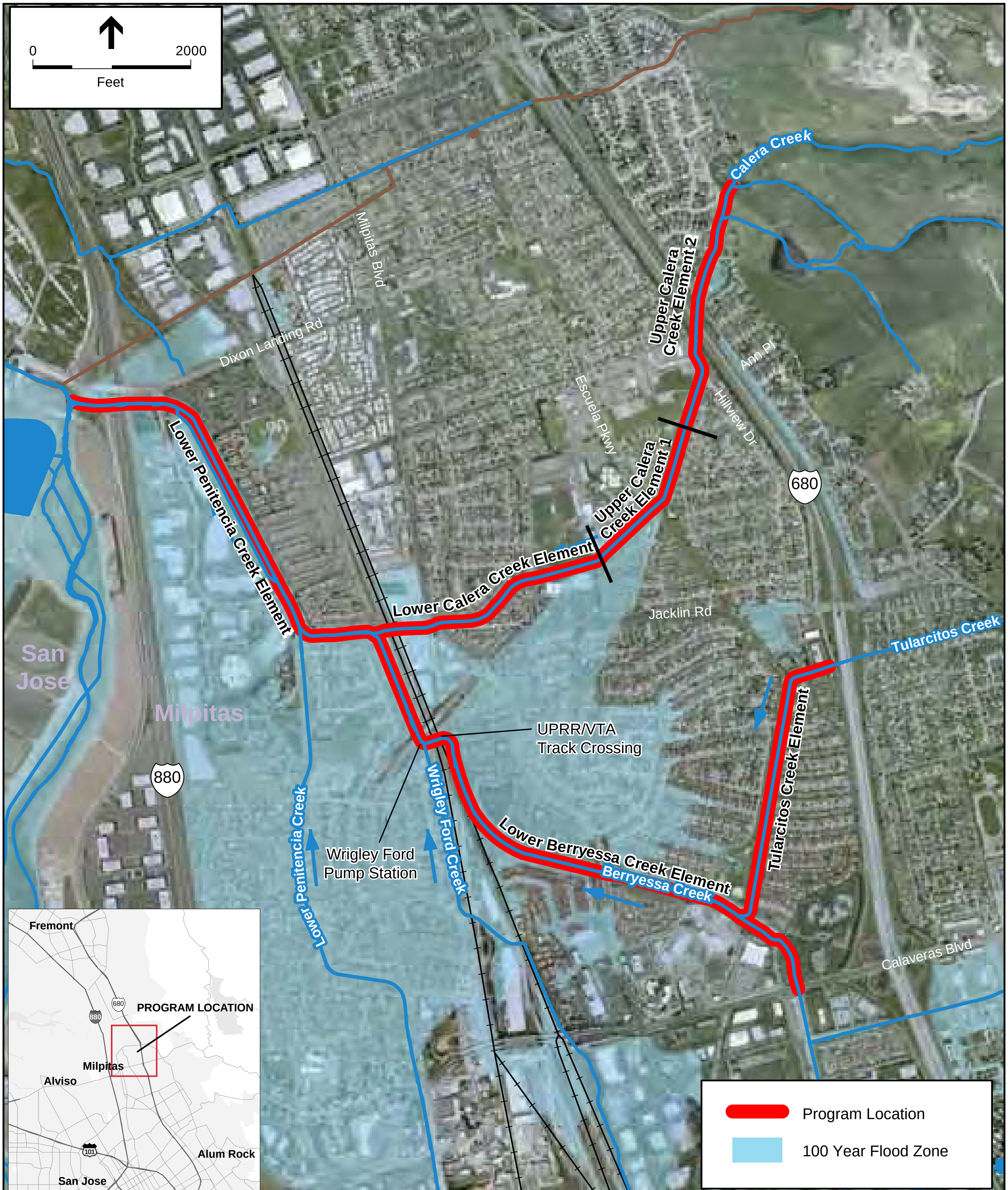
The Santa Clara Valley Water District (District) prepared this ~~draft~~ environmental impact report (~~D~~EIR) to provide the public, responsible agencies, and trustee agencies with information about the potential environmental effects of implementing the proposed Lower Penitencia Creek Improvements Project (proposed project). This document was prepared in accordance with the requirements of the California Environmental Quality Act of 1970 (as amended) (CEQA) (Public Resources Code [PRC] Section 21000 et seq.) and the State CEQA Guidelines (14 California Code of Regulations [CCR] Section 15000 et seq.).

1.1 Project Background

~~The District has approved and is planning~~This project relates to capital improvements to Lower Penitencia Creek and several of its tributaries. The Lower Berryessa Creek Program (Program) consists of capital improvements to provide flood protection to portions of four creeks in the Berryessa Creek watershed. As shown in **Figure 1-1**, the Program is divided by geography and implementation sequence into six elements, each located in the City of Milpitas in Santa Clara County:

- Lower Berryessa Creek
  - Lower Berryessa Creek Element
- Calera Creek
  - Lower Calera Creek Element
  - Upper Calera Creek Element 1
  - Upper Calera Creek Element 2
- Tularcitos Creek
  - Tularcitos Creek Element
- Lower Penitencia Creek
  - Lower Penitencia Creek Element (the proposed project)

In 2011, the District prepared the *Lower Berryessa Creek Program Environmental Impact Report* (Program EIR); this ~~was a program-level~~ EIR ~~covering~~ covers all capital improvements on the four creeks. The 2011 Program EIR (State Clearinghouse Number 2007092084) evaluated environmental consequences of improvements to Lower Penitencia Creek at a programmatic level of detail and prescribed additional impact evaluation to occur when the project was further defined.



Source: ESA 2011

Figure 1-1.
Lower Berryessa Creek Program Area

Prepared by:
Horizon WATER and ENVIRONMENT

Lower Penitencia Creek Improvements Project

This ~~D~~EIR analyzes proposed improvements to Lower Penitencia Creek, the downstream-most element of the Program, which receives water conveyed by the upstream Program elements. The proposed project extends from the Lower Penitencia Creek/Coyote Creek confluence upstream to the San Andreas Drive bridge in Milpitas, California.

In its current condition, Lower Penitencia Creek has existing capacity to accommodate the existing 1-percent flood flow[1] without overtopping its levees. However, upstream capital improvements to the Program elements on Lower Berryessa Creek, Lower Calera Creek, and Tularcitos Creek and enlargement of the Upper Berryessa Creek channel, which is currently under construction by the U.S. Army Corps of Engineers, will increase the size of the 1-percent flow. After the other upstream elements of the Program are improved and Upper Berryessa Creek is enlarged, the increased 1-percent flow from the upstream channels delivered to Lower Penitencia Creek will exceed the existing flow conveyance capacity of Lower Penitencia Creek. Therefore, the District proposes the Lower Penitencia Creek Improvements Project (proposed project) to contain the projected 1-percent flow after completion of the upstream channel improvements, thereby preventing the 1-percent flow from overtopping the banks of Lower Penitencia Creek in the future.

The District has prepared the current project EIR analyzing, at a project-specific level of detail, the proposed improvements to Lower Penitencia Creek.

1.2 Overview of CEQA Requirements

CEQA's basic purposes are to:

- Inform governmental decision makers and the public about the potential significant environmental effects of proposed activities;
- Identify the ways that environmental damage can be avoided or significantly reduced;
- Prevent significant avoidable damage to the environment by requiring implementation of feasible mitigation measures or project alternatives that would substantially lessen any significant effects that a project would have on the environment; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

With certain exceptions, CEQA requires all state and local government agencies to consider the environmental consequences of projects over which they have discretionary authority before approving or carrying out those projects. CEQA establishes both procedural and substantive requirements that agencies must satisfy to meet CEQA's objectives. For example, the agency with principal responsibility for approving or carrying out a project (the lead agency) must first assess whether a proposed project would result in significant environmental impacts. If there is substantial evidence that the project would result in

[1] A 100-year flood event, sometimes referred to as a 1-percent flood event, has an estimated 1-percent probability of occurring in any given year.

significant environmental impacts, CEQA requires that the agency prepare an EIR, analyzing both the proposed project and a reasonable range of potentially feasible alternatives.

As described in the State CEQA Guidelines (14 CCR Section 15121[a]), an EIR is an informational document that assesses potential environmental effects of a proposed project and identifies mitigation measures and alternatives to the project that could reduce or avoid potentially significant environmental impacts. Other key CEQA requirements include developing a program for implementing and monitoring the success of the identified mitigation measures and carrying out specific public notice and distribution steps to facilitate public involvement in the environmental review process. As an informational document used in the planning and decision-making process, an EIR's purpose is not to recommend either approval or denial of a project. It is important to note that an EIR does not expand or otherwise provide independent authority for the lead agency to impose mitigation measures or avoid project-related significant environmental impacts, beyond the authority already provided within the lead agency's jurisdiction.

1.2.1 Intent and Scope of this Document

In proposing to construct and operate the project as identified in Chapter 2, *Project Description,* of this ~~D~~EIR, the District is proposing to carry out and approve a discretionary project subject to CEQA (14 CCR Section 15378). The District will use the analyses presented in this ~~D~~EIR, the public response to those analyses, and the whole of the administrative record to evaluate the proposed project's environmental impacts and to further modify, approve, or deny approval of the proposed project.

1.2.2 Baseline Conditions

Under CEQA, the environmental setting or "baseline" serves as a gauge to assess changes to existing physical conditions that would occur as a result of a proposed project. In accordance with State CEQA Guidelines Section 15125, for purposes of this ~~D~~EIR, the environmental setting is the existing physical conditions at the time the Notice of Preparation of an EIR (NOP) was published (June 11, 2015). However, the project reach is within a larger maintenance program operated by the District that involves routine sediment removal and vegetation management activities. The existing physical conditions in the channel within the project area reflect a range of conditions that are influenced by routine maintenance activities. Since the NOP was published, the District has conducted maintenance work at the project site in November 2015, including sediment removal from the channel. As a result, the "existing conditions" (i.e., baseline conditions) of the project site range from the conditions in June 2015 to the conditions in late November 2015. The project site is also influenced by tidal fluctuations, and the range of sediment, vegetation growth, and tidal elevations and water quality that result from those fluctuations are evaluated equally in this analysis.

Please note, that since the NOP was published, two residential development projects, just west of Reach 3 (Waterstone and iStar), have been under construction during the preparation of this ~~Draft~~ EIR document. While no residents were living in the new townhomes at the time the ~~Draft~~ EIR was prepared, given the high housing demands in the Milpitas and South Bay Area, these developments will likely be inhabited by the time construction of the Lower Penitencia Creek Improvements Project begins. For this reason and for the purposes of this EIR, some analyses (e.g., Section 3.2, *Aesthetics*, and Section 3.11, *Noise and Vibration*) consider the proposed project's potential effects on these residents.

1.3 CEQA Process

1.3.1 Berryessa Creek Program EIR

As described above, the Lower Penitencia Creek Element is one of six elements evaluated in the Lower Berryessa Creek Program EIR. The District prepared the *Lower Berryessa Creek Program Final EIR* (SCH #2007092084) in December 2011. That Program EIR analyzed at a programmatic level of detail the environmental impacts of improving Lower Penitencia Creek. This EIR builds upon the analysis presented in the Program EIR by evaluating the environmental impacts of the proposed Lower Penitencia Creek improvements at a more specific project level of detail based on the current design of the improvements. The current project EIR evaluates potential project effects at greater level of detail than the programmatic design information available in 2011. Note that this EIR does not tier from the Program EIR, but evaluates the current project independently and entirely.

1.3.2 Notice of Preparation of an EIR

An NOP for the proposed project was prepared in accordance with State CEQA Guidelines Section 15082 and circulated to the State Clearinghouse on June 11, 2015. The scoping period continued for 30 days and concluded on July 10, 2015. The NOP presented general background information on the proposed project, the scoping process, and the environmental issues to be addressed in the EIR. Approximately 28 copies of the NOP were mailed or emailed to a broad range of stakeholders, including local, state, and federal regulatory agencies and jurisdictions and nonprofit organizations. The NOP is included in this DEIR in Appendix A, *Scoping Summary Report*.

1.3.3 Scoping Comments and Meetings

The District accepted written comments on the proposed project, the scoping process, and the environmental issues to be addressed during the 30-day scoping period. During the scoping period, two comment letters were received: one from the California Department of Transportation and one from the San Francisco Bay Regional Water Quality Control Board. Copies of comment letters received during the scoping period are included in Appendix A, *Scoping Summary Report*.

1.3.4 Draft EIR

The District ~~has~~ prepared the~~is~~ DEIR, as informed by public and agency input received during the scoping period, to disclose potentially significant environmental impacts associated with the proposed project. Where any such impacts are significant, feasible mitigation measures and potentially feasible alternatives that would substantially lessen or avoid such effects are identified and discussed.

1.3.5 Public Review and Meetings

The DEIR ~~is currently undergoing~~was available for public review for 45 days. The public review period provide~~s~~d the public an opportunity to comment on the DEIR to the lead agency. During the public review period, the District ~~will hold~~held a public meeting. The meeting ~~will begin~~began with a brief overview of the proposed project and the analysis and conclusions set forth in the DEIR. This introductory presentation ~~will then be~~was followed by the opportunity for interested members of the public to provide oral and written comments to the District regarding the proposed project and the DEIR.

This information ~~is~~was also included in the Notice of Availability of ~~this~~the DEIR.

1.3.6 Final EIR

Written and oral comments received in response to the DEIR ~~will be~~were addressed in a Response to Comments document that, together with the DEIR and any related changes to the substantive discussion in the DEIR, ~~will~~ constitute ~~the~~this Final EIR (FEIR). The Response to Comments document is presented in Volume 1 of this FEIR. ~~The~~This FEIR, in turn, will inform the District's exercise of its discretion as a lead agency under CEQA in deciding whether or how to approve the proposed project.

1.3.7 Mitigation, Monitoring, and Reporting

CEQA requires lead agencies to adopt a Mitigation Monitoring and Reporting Program (MMRP) for mitigation measures that are adopted to avoid or substantially lessen significant effects on the environment. All adopted measures will be included in an MMRP to ensure CEQA compliance during project construction and operation (State CEQA Guidelines Section 15097[a]).

1.4 Organization of this ~~D~~EIR

This ~~D~~volume of the EIR contains the following components:

Executive Summary. A project summary, description of the issues of concern, list of project alternatives, and summary of environmental impacts and mitigation measures are provided in the *Executive Summary*.

Chapter 1, *Introduction*. This chapter describes the purpose and organization of the EIR and its preparation, review, and certification process.

Chapter 2, *Project Description*. This chapter summarizes the proposed project, including a description of the project need, purpose, and objectives; project area; project components, design alternatives, and construction activities; and other actions that would be taken under the proposed project.

Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*. Section 3.1 is an introduction to the impact analysis conducted in this DEIR and describes resource topics that have been eliminated from further analysis. Sections 3.2 through 3.14 describe the environmental resources and potential environmental impacts of the proposed project. Each of these chapters describes the existing setting and background information for the resource topic area under consideration. This background provides the reader with the basis to understand the conditions that could be affected by the proposed project. These chapters present impact evaluations and discuss the criteria used in determining the significance levels of the proposed project's environmental impacts. Each of these chapters also identifies mitigation measures to reduce, where possible, the adverse effects of potentially significant impacts.

Chapter 4, *Other Statutory Considerations*. This chapter addresses the proposed project's potential to contribute to cumulative impacts. Chapter 4 also outlines the proposed project's potential to induce growth and identifies significant, irreversible environmental changes resulting from the project.

Chapter 5, *Alternatives*. This chapter describes the process by which alternatives to the proposed project were developed, screened, and evaluated. This chapter also summarizes the likely environmental impacts of the alternatives and identifies the environmentally superior alternative.

Chapter 6, *Report Preparers*, lists the individuals involved in preparing this DEIR.

Chapter 7, *References*, provides a bibliography of printed references, websites, and personal communications used in preparing this DEIR.

<u>Volume 3 of this FEIR is organized as follows:</u>

Appendix A is the Scoping Summary Report, which includes the NOP issued by the District, a summary of the scoping process, comments received during the scoping period, and copies of comments received.

Appendix B contains a summary of local plans and policies relevant to the proposed project.

Appendix C contains the air quality and greenhouse gas emissions calculations used for the project's air quality and greenhouse gas emissions impact evaluations.

Appendix D contains the preliminary wetland delineation prepared for the proposed project.

Appendix E contains a table summarizing special-status plants that were evaluated for their potential occurrence in the project area.

Appendix F contains detailed descriptions of special-status animal species potentially occurring in the project area.

Appendix G contains noise calculations used to determine the proposed project's noise effects on the surrounding environment.

Appendix H includes the traffic impact analysis memorandum completed for the proposed project.

Appendix I contains the draft mitigation monitoring and reporting program prepared for the proposed project.

<u>Appendix J contains the Notice of Availability and DEIR distribution list.</u>

<u>Appendix K includes the public meeting presentation and sign-in sheet.</u>

1.5 Submittal of Comments

The District ~~is circulating~~circulated the DEIR for a 45-day public review and comment period, as identified in the Notice of Availability. As discussed in Section 1.2.4 above, the District ~~will~~hosted a public meeting during this period at which oral and written comments will be received. The purpose of public circulation and the public meeting ~~is~~was to provide agencies and interested individuals with opportunities to comment on or express concerns regarding the contents of the~~is~~ DEIR.

Meeting attendees were allowed to submit ~~W~~written and oral comments concerning ~~this~~the DEIR ~~may be submitted~~ at the public meeting described above, and written comments ~~can be provided at any time~~were submitted during the DEIR public review period.~~ All written comments must be received by 5:00 p.m. on the final date of public review, as identified in the Notice of Availability.~~ Written comments ~~should be~~were directed to the name and address listed below:

Michael Coleman, Environmental Planner II
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118
mcoleman@valleywater.org

Submittal of written comments via e-mail (Microsoft Word or Adobe PDF format) ~~is~~was preferred. Written and oral comments received in response to ~~this~~the DEIR during the public review period w~~ill be~~ere addressed in ~~a~~ the Response to Comments section of the FEIR (Volume 1).

Chapter 2
PROJECT DESCRIPTION

2.1 Overview

The District prepared this EIR in accordance with CEQA to identify and evaluate environmental effects of the proposed Lower Penitencia Creek Improvements Project (proposed project). During the CEQA process, the District considers the proposed project as a proposed activity only. Pending the outcome of the CEQA process, the proposed project will be submitted to the District Board of Directors for their review and approval.

The objective of this project description is to provide the public with a clear understanding of the proposed project, including its objectives, location, proposed elements, construction, built features, operation, and required permits and approvals. This project description does not presume that the proposed project is considered approved, nor will it necessarily be approved, until the environmental and planning process has been completed.

2.2 Project Objectives

Lower Penitencia Creek is situated in the northeasterly portion of Santa Clara County within the city of Milpitas in the Berryessa Creek watershed (**Figure 2-1**). Lower Penitencia Creek is an open trapezoidal channel with both earth- and concrete-lined sections. Channel capacity improvements were constructed in 1955, 1962, 1965, and 1984. Lower Penitencia Creek's east levee, between California Circle and Berryessa Creek, is currently certified by the Federal Emergency Management Agency (FEMA), which means that the levee meets federal design, construction, maintenance, and operation standards to adequately reduce the risk of flooding from a major flood (i.e., a flood with a 1-percent chance of occurring in any given year), and areas behind the levee are shown as moderate-risk zones on FEMA flood maps. Two tributaries, Berryessa Creek and East Penitencia Channel, flow into Lower Penitencia Creek at the upstream terminus of the project area. Lower Penitencia Creek itself flows into Coyote Creek at the downstream terminus of the project area.

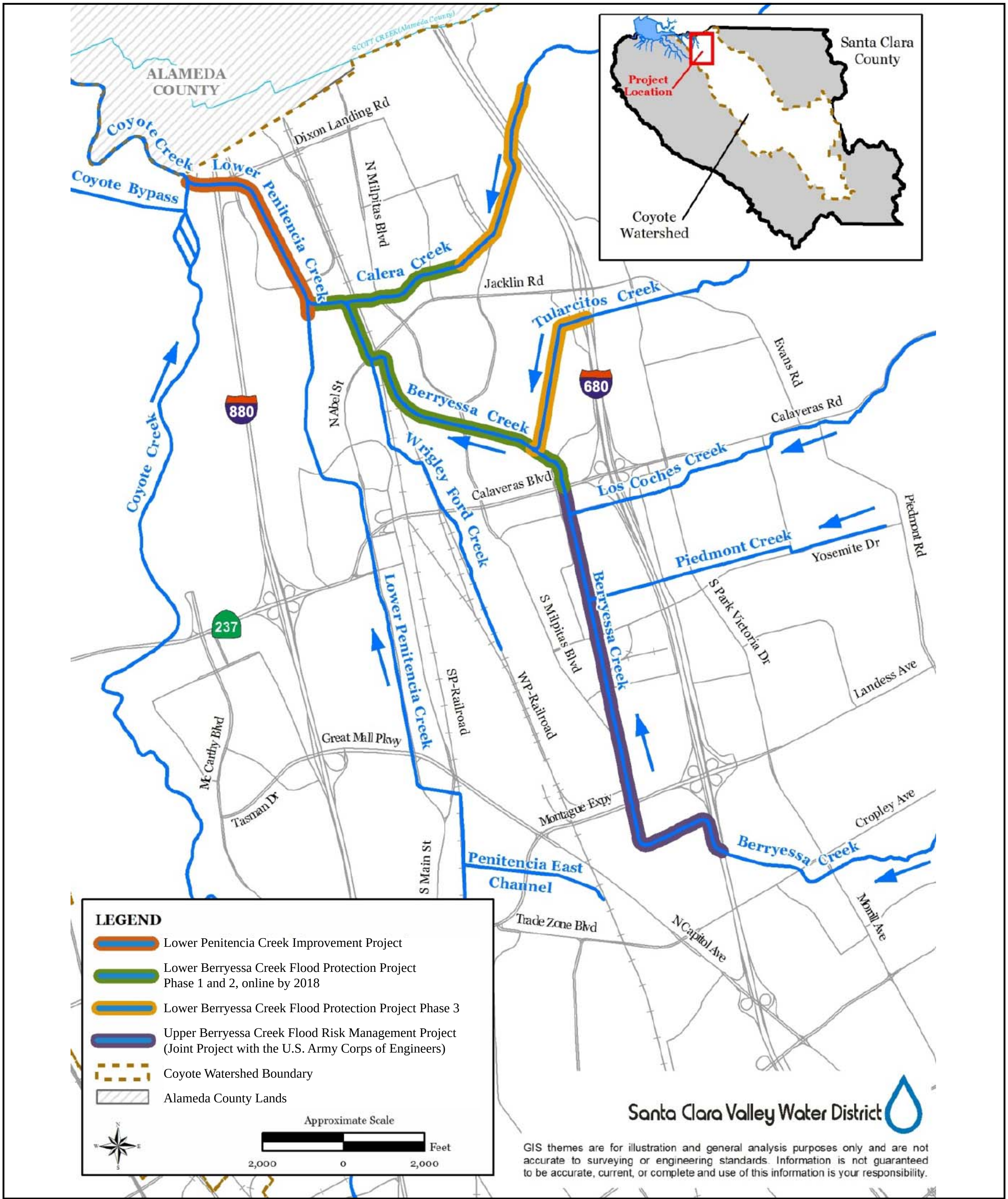
The Lower Berryessa Creek Element, a component of the Lower Berryessa Creek Program, is located directly upstream of Lower Penitencia Creek, and discharges to Lower Penitencia Creek. The District is currently constructing improvements to the Lower Berryessa Creek Element (hereinafter referred to as the Lower Berryessa Creek Project) (SCVWD 2017). The Lower Calera Creek Element discharges to Lower Berryessa Creek. Flood protection improvements to the Lower Calera Creek Element are currently under design, and are expected to be constructed in the next 2 to 3 years. The U.S. Army Corps of Engineers' (USACE's) Upper Berryessa Creek Flood Risk Management Project (USACE 2014), located directly upstream of the Lower Berryessa Creek Project, is also currently under construction. The location of these two projects in relation to the proposed project are shown in **Figure 2-2**.

C:\Users\GIS\Documents\ArcGIS_PROJECTS\15005_SCVWD_LowerPenitenciaCEQA\mxd\Figure 2-1_ProjectLocation.mxd PG 10/7/2016

Figure 2-1
Project Location

Prepared by:
Horizon WATER and ENVIRONMENT

Lower Penitencia Creek Improvements Project



Source: SCVWD 2016

Figure 2-2. Location of Proposed Project and Upstream Flood Protection Projects

Prepared by: Horizon WATER and ENVIRONMENT

Lower Penitencia Creek Improvements Project

Construction of USACE's Upper Berryessa Creek Flood Risk Management Project (Interstate 680 [I-680] to Calaveras Boulevard) is scheduled for completion in late 2017 (SCVWD 2016). The District began construction of the Lower Berryessa Creek Project (Calaveras Boulevard to Lower Penitencia Creek) in summer 2015 and expects to complete construction in late 2018 (SCVWD 2016). Together, the Upper and Lower Berryessa Creek projects will protect 3,400 homes, businesses, and public facilities from the 1-percent flood event (SCVWD 2011a).

After construction of the Lower Berryessa Creek and Upper Berryessa Creek projects is completed, the Upper and Lower Berryessa channels will have the capacity to convey the 1-percent flood event (i.e., the stream flow with a 1-percent likelihood of being equaled or exceeded in a given year; also referred to as the 100-year flow) downstream to Lower Penitencia Creek. Because these projects will contain the 100-year event within the channel without overtopping of banks, the amount of water conveyed downstream to Lower Penitencia Creek will increase (i.e., water that would have overflowed the creek banks onto surrounding areas will now remain within the channel). Under current conditions, the estimated 1-percent (100-year) design discharge for Lower Penitencia Creek at its confluence with Coyote Creek is 4,830 cubic feet per second (cfs). In the future (after completion of the Lower and Upper Berryessa Creek projects), Lower Penitencia Creek's 1-percent flow would increase to an estimated 6,900 cfs (SCVWD 2016). In its existing condition, Lower Penitencia Creek lacks the capacity to convey the projected future 1-percent flow.

A primary objective of the proposed Lower Penitencia Creek project is to convey the increased 1-percent flows from the improved Upper and Lower Berryessa Creeks to Coyote Creek without overtopping of the Lower Penitencia Creek banks. This would extend the flood protection benefits from the upper watershed projects downstream to the Coyote Creek/ Lower Penitencia Creek confluence. The proposed project is intended to meet the following specific objectives:

- Convey the Lower Berryessa Creek 1-percent design flow;
- Meet required water surface elevations at the confluences of Lower Penitencia Creek with Coyote Creek and Berryessa Creek;
- Minimize the need for seasonal removal of sediment and non-woody vegetation;
- Maintain existing FEMA accreditation of the east levee located between California Circle and Berryessa Creek; and
- Ensure the project improvements meet FEMA certification requirements.

In the long term, the 1-percent or 100-year flow on Lower Penitencia Creek could increase to 8,720 cfs (i.e., the ultimate flow) if additional channel improvements are made to Berryessa Creek upstream of I-680, which is located about 4 miles upstream of the confluence of Lower Penitencia Creek and Lower Berryessa Creek (SCVWD 2016). Channel improvements upstream of I-680 are not currently planned by the District and would occur only after the District conducted additional planning studies and CEQA analysis of those improvements, which would take many years (SCVWD 2016). The proposed project would accommodate the 6,900-cfs flow in Lower Penitencia Creek projected to result from construction of the Upper Berryessa Creek Flood Risk Management Project by USACE and construction of the Lower Berryessa Creek Project by the District. The floodwalls included in the proposed project would be designed to accommodate the anticipated ultimate 8,720 cfs flow, however, as only a minor increase in floodwall heights is required above the 6,900-cfs floodwall heights. All other project elements would be designed to accommodate the projected 100-year flow of

6,900 cfs, which would result after the completion of improvements to Lower Berryessa Creek and Upper Berryessa Creek (currently under construction).

The proposed project would be necessary to prevent flooding in the project vicinity during a future 1-percent event. The proposed project is also necessary to maintain the existing FEMA accreditation[1] of the Lower Penitencia Creek east levee, located between California Circle and the Lower Berryessa Creek confluence, after construction of the Upper and Lower Berryessa Creek projects. If the Lower Penitencia Creek east levee were to be decertified by FEMA (i.e., if it no longer provided 100-year flood protection), a portion of Milpitas would be returned to the flood hazard zone.

2.3 Proposed Project Location and Setting

The project area on Lower Penitencia Creek is located in the lower portion of the Coyote Creek watershed on the east side of the Santa Clara Valley. Lower Penitencia Creek receives streamflow from approximately 28.2 square miles of upstream catchment area in the watershed east and south of the project area. These upstream watershed lands consist mostly of hillslopes in the western portion of the Diablo Range. Closer to the project area, the lower watershed is urbanized, and storm runoff moves quickly through the City of Milpitas' storm drain system to the Lower Penitencia Creek channel. The main tributaries to Lower Penitencia Creek are the East Penitencia Channel and Lower Berryessa Creek. Lower Penitencia Creek flows through residential and office park/commercial areas in the City of Milpitas before reaching its confluence with Coyote Creek, which drains to south San Francisco Bay.

The proposed project is located in a developed area in the city of Milpitas, Santa Clara County, California. As shown in **Figure 2-3**, the upstream limit of the proposed project is upstream of the San Andreas Drive bridge, just upstream of Lower Penitencia Creek's confluence with Lower Berryessa Creek. The downstream limit of the proposed project is at the creek's confluence with Coyote Creek.

[1] FEMA has the responsibility of accrediting levee systems that are defined as providing protection from the base flood. FEMA has established a set of design, operation, and maintenance criteria that must initially be met and must continue to be met in order for a levee system to be recognized as providing a 1-percent annual level of flood protection on National Flood Insurance Program maps or Digital Flood Insurance Rate Maps.

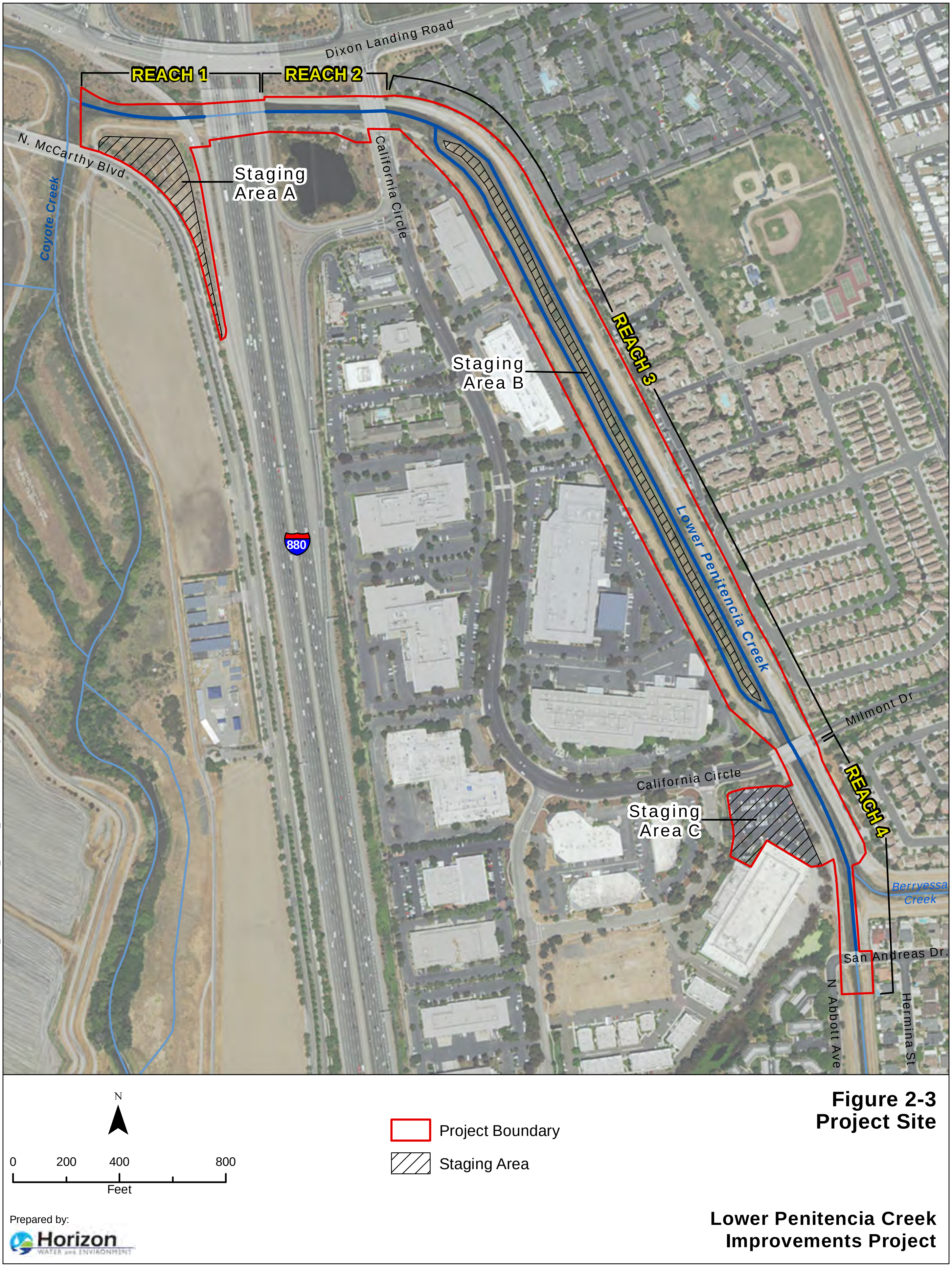


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Figure 2-3
Project Site

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Lower Penitencia Creek Improvements Project

Within the project area, the total length of the affected creek channel is approximately 5,000 linear feet. The project area includes four reaches of Lower Penitencia Creek (Figure 2-3), as listed below:

- Reach 1: Coyote Creek confluence to Interstate 880 (I-880) (800 feet)
- Reach 2: I-880 to California Circle (500 feet)
- Reach 3: California Circle to Milmont Drive (3,000 feet)
- Reach 4: Milmont Drive to San Andreas Drive (800 feet)

The existing Lower Penitencia Creek channel is a trapezoidal flood control channel with both earth and concrete-lined sections, bounded on its north/east and south/west banks by earthen levees. In Reach 3, primary and secondary channels are separated by a central berm. Vehicular bridges for the I-880 southbound ramp, I-880, California Circle, Milmont Drive, and San Andreas Drive cross the creek channel in the project area. The banks and/or bed of Lower Penitencia Creek are lined with concrete at two areas: upstream of the California Circle Bridge and between the Milmont Drive Bridge and the Lower Berryessa Creek confluence. Additionally, a concrete-lined crossing at the southern end of the Reach 3 secondary channel allows vehicle access to the central berm in this reach. An unpaved maintenance road runs the length of the central berm. Existing maintenance roads are located on the levee crests on both sides of the creek in Reaches 2, 3, and 4. In Reach 1, a maintenance road is located on the south bank, but not on the north bank. Additionally, a depressed maintenance road is located along the inboard eastern levee between California Circle and Milmont Drive (Reach 3).

2.4 Relationship to Other District Activities

In an ongoing effort to ensure flood protection in the five watersheds under its jurisdiction, the District is currently engaged in several flood protection projects. Flood protection activities most closely associated with the proposed project include the Lower Berryessa Creek Project described in Chapter 1 and Section 2.2 of this chapter, the Upper Berryessa Creek Flood Risk Management Project, and the District's Stream Maintenance Program, described in Section 2.4.1 below. Additionally, the District has developed standard procedures (i.e., best management practices [BMPs]) that are applied during construction and operation of its flood protection projects. These BMPs are described in Section 2.4 and listed at the end of this chapter.

2.4.1 Stream Maintenance Program

The District's Stream Maintenance Program (SMP) provides maintenance standards and guides maintenance activities for the District to meet its designated flood protection mandates throughout Santa Clara County, including at the Lower Penitencia Creek channel. SMP activities are intended to maintain a channel to its original design and are not conducted (or allowed) to increase the flow conveyance capacity of a channel. The SMP includes many measures to avoid and minimize potential environmental impacts associated with maintenance activities. The SMP is an ongoing, countywide program that is included in this EIR's cumulative impact analysis (Chapter 4, Section 4.3).

The SMP covers sediment removal, vegetation management (including mowing of levee banks for fire safety purposes), streambank protection, management of wildlife conflicts, and minor maintenance activities such as fence repair and graffiti removal. In 2012, the District prepared an EIR for updates to the SMP (SCVWD 2012). In 2014, programmatic permits were issued for SMP activities extending through 2023 (SCVWD 2014a).

The project area along Lower Penitencia Creek is maintained by the District in accordance with the SMP. Reaches 2, 3 and 4 (i.e., I-880 crossing to Lower Berryessa Creek confluence) of the Lower Penitencia Creek channel undergo periodic sediment removal and are classified as pre-mitigated areas for sediment removal activities. In 2015, the District removed accumulated sediment in Reaches 2, 3, and 4 of Lower Penitencia Creek to restore the design flow conveyance capacity of the channel. Sediment removal activities conducted under the SMP maintain the channel's current design capacity and do not provide any additional conveyance capacity beyond the existing channel design. Because the sediment removal area is classified as pre-mitigated, no additional mitigation was required for that activity. In contrast to SMP activities, the proposed project would increase the flow conveyance capacity of Lower Penitencia Creek. Following construction of the proposed project, the future maintenance of the channel would be conducted in compliance with the District's SMP.

2.4.2 District Best Management Practices

The District has developed, and regularly updates, the *Santa Clara Valley Water District Best Management Practices Handbook* (Handbook), which provides a comprehensive list of standard procedures that are consistently applied to design, development, construction, and operation of District projects, with the purpose of avoiding or minimizing adverse environmental effects (SCVWD 2014b). The Handbook provides general technical guidance and standardized procedures for all District projects; it does not address project-specific issues. The Handbook refers to these procedures as BMPs. Relevant BMPs from the Handbook are incorporated into the proposed project and are identified in the impact analyses in Chapter 3. The full text of relevant BMPs are presented in **Table 2-4** at the end of this chapter.

2.5 Project Development

At the time the *Lower Berryessa Creek Program Environmental Impact Report* (Program EIR) was developed in 2011, the District anticipated that a hydrologic and hydraulic analysis of the creek from just upstream of the Lower Berryessa Creek confluence downstream to I-880 was needed to determine the 100-year water surface elevation and hydraulic grade line throughout the Lower Penitencia Creek Project reach that would result from upstream improvements (i.e., the Lower Berryessa Creek Project and the USACE's Upper Berryessa Creek Flood Risk Management Project). Because this analysis was not complete at the time the Program EIR was developed, the Lower Penitencia Creek Improvements Project was evaluated at a more general level of detail in the Program EIR, without the specific understanding of project needs based on the forthcoming hydraulic analysis. The preliminary concept of the Lower Penitencia Creek Element entailed returning the channel to design capacity by removing accumulated sediment and vegetation in the channel and lowering the in-channel bench between the creek's confluence with Lower Berryessa Creek and California Circle. More specifically, the District envisioned removing accumulated sediment between California Circle and I-880, and within the reach downstream of I-880 (SCVWD 2011a).

Since publication of the Program EIR, the District has developed and analyzed a number of conceptual design alternatives that could fulfill the project objectives (identified in Section 2.2). The conceptual design alternatives included different combinations of infrastructure upgrades to improve flood protection at Lower Penitencia Creek. Conceptual design alternatives were evaluated for their hydraulic and engineering conditions and were refined based on the District's Natural Flood Protection (NFP) evaluation process. The NFP evaluation is documented in the Staff-Recommended Alternative Report (SCVWD 2015) for the project. The NFP evaluation considered input received during meetings held during 2014 and 2015 from the City of Milpitas, members of the local community, and District experts.

Of the alternatives considered initially, four potentially feasible design alternatives were evaluated using the NFP process, and the results of that analysis are documented in the District's Staff-Recommended Alternatives Report (SCVWD 2015). The four design alternatives are:

- Design Alternative 1: widen the California Circle crossing, construct floodwalls, raise a levee, and construct wetland benches;
- Design Alternative 2A: widen the California Circle and Milmont Drive crossings, construct floodwalls, relocate a levee, and construct wetland benches in Reaches 1 and 2;
- Design Alternative 4: widen the California Circle and Milmont Drive crossings, construct floodwalls (including a taller floodwall), relocate a levee, and construct wetland benches; and
- Design Alternative 6: widen the California Circle crossing, construct floodwalls, raise a levee, remove the central berm in Reach 3, and line the channel with concrete.

Each design alternative was rated according to how well it would accomplish the project objectives. Based on the evaluation process, District staff determined that Design Alternative 2A would best meet the project objectives. Upon completion of hydraulic and geotechnical studies prepared for Alternative 2A, the District further refined Alternative 2A to develop the proposed project. Specifically, the District confirmed that the project would not require widening of the California Circle and Milmont Drive bridges, a wetland bench would be feasible in Reach 1 but not in Reach 2, and headwalls (see Section 2.6.1) would need to be installed on the upstream and downstream sides of the San Andreas Drive bridge. Chapter 5, *Alternatives*, analyzes potential environmental impacts of the other three potentially feasible design alternatives and indicates how these impacts compare to impacts of the proposed project.

2.6 Characteristics of the Proposed Project

The proposed project would meet project objectives for flood protection while accommodating daily tidal fluctuations and expected sea-level rise. The controlling factors for channel conveyance capacity are the 10-year tide and 100-year flow event (after completion of the upstream projects on Lower and Upper Berryessa Creek). The proposed project would be designed to accommodate an expected increase of 2.59 feet in sea level rise over the project's 50-year design life (SCVWD 2016). Proposed project elements for each reach are described below.

2.6.1 Proposed Project Elements

The proposed project includes the following elements: floodwalls in Reaches 2, 3, and 4; setback replacement levee and wetland bench in Reach 1; earthen ramps on the Reach 3 east bank; bridge headwalls;[2] sediment removal; restoration of maintenance roads disturbed during construction; and hydroseeding and stabilization of disturbed areas. **Table 2-1** summarizes proposed project elements considered for each reach, and general descriptions of these elements are provided below. **Figures 2-4 and 2-5** show conceptual plan view and cross-section views of these elements, respectively.

Table 2-1. Proposed Project Elements Considered for Reach and Bridge Locations

Reach or Bridge	Project Elements
Reach 1 Coyote Creek to Highway 880	Relocated and raised south bank levee with maintenance road on crest Wetland bench on south bank Approximately 50 feet of sheetpile floodwall to the north of channel
Reach 2 I-880 to California Circle	Sheetpile floodwall on top of existing south/west bank levee Approximately 25 feet of sheetpile floodwall on top of existing north/east bank levee near I-880 Removal of about 70 cy of sediment from the concrete-lined channel Relocated access ramp to City's pump station Maintenance road improvements
Reach 3 California Circle to Milmont Drive	Sheet pile floodwalls on top of existing west and east bank levees Earthen fill to floodwall to allow the existing Penitencia Creek Trail to cross over the new floodwall Maintenance road improvements Removal of accumulated sediment from low-flow channel
Reach 4 Milmont Drive to San Andreas Drive	Sheetpile floodwalls on top of existing west bank levee Raising of existing east bank levee by up to 6 feet Removal of about 730 cy of sediment from the concrete-lined channel Maintenance road improvements
San Andreas Drive Bridge	Headwalls on the downstream and upstream faces of San Andreas Drive bridge

[2] A headwall is an impervious wall connecting to a bridge over a stream channel to prevent high water from flowing onto the bridge deck.

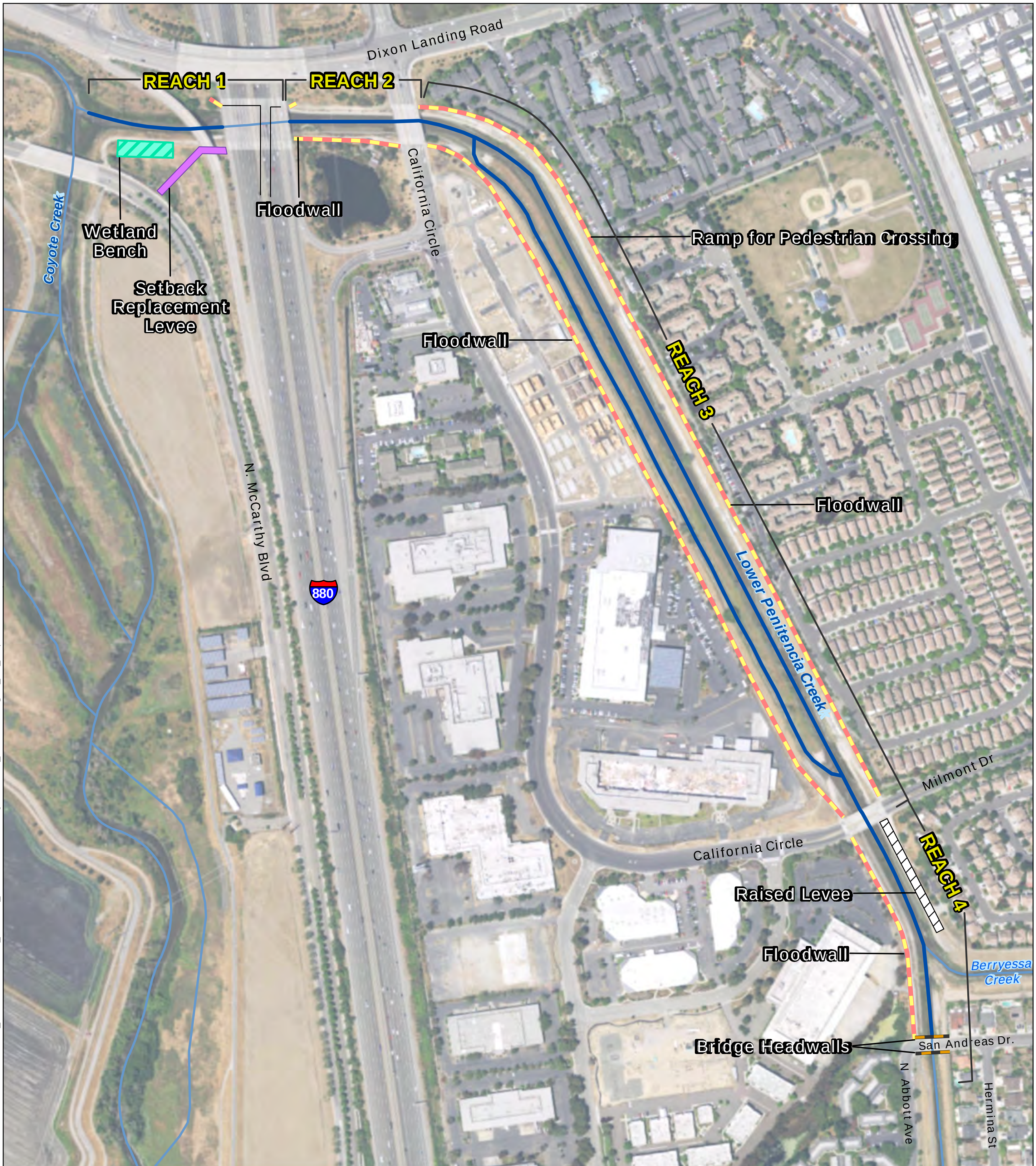

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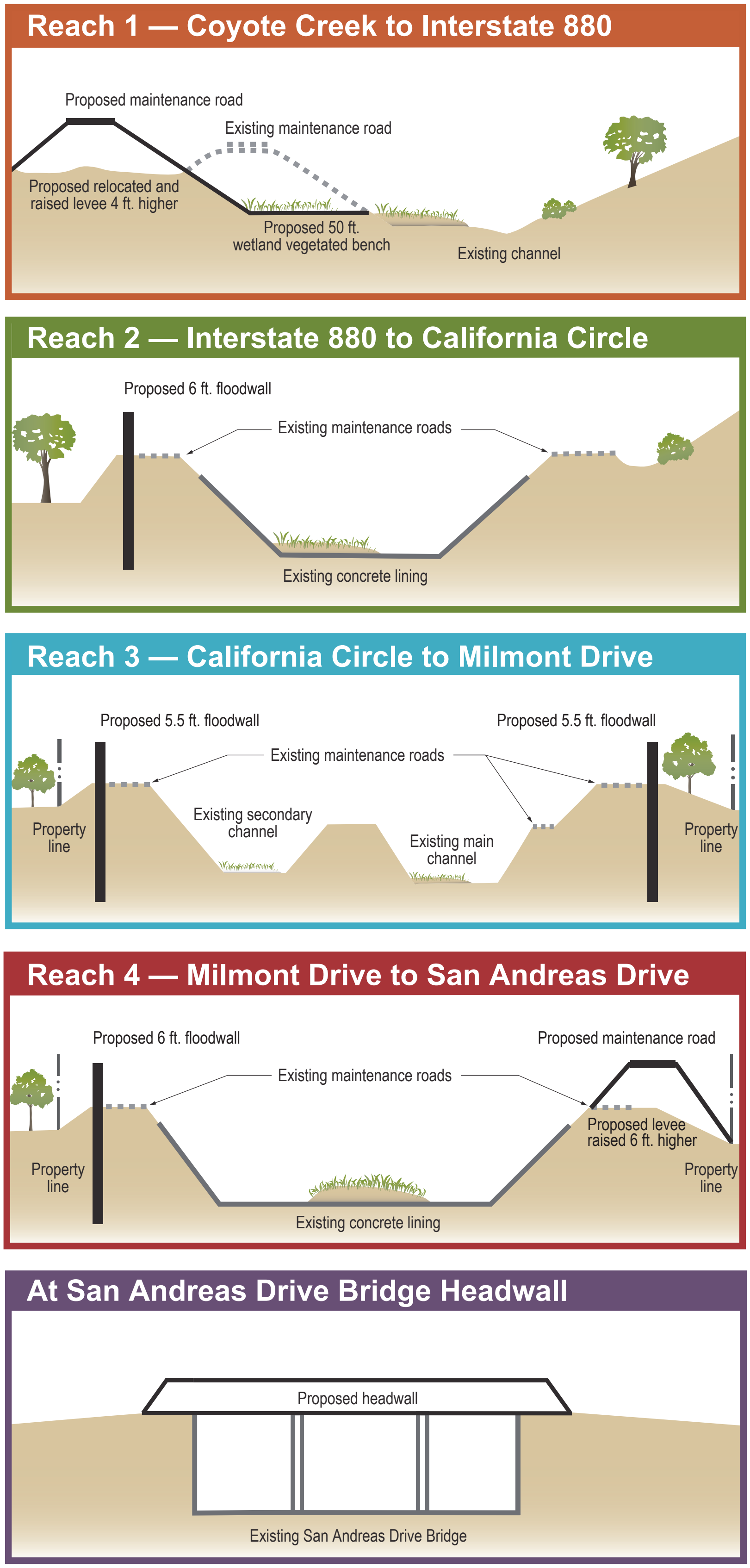
Figure 2-4
Proposed Project Elements

Lower Penitencia Creek Improvements Project



Source: SCVWD 2017

Figure 2-5. Conceptual Cross-Section View of Proposed Project Elements by Reach

Lower Penitencia Creek Improvements Project

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Floodwalls

New vertical sheet pile floodwalls would be constructed on top of the existing levees parallel to the creek channel in all four ~~R~~reaches ~~2, 3, and 4~~. Floodwalls would provide increased flood protection and freeboard[3] necessary to comply with FEMA requirements and the District's freeboard standards. Floodwalls would vary in height from approximately 5.5 to 6 feet above the levee crest along the Project. In Reaches 2 and 4, the floodwalls would be 6 feet tall; and in Reach 3, the floodwalls would be 5.5 feet tall. Floodwall heights are measured from the existing top of the levees. Some of the floodwalls would be installed on the outboard side slope of levees and would appear taller when viewed from outside the channel.

The floodwalls would be composed of overlapping coated-steel sheet piles driven into the ground. While the District has not yet selected a color coating, it is anticipated that the coating would be non-reflective and a neutral color selected to blend into the surrounding environment **Figure 2-6** (top two photos) shows example floodwalls comprised of coated sheet pile. Although the proposed floodwalls are currently in the design phase, the new floodwalls would appear similar to those shown in Figure 2-5. The sheet piles would be coated to prevent corrosion and improve aesthetics. Additional description of the floodwalls is provided by project reach below.

Reach 1. An approximately 50-foot-long section of floodwall would be constructed on the north/east levee near I-880.

Reach 2. A floodwall would be constructed on the outboard side of the south/west levee in Reach 2. To accommodate access to the California Circle Pump Station, which is located just south of the District's this levee, an 18-foot-wide ramp accessible from California Circle would be constructed behind the floodwall. A 26-foot-long segment of floodwall would be constructed on the north/east levee near I-880.

Reach 3. Floodwalls would be constructed on both sides of the channel in Reach 3. On the west bank of Reach 3, the floodwall would be constructed on the outboard side of the maintenance road. On the east bank of Reach 3, between Milmont Drive and the point at which the City trail merges with the District's maintenance road, the floodwall would be on the inboard side of the maintenance road. To the north of the trail merge, the floodwall would be on the outboard side of the maintenance road. The east levee floodwall in Reach 3 would include a pedestrian crossing to allow for continued use of the existing Penitencia Creek Trail (owned by the City of Milpitas) that parallels and connects with the trail located on the District's levee-crest maintenance road. The floodwall crossing would require raising the slope of the existing trail to meet the top of the proposed floodwall, building a rectangular earthen pad at the crest point, and building an earthen ramp connecting to the existing trail at the outboard base of the east levee. The existing grade of the Penitencia Creek Trail would be increased to meet the ramp. In both directions of the maintenance road, the grade would be sloped at no greater than 1:12 (vertical:horizontal) to ensure compliance with the Americans with Disabilities Act and conform to the existing maintenance road elevation. To buttress the ramps, sheet pile retaining walls would be installed.

[3] In flood management terminology, freeboard is the height of a given structure above the flood level. FEMA encourages communities to adopt at least a 1-foot freeboard in designated floodways (FEMA 2017).

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Example photo of sheetpile floodwall installed for the
Downtown Guadalupe Flood Protection Project in San Jose, California.

Example photo sheetpile floodwall installed for a project in Long Beach, California.

Photo depicting sheetpile wall installation for a project
along Trabuco Creek in San Juan Capistrano, California.

Another photo showing sheetpile wall installation for a project
along Trabuco Creek in San Juan Capistrano, California

Figure 2-6. Example Photos of Sheet Pile Walls

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Lower Penitencia Creek
Improvements Project

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Reach 4. A sheetpile floodwall would be installed on the west side of the channel, extending from Milmont drive to San Andreas Drive. The northern portion of floodwall would be installed on the outboard side of the levee (i.e., the outer side facing away from the creek), and the southern portion of floodwall would be located on the inboard side of the levee (i.e., the inner side facing toward the creek).

Raised Levee

On the east bank, the existing earthen levee would be raised by about 5.5 feet, from Milmont Drive to the Lower Berryessa Creek confluence, where it would connect to an existing raised levee along Lower Berryessa Creek.

Setback Replacement Levee

The existing south levee in Reach 1 would be removed and replaced with a taller earthen levee (approximately 2.5 feet taller than the existing levee) located up to 150 feet south of the existing levee. The new levee would have side slopes at a 3:1 to 2:1 (horizontal:vertical) gradient and a minimum top width of 18 feet. A maintenance road surfaced with crushed stone or armoring aggregate would be built on the levee crest. The new levee would have an 18-foot-wide road surfaced with compacted aggregate on its crest that would connect to McCarthy Road and the existing I-880 access gate. The road would be gated at either end and access would be restricted to District maintenance staff

Wetland Bench

A new approximately 0.29-acre bench[4] would be created on the south bank of Reach 1. To create the Reach 1 bench, the existing south/west levee would be removed and a new earthen levee with a crest elevation approximately 2.5 feet higher than the removed levee and would be constructed farther south, away from the channel. The bench would be located between the existing North McCarthy Road embankment at its western end and to the existing I-880 southbound onramp embankment at its eastern end. The bench area would be excavated to an elevation that would experience tidal inundation. The newly created bench would be approximately 50 feet wide and planted with wetland vegetation to create tidal aquatic habitat. The relocated levee and wetland bench would increase the channel’s flow conveyance capacity in Reach 1.

San Andreas Drive Bridge Headwalls

Without any improvements, the existing San Andreas Drive bridge in Reach 4 could be overtopped by backwater[5] accumulating in the Lower Penitencia Creek channel during the 1-percent flow event. Therefore, to prevent overtopping by floodwaters, concrete headwalls would be constructed on the downstream and upstream faces of the bridge. The headwalls would connect with the east and west bank levees and floodwalls and would each be approximately 70 feet long. The headwalls would be approximately 1 foot thick and have a height of approximately 6.5 feet. Since the southern portion of floodwall along the west bank

[4] A wetland bench is a horizontal area of the channel margin. While positioned higher than the main channel bottom, the wetland bench would be at an elevation that experiences periodic tidal inundation under mean higher high water conditions and is also inundated during moderate and larger creek flows during winter storm events. The bench would be vegetated with estuarine plants that are suited to both tidal and riverine conditions. The bench would create tidal aquatic habitat.

[5] Backwater is water that has backed up in its course because of an obstruction, an opposing current, or tides.

of the channel would be on the inboard side of the levee, it would not obstruct pedestrian access to the trail on the west bank of Reach 4 from San Andreas Drive. The east bank would have a closeable gate-type opening between the floodwall and the bridge headwall. The gate-type opening would be designed so that a wood or metal barrier could be quickly deployed to close the opening to flood waters.

Sediment Removal

Accumulated sediment would be removed from the concrete-lined portions of Reaches 2 and 4 of the channel and an additional 1,500 cubic yards from the unlined channel in from Reach 3.

Maintenance Road Restoration

The District's maintenance roads along the channel would be disturbed during construction of the floodwalls in Reaches 2, 3, and 4. The project would restore the roads to conditions similar to existing conditions. Portions of the maintenance roads along the east bank of Reach 3 and on the west bank of Reach 4 which serve as public trails would be repaved with asphaltic concrete after floodwall construction has been completed. All other maintenance roads would be surfaced with aggregate. Additionally, a maintenance road surfaced with either crushed stone or aggregate base would be constructed on of the crest of the setback levee on the south bank of Reach 1, replacing the maintenance road on the crest of the existing levee (which would be removed).

Revegetation and Stabilization

Upon completion of construction, disturbed areas would be hydroseeded with native grasses to prevent erosion and establish upland habitat. Specific areas that would be hydroseeded include the side slopes of the Reach 1 setback levee; maintenance road shoulders in Reaches 2, 3 and 4; and construction staging areas. Note that the wetland bench in Reach 1 would not be hydroseeded. Woven, biodegradable erosion control blankets would be secured over the disturbed areas to prevent erosion while the grass establishes. The grass would grow through the blankets, which would biodegrade and disappear over time.

2.7 Project Construction

2.7.1 Construction Activities

~~Reach 2, 3, and 4~~ Floodwalls

Floodwalls would be constructed on or near the crests of existing levees and would require shallow excavation and fill to accommodate floodwall supports below the existing grade. A specialized piece of equipment called a Giken silent piler would be used to install the sheet pile walls. This particular machine uses a press-in method that emits less noise and vibration than other methods for pile installation. To the extent feasible, all equipment would be operated from the levee-crest maintenance roads.

Reach 1 Setback Replacement Levee and Wetland Bench

Construction of the Reach 1 improvements would require dewatering (i.e., draining) of the creek channel. Construction of the new south bank levee in Reach 1 would entail demolition and removal of the existing Reach 1 south bank levee, as well as preparation of the ground surface to receive new fill. The existing levee would be removed down to grade level. The new levee would be set back from the creek channel and constructed using stockpiled soils, imported fill, or a combination of the two. Approximately 4,600 cubic yards would be excavated and ~~T~~to the extent feasible, material excavated from the existing levee would be used to reconstruct the new levees. The newly placed fill would be contoured and compacted to ensure the levees' structural stability. The levee slopes would be hydroseeded[6] with native grasses for erosion protection.

A wetland bench would be excavated between the creek channel and the replacement levee in the existing south bank of Reach 1 using excavators and backhoes. As previously described, work in Reach 1 would entail lowering the ground surface to create the new, nearly level bench within the tidal range. Excavated soil would be used to create the replacement levee in Reach 1 or disposed of at an offsite location. The bench would be planted with native species adapted to tidal conditions to create new habitat.

San Andreas Drive Bridge Headwalls

Construction of new headwalls on the upstream and downstream faces of the San Andreas Drive bridge would require dewatering of the channel under and near the bridge. The existing chain-link fence on the bridge would be removed and concrete headwalls would be installed. The downstream headwall would tie into the Reach 4 west bank floodwall and the Lower Berryessa floodwall on the east bank. The upstream headwall would tie into the future floodwalls on both sides of the channel. Construction of the headwalls would take up to 2 months. During construction of each headwall, one lane of the two-lane bridge would be temporarily closed and the bridge would remain in use with reduced capacity. Traffic controls would be put in place to ensure safe and efficient movement of vehicles, bicyclists, and pedestrians over the bridge during the construction period. Refer to Section 3.13, *Transportation and Traffic,* for additional information regarding traffic control measures that would be implemented.

Sediment Removal

During construction in Reach 2 Approximately 70 cubic yards of accumulated sediment would be removed from the concrete-lined portions of the channel. During construction in Reach 4 approximately 730 cubic yards of accumulated sediment would be removed from the concrete-lined portions of the channel. During construction in Reach 3, approximately 1,500 cubic yards of accumulated sediment would be removed from the unlined earthen channel. This sediment would ~~either~~ be ~~reused on site or~~ off-hauled to the Newby Island Landfill, located just northwest of the project site.

Dewatering Activities

In-channel construction work for the proposed project would occur during the dry season, between mid-June and mid-October when channel flow is lowest. Channel dewatering would be required for construction of the relocated levee and wetland bench in Reach 1, sediment removal within Reaches 2 and 3, construction of headwalls to the San Andreas Drive bridge,

[6] Hydroseeding is a planting process that uses a slurry of seed and mulch; it is often used as an erosion control technique on construction sites to stabilize bare soil and prevent erosion.

and sediment removal in Reach 4. Dewatering activities at these project areas would be temporary.

Additionally, depending on the layout of equipment needed to construct floodwalls on the south bank of Reach 2 and both banks of Reach 3, it would be necessary to dewater the entire length of Reaches 2 and 3 during construction of the floodwalls. In total, about 5,100 linear feet of channel would be dewatered. The work would be staged and only a portion of the channel length would be dewatered at any one time. Dewatering at any particular creek section would have a maximum duration of 4 months.

All water in the dewatered areas would be removed and creek flows and runoff diverted around the work areas. Water would be diverted into pipes and routed around the work areas by a temporary cofferdam. Diverted water would be returned to the creek downstream of the project area. This diversion would remain in place during construction of the Reach 1 wetland bench and replacement levee, the San Andreas Drive headwalls and sediment removal work area, and possibly the Reach 2 and 3 floodwalls.

Maintenance Road Improvements

The District's maintenance roads would be improved and restored similar to existing conditions. An approximately 18-foot-wide maintenance road consisting of either crushed stone or aggregate base would be constructed on the crest of the replacement levee on the south bank of Reach 1. Portions of the maintenance roads along the east bank of Reach 3 and on the west bank of Reach 4 would be repaved with asphaltic concrete after floodwall construction has been completed. The remaining portions of those roads would be surfaced with an aggregate base.

Construction-period Erosion Control

Prior to stripping of vegetative cover and site grading, erosion control features (e.g., silt fences, fiber rolls, drainage swales, detention ponds) would be installed in compliance with the proposed project's stormwater pollution prevention plan (SWPPP). These temporary features would be designed to prevent soil erosion at the construction areas. They would be removed at the end of construction, and the affected areas would be hydroseeded and permanently stabilized.

Hydroseeding and Slope Stabilization <u>and Revegetation</u>

Disturbed areas, including the side slopes of the setback replacement levee, maintenance road shoulders, and staging areas would be hydroseeded at the end of the dry-period construction season (likely in October) to provide erosion protection and prevent sediment erosion and transport to the channel. A hydroseed mix consisting of native and naturalized grass seeds, mulch, and tackifier would be sprayed onto the ground surface. In addition, biodegradable mats would be placed on top of disturbed areas, such as on relatively steep levee-side slopes, where necessary to prevent erosion.

<u>For revegetation activities, the District will follow regional guidelines developed by the Phytophthoras in Native Habitats Work Group. This Work Group is a coalition of California native plant nursery managers, land management agencies, researchers, and non-profit organizations, created for the purpose of coordinating and developing comprehensive</u>

program of management, monitoring, research, education and policy to minimize the spread of Phytophthora pathogens in restoration sites and native plant nurseries. The full text of the guidelines can be found at http://www.suddenoakdeath.org/wp-content/uploads/2016/04/Restoration.Nsy_.Guidelines.final_.092216.pdf and http://www.suddenoakdeath.org/wp-content/uploads/2016/04/Restoration_guidance_FINAL-111716.pdf. Implementing the regional guidelines would require the District to follow sanitation, planting, and nursery guidelines through the following:

- If container plants are used for revegetation efforts, the District will require the nursery to implement the “Guidelines to Minimize Phytophthora Pathogens in Restoration Nurseries” (2016a).

- In preparation for and during restoration activities, the District and its contractors will follow the “Guidelines to Minimize Phytophthora Contamination in Restoration Projects” (2016b).

In addition, to the maximum extent practicable, the District will follow general site sanitation practices such as:

- The exterior and interior of all vehicles, construction equipment and tools should be clean and free of debris, soil and mud (including mud on tires, treads, wheel wells and undercarriage)

- Work shoes should be kept clean by inspection of shoe soles and removal of mud, debris, and soil off treads before moving to a new job site.

- Vehicles should stay on established roads whenever possible.

2.7.2 Construction Equipment

The following pieces of equipment would be used for project construction:

- track-mounted excavator
- crane
- dump truck
- flat-bed delivery truck
- concrete truck
- grader
- bulldozer
- compactor
- Giken silent piler
- backhoe
- compactor
- front-end loader
- water truck
- diesel generators
- water hoses
- pumps for dewatering
- cement and mortar mixers
- mowing equipment (e.g., weed eaters, commercial lawnmowers)

2.7.3 Construction Staging Areas, Access, and Vehicle Trips

Project construction would generally occur within existing District right-of-way (ROW) and easements along the creek channel. As shown in Figure 2-3, in addition to the existing channel ROW, the vacant area south of the Reach 1 replacement levee may also be used as a staging area during project construction. This area, Staging Area A, is accessible from an existing District access road connecting to North McCarthy Boulevard and would be used for staging of equipment and construction materials.

Staging may also occur at the central berm between the primary and secondary channels in Reach 3 (Staging Area B) during floodwall construction and sediment removal activities. Prior to use of this staging area, the channel would be dewatered and water would be routed around the extent of Reach 3. Within Staging Area B, equipment and materials would be stored on the flat portions of the berm. The central berm is accessible via two existing concrete-lined ramps located at the northern and southern end of Reach 3. These ramps both connect to the levee crest road on the west bank in Reach 3.

In addition, the District may use Staging Area C throughout project construction. This potential staging area is located adjacent to Reach 4, southwest of the Milmont Drive bridge. The site is currently a paved parking lot with some landscaping. Any stockpiling of import, export, or reuse materials would also occur within the designated staging areas. Staging may also occur within channel easements or District ROW on District channel maintenance roads on both sides of the channel.

I-880 and the Dixon Landing Road exit would be the primary construction access route to the project area. Construction vehicles would access Reach 1 from North McCarthy Boulevard and the District maintenance road accessible from this roadway. Reach 2 would be accessed from California Circle and existing maintenance roads on both sides of the channel. Reach 3 would be accessed from California Circle, Milmont Drive, and the existing maintenance roads along the channel. Similarly, Reach 4 would be accessed from Milmont Drive and/or San Andreas Drive and existing maintenance roads along the channel.

The Penitencia Creek Trail on and at the toe of the east levee of Reach 3 would be temporarily closed to the public for the duration of Reach 3 construction.

Table 2-2 summarizes the anticipated number of potential worker trips and construction-related trips for the proposed project. The proposed project would require up to 40 construction workers on site, although 20 workers would likely be on site on a typical work day. The construction-related trip estimates are based on the District's Planning Study Report, which assumed that approximately 14,400 cubic yards of excavated soil would be reused on site, approximately 6,700 cubic yards of soil would be off-hauled, and approximately 3,500 cubic yards of concrete would be delivered and placed on site (SCVWD 2016). About 2,300 cubic yards of sediment would be removed from the low-flow channel for disposal off-site. The Planning Study Report estimates are conservative and it is likely that the project would actually require somewhat less concrete and earth movement. Since the DEIR was published, project design has advanced and the total volume of soil that would be excavated would be approximately 4,600 cubic yards. Assuming that this material would be reused for new levee construction, an additional 3,430 cubic yards of fill material would be imported to the project site for new levee construction. These excavation and fill quantities were not available at the time the DEIR was published; ~~T~~therefore, the construction-related trip estimates presented in Table 2-2 are overestimated and considered conservative.

Table 2-2. Construction-related Trips

Time Period	Average Employee Trips [1]	Average Heavy Vehicle Trips [2]	Total Trips [3]		
			To the Project Site	Out from the Site	Total
AM Peak Hour	40	3	40	3	43
PM Peak Hour	40	3	3	40	43
Daily	132	26	79	79	158

[1] Assumes one commute trip per employee per peak hour and miscellaneous trips such as deliveries, visitor trips, and lunch trips.

[2] Based on 10 cubic yards of material per heavy vehicle trip during the busiest 2-month work period, with truck trips evenly distributed throughout 8 hours of a typical day.

Source: Hexagon Transportation Consultants, Inc. 2016

2.7.4 Construction Schedule

The District intends to construct the proposed project over 2 years, during 2018 and 2019. In-channel construction activities, including channel dewatering, would occur between June 15 and October 15 each year, although some work outside the creek channel and revegetation planting may occur before June 15 or after October 15. Construction activities that could occur prior to June 15 include site preparation (e.g. vegetation clearing), staging of construction equipment and materials, and some earthwork outside of the channel (e.g. grading of maintenance roads). For the purposes of the EIR, it is assumed that the total number of work days would be equivalent to 4 months total each year. Although the phasing of construction has not yet been determined, for the purposes of this analysis, it is assumed that the first half of the construction activities would take place in 2018 and the second half would occur in 2019. While there is a possibility that construction delays could occur, the EIR analysis conservatively assumes a worse-case scenario that construction activities would be condensed within a 2-year timeframe.

Project construction would generally occur on weekdays during daytime hours (7:00 a.m. to 7:00 p.m.), which is consistent with the City of Milpitas noise ordinance. However, extended construction hours on weekends may occur infrequently if approved in advance by the City of Milpitas. No construction activities would occur on the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

2.8 Project Operations

2.8.1 Maintenance Activities

Similar to current practice, maintenance activities may be conducted within the project area following project construction. These activities may include trash and debris removal, vegetation management (e.g., mowing the channel banks, removing vegetation along maintenance roads), maintenance road grading, management of wildlife conflicts, graffiti removal, and fence repair. In addition to continuing these maintenance activities, the newly installed floodwalls and San Andreas Drive bridge headwalls would be visually inspected on a periodic basis (one to two times per year). If observed damage threatens the integrity of the structure, repairs would be completed to return them to the as-built design.

Once constructed, the proposed project would reduce the need for routine sediment removal in the channel. The proposed project would be designed so that sediment build-up can occur up to the mean high water mark and still ensure sufficient flow capacity to convey the 1-percent flow. During low tide, the majority of accumulated sediment would settle in the Reach 3 low-flow channel. Future sediment removal work in the channel would occur under the District's SMP and would be triggered once sediment accumulation exceeds design standards. Localized sediment removal work may be needed to keep culverts and ramps clear. Other post-construction maintenance activities in the project area would also continue under the District's SMP similar to current channel maintenance efforts.

2.9 Intended Uses of the EIR

As described in the State CEQA Guidelines (14 CCR Section 15121[a]), an EIR is a public information document that assesses potential environmental effects of a proposed project, as well as identifies mitigation measures and alternatives to the project that could reduce or avoid potentially significant environmental impacts (14 CCR Section 15121[a]). Other key requirements include developing a plan for implementing and monitoring the success of the identified mitigation measures, and carrying out specific noticing and distribution steps to facilitate public involvement in the environmental review process.

The EIR is an informational document used in the planning and decision-making process. It is not the purpose of an EIR to recommend either approval or denial of a project. The information contained in this EIR and the administrative record will be reviewed and considered by the District Board of Directors prior to making a decision to approve, disapprove, or modify the proposed project. In addition, the EIR will also be used by a responsible agency for purpose of deciding whether and how to approve the project. Responsible agencies are state or local agencies other than the lead agency which have some discretionary approval power over the project. In this instance, as listed in Table 2-3 below, the responsible agencies would include the Regional Water Quality Control Board, California Department of Fish and Wildlife, Caltrans, and City of Milpitas.

2.10 Permits and Approvals

Agencies expected to use this EIR in their decision making for permits and approvals required for implementation of the project are summarized in **Table 2-3** below. With respect to the floodwall and ramp in Reach 3, the District would also coordinate with the City of Milpitas as design of those facilities advances.

Table 2-3. ~~Applicable~~Anticipated Permit and Regulatory Requirements for Project

Regulatory Agency	Law/Regulation	Purpose	Permit/Authorization Type
U.S. Army Corps of Engineers (USACE)	Clean Water Act (CWA) Section 404/Rivers and Harbor Act Section 10	Regulates placement of dredge and fill materials into waters of the U.S., including wetlands	Individual Permit
U.S. Fish and Wildlife Service (USFWS) / National Marine Fisheries Service (NMFS)	Endangered Species Act Section 7 / Magnuson-Stevens Fishery Conservation and Management Act	Potential Consultation between USACE and USFWS and/or NMFS if threatened or endangered species might be affected by the project	ESA Section 7 Consultation (likely informal consultation for project)
Regional Water Quality Control Board San Francisco Bay Region	CWA Section 401	Water quality certification for placement of dredge and fill materials into waters of the U.S., including wetlands	401 Water Quality Certification is required for federal permits, such as CWA Section 404 Permits
	CWA Section 402	National Pollutant Discharge Elimination System (NPDES) program, which regulates discharges of pollutants	NPDES General Construction Permit
	Porter-Cologne Water Quality Control Act	Regulates discharges of materials to land and protection of beneficial uses of waters of the state	Waste Discharge Requirements
California Department of Fish and Wildlife	Fish and Game Code Section 1602	Applies to activities that will substantially modify a river, steam, or lake; includes reasonable conditions necessary to protect those resources	Streambed Alteration Agreement
California Department of Transportation (Caltrans)	Section 660 of the California Streets and Highways Code	Applies to Reaches 1 and 2 work in areas within Caltrans right-of-way	Encroachment permit

Regulatory Agency	Law/Regulation	Purpose	Permit/Authorization Type
City of Milpitas	N/A	Applies to Reaches 1, 2, and 3 work on City of Milpitas property	Temporary and permanent easements
City of Milpitas	Tree Maintenance and Protection Ordinance	Applies to trees within the limits of the City of Milpitas	Permit for removal of street trees, protected trees, or heritage trees.

Table 2-4. District Best Management Practices Relevant to the Proposed Project

BMP Number and Title	BMP Text
Air Quality	
AQ-1: Use Dust Control Measures	The following Bay Area Air Quality Management District (BAAQMD) Dust Control Measures will be implemented: 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. Water used to wash the various exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, etc.) will not be allowed to enter waterways; 5. All vehicle speeds on unpaved roads shall be limited to 15 mph; 6. 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; 7. 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 California Code of Regulations), and this requirement shall be clearly communicated to construction workers (such as verbiage in contracts and clear signage at all access points); 8. All construction equipment shall be maintained and properly tuned in accordance with manufacturer’s specifications, and all equipment shall be checked by a certified visible emissions evaluator; 9. Correct tire inflation shall be maintained in accordance with manufacturer's specifications on wheeled equipment and vehicles to prevent excessive rolling resistance; and, 10. Post a publicly visible sign with a telephone number and contact person at the lead agency to address dust complaints; any complaints shall be responded to and take corrective action within 48 hours. In addition, a BAAQMD telephone number with any applicable regulations will be included.
AQ-2: Avoid Stockpiling Odorous Materials	Materials with decaying organic material, or other potentially odorous materials, will be handled in a manner that avoids impacting residential areas and other sensitive receptors, including: 1. Avoid stockpiling potentially odorous materials within 1,000 feet of residential areas or other odor sensitive land uses; and 2. Odorous stockpiles will be disposed of at an appropriate landfill.

BMP Number and Title	BMP Text
Biological Resources	
BI-1: Avoid Relocating Mitten Crabs	Sediment potentially containing Chinese Mitten Crabs will not be transported between San Francisco Bay Watersheds and Monterey Bay Watersheds, specifically: 1. Sediment removed from the San Francisco Bay watersheds will not be transported south of Coyote Creek Golf Drive in south San Jose, and the intersection of McKean and Casa Loma Roads; and, 2. Earth moving equipment used in the San Francisco Bay watershed will be cleaned before being moved to, and used in, the Pajaro Watershed.
BI-2: Minimize Impacts to Steelhead	Minimize potential impacts to salmonids by avoiding routine use of vehicles and equipment in salmonid streams between January 1 and June 15.
BI-3: Remove Temporary Fill	Temporary fill materials, such as for diversion structures or cofferdams, will be removed upon finishing the work or as appropriate. The creek channels and banks will be re-contoured to match pre-construction conditions to the extent possible. Low-flow channels within non-tidal streams will be contoured to facilitate fish passage and will emulate the preconstruction conditions as closely as possible, within the finished channel topography.
BI-5: Avoid Impacts to Nesting Migratory Birds	Nesting birds are protected by state and federal laws. The District will protect nesting birds and their nests from abandonment, loss, damage, or destruction. Nesting bird surveys will be performed by a qualified biologist prior to any activity that could result in the abandonment, loss, damage, or destruction of birds, bird nests, or nesting migratory birds. Inactive bird nests may be removed with the exception of raptor nests. Birds, nests with eggs, or nests with hatchlings will be left undisturbed.
BI-6: Avoid Impacts to Nesting Migratory Birds from Pending Construction	Nesting exclusion devices may be installed to prevent potential establishment or occurrence of nests in areas where construction activities would occur. All nesting exclusion devices will be maintained throughout the nesting season or until completion of work in an area makes the devices unnecessary. All exclusion devices will be removed and disposed of when work in the area is complete.
BI-7: Minimize Impacts to Vegetation from Survey Work	Survey cross-sections will be moved, within acceptable tolerances, to avoid cutting dense riparian vegetation and minimize cutting of woody vegetation, taking advantage of natural breaks in foliage. If the cross-section cannot be moved within the established acceptable tolerances to avoid impacts to dense riparian or woody vegetation, the survey section will be abandoned.
BI-8: Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes	Whenever native species are prescribed for installation the following steps will be taken by a qualified biologist or vegetation specialist:

BMP Number and Title	BMP Text
	1. Evaluate whether the plant species currently grows wild in Santa Clara County; and, 2. If so, the qualified biologist or vegetation specialist will determine if any need to be local natives, i.e., grown from propagules collected in the same or adjacent watershed, and as close to the project site as feasible. Also, consult a qualified biologist or vegetation specialist to determine which seeding option is ecologically appropriate and effective, specifically: 1. For areas that are disturbed, an erosion control seed mix may be used consistent with the SCVWD Guidelines and Standards for Land Use Near Streams, Design Guide 5, ‘Temporary Erosion Control Options.’ 2. In areas with remnant native plants, the qualified biologist or vegetation specialist may choose an abiotic application instead, such as an erosion control blanket or seedless hydro-mulch and tackifier to facilitate passive revegetation of local native species. 3. Temporary earthen access roads may be seeded when site and horticultural conditions are suitable. 4. If a gravel or wood mulch has been used to prevent soil compaction, this material may be left in place [if ecologically appropriate] instead of seeding. Seed selection shall be ecologically appropriate as determined by a qualified biologist, per Guidelines and Standards for Land Use Near Streams, Design Guide 2: Use of Local Native Species.
BI-9: Restore Riffle/Pool Configuration of Channel Bottom	The channel bottom shall be re-graded at the end of the work project to as close to original conditions as possible. In salmonid streams, restore pool and riffle configurations to emulate pre-project instream conditions, taking into account channel morphological features (i.e., slope), which affects riffle/pool sequence.
BI-10: Avoid Animal Entry and Entrapment	All pipes, hoses, or similar structures less than 12 inches diameter will be closed or covered to prevent animal entry. All construction pipes, culverts, or similar structures, greater than 2-inches diameter, stored at a construction site overnight, will be inspected thoroughly for wildlife by a qualified biologist or properly trained construction personnel before the pipe is buried, capped, used, or moved. If inspection indicates presence of sensitive or state- or federally-listed species inside stored materials or equipment, work on those materials will cease until a qualified biologist determines the appropriate course of action. To prevent entrapment of animals, all excavations, steep-walled holes or trenches more than 6-inches deep will be secured against animal entry at the close of each day. Any of the following measures may be employed, depending on the size of the hole and method feasibility:

BMP Number and Title	BMP Text
	1. Hole to be securely covered (no gaps) with plywood, or similar materials, at the close of each working day, or any time the opening will be left unattended for more than one hour; or 2. In the absence of covers, the excavation will be provided with escape ramps constructed of earth or untreated wood, sloped no steeper than 2:1, and located no farther than 15 feet apart; or 3. In situations where escape ramps are infeasible, the hole or trench will be surrounded by filter fabric fencing or a similar barrier with the bottom edge buried to prevent entry.
BI-11: Minimize Predator Attraction	Remove trash daily from the worksite to avoid attracting potential predators to the site.
Cultural Resources	
CU-1: Accidental Discovery of Archaeological Artifacts, Tribal Cultural Resources, or Burial Remains	If historical or unique archaeological artifacts are accidentally discovered during construction, or tribal cultural resources, work in affected areas will be restricted or stopped until proper protocols are met. Work at the location of the find will halt immediately within 100~~30~~ feet of the find. A "no work" zone shall be established utilizing appropriate flagging to delineate the boundary of this zone. A Consulting Archaeologist will visit the discovery site as soon as practicable for identification and evaluation pursuant to Section 21083.2 of the Public Resources Code and Section 15126.4 of the California Code of Regulations. If the archaeologist determines that the artifact is not significant, construction may resume. If the archaeologist determines that the artifact or resource is significant, the archaeologist will determine if the artifact or resource can be avoided and, if so, will detail avoidance procedures. If the artifact cannot be avoided, the archaeologist will develop within 48 hours an Action Plan which will include provisions to minimize impacts and, if required, a Data Recovery Plan for recovery of artifacts in accordance with Public Resources Code Section 21083.2 and Section 15126.4 of the CEQA Guidelines. If a tribal cultural resource cannot be avoided, the Action Plan will include notification of the appropriate Native American tribe, and consultation with the tribe regarding acceptable recovery options. If burial finds are accidentally discovered during construction, work in affected areas will be restricted or stopped until proper protocols are met. Upon discovering any burial site as evidenced by human skeletal remains, the County Coroner will be immediately notified and the field crew supervisor shall take immediate steps to secure and protect such remains from vandalism during periods when work crews are absent. No further excavation or disturbance within ~~30~~100 feet of the site or any nearby area reasonably suspected to overlie adjacent remains may be made except as authorized by the County Coroner, California Native American Heritage Commission, and/or the County Coordinator of Indian Affairs.

<table>
<tr><th>BMP Number and Title</th><th>BMP Text</th></tr>
<tr><td colspan="2">Hazards & Hazardous Materials</td></tr>
<tr><td>HM-7: Restrict Vehicle and Equipment Cleaning to Appropriate Locations</td><td>Vehicles and equipment may be washed only at approved areas. No washing of vehicles or equipment will occur at job sites.</td></tr>
<tr><td>HM-8: Ensure Proper Vehicle and Equipment Fueling and Maintenance</td><td>No fueling or servicing will be done in a waterway or immediate flood plain, unless equipment stationed in these locations is not readily relocated (i.e., pumps, generators).
1. For stationary equipment that must be fueled or serviced on-site, containment will be provided in such a manner that any accidental spill will not be able to come in direct contact with soil, surface water, or the storm drainage system.
2. All fueling or servicing done at the job site will provide containment to the degree that any spill will be unable to enter any waterway or damage riparian vegetation.
3. All vehicles and equipment will be kept clean. Excessive build-up of oil and grease will be prevented.
4. All equipment used in the creek channel will be inspected for leaks each day prior to initiation of work. Maintenance, repairs, or other necessary actions will be taken to prevent or repair leaks, prior to use.
5. If emergency repairs are required in the field, only those repairs necessary to move equipment to a more secure location will be done in a channel or flood plain.</td></tr>
<tr><td>HM-9: Ensure Proper Hazardous Materials Management</td><td>Measures will be implemented to ensure that hazardous materials are properly handled and the quality of water resources is protected by all reasonable means.</td></tr>
</table>

BMP Number and Title	BMP Text
	1. Prior to entering the work site, all field personnel will know how to respond when toxic materials are discovered. 2. Contact of chemicals with precipitation will be minimized by storing chemicals in watertight containers with appropriate secondary containment to prevent any spillage or leakage. 3. Petroleum products, chemicals, cement, fuels, lubricants, and non-storm drainage water or water contaminated with the aforementioned materials will not contact soil and not be allowed to enter surface waters or the storm drainage system. 4. All toxic materials, including waste disposal containers, will be covered when they are not in use, and located as far away as possible from a direct connection to the storm drainage system or surface water. 5. Quantities of toxic materials, such as equipment fuels and lubricants, will be stored with secondary containment that is capable of containing 110% of the primary container(s). 6. The discharge of any hazardous or non-hazardous waste as defined in Division 2, Subdivision 1, Chapter 2 of the California Code of Regulations will be conducted in accordance with applicable State and federal regulations. 7. In the event of any hazardous material emergencies or spills, personnel will call the Chemical Emergencies/Spills Hotline at 1-800-510-5151.
HM-10: Utilize Spill Prevention Measures	Prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water following these measures: 1. Field personnel will be appropriately trained in spill prevention, hazardous material control, and clean-up of accidental spills; 2. Equipment and materials for cleanup of spills will be available on site, and spills and leaks will be cleaned up immediately and disposed of according to applicable regulatory requirements; 3. Field personnel will ensure that hazardous materials are properly handled and natural resources are protected by all reasonable means; 4. Spill prevention kits will always be in close proximity when using hazardous materials (e.g., at crew trucks and other logical locations), and all field personnel will be advised of these locations; and, 5. The work site will be routinely inspected to verify that spill prevention and response measures are properly implemented and maintained.
HM-11: Ensure Worker Safety in Areas with High Mercury Levels	To ensure worker safety is protected in areas with elevated mercury concentrations in exposed surfaces, personal protective equipment will be required during project construction to maintain exposure below levels established by the California Division of Occupational Safety and Health (Cal/OSHA).

BMP Number and Title	BMP Text
HM-12: Incorporate Fire Prevention Measures	1. All earthmoving and portable equipment with internal combustion engines will be equipped with spark arrestors. 2. During the high fire danger period (April 1–December 1), work crews will have appropriate fire suppression equipment available at the work site. 3. An extinguisher shall be available at the project site at all times when welding or other repair activities that can generate sparks (such as metal grinding) is occurring. 4. Smoking shall be prohibited except in designated staging areas and at least 20 feet from any combustible chemicals or vegetation.
Hydrology/Water Quality	
WQ-1: Conduct Work from Top of Bank	For work activities that will occur in the channel, work will be conducted from the top of the bank if access is available and there are flows in the channel.
WQ-2: Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms	Field personnel will use the appropriate equipment for the job that minimizes disturbance to the stream bottom. Appropriately tired vehicles, either tracked or wheeled, will be used depending on the situation. Tracked vehicles (bulldozers, loaders) may cause scarification. Wheeled vehicles may cause compaction. Heavy equipment will not operate in the live stream.
WQ-3: Limit Impact of Pump and Generator Operation and Maintenance	Pumps and generators will be maintained and operated in a manner that minimizes impacts to water quality and aquatic species. 1. Pumps and generators will be maintained according to manufacturers' specifications to regulate flows to prevent dry-back or washout conditions. 2. Pumps will be operated and monitored to prevent low water conditions, which could pump muddy bottom water, or high water conditions, which creates ponding. 3. Pump intakes will be screened to prevent uptake of fish and other vertebrates. Pumps in steelhead creeks will be screened according to NMFS criteria. 4. Sufficient back-up pumps and generators will be onsite to replace defective or damaged pumps and generators.
WQ-4: Limit Impacts from Staging and Stockpiling Materials	1. To protect on-site vegetation and water quality, staging areas should occur on access roads, surface streets, or other disturbed areas that are already compacted and only support ruderal vegetation. Similarly, all

BMP Number and Title	BMP Text
	equipment and materials (e.g., road rock and project spoil) will be contained within the existing service roads, paved roads, or other pre-determined staging areas. 2. Building materials and other project-related materials, including chemicals and sediment, will not be stockpiled or stored where they could spill into water bodies or storm drains. 3. No runoff from the staging areas may be allowed to enter water ways, including the creek channel or storm drains, without being subjected to adequate filtration (e.g., vegetated buffer, swale, hay wattles or bales, silt screens). 4. The discharge of decant water to water ways from any on-site temporary sediment stockpile or storage areas is prohibited. 5. During the wet season, no stockpiled soils will remain exposed, unless surrounded by properly installed and maintained silt fencing or other means of erosion control. During the dry season; exposed, dry stockpiles will be watered, enclosed, covered, or sprayed with non-toxic soil stabilizers.
WQ-5: Stabilize Construction Entrances and Exits	Measures will be implemented to minimize soil from being tracked onto streets near work sites: 1. Methods used to prevent mud from being tracked out of work sites onto roadways include installing a layer of geotextile mat, followed by a 4-inch thick layer of 1 to 3-inch diameter gravel on unsurfaced access roads. 2. Access will be provided as close to the work area as possible, using existing ramps where available and planning work site access so as to minimize disturbance to the water body bed and banks, and the surrounding land uses.
WQ-6: Limit Impact of Concrete Near Waterways	Concrete that has not been cured is alkaline and can increase the pH of the water; fresh concrete will be isolated until it no longer poses a threat to water quality using the following appropriate measures: 1. Wet sacked concrete will be excluded from the wetted channel for a period of four weeks after installation. During that time, the wet sacked concrete will be kept moist (such as covering with wet carpet) and runoff from the wet sacked concrete will not be allowed to enter a live stream. 2. Poured concrete will be excluded from the wetted channel for a period of four weeks after it is poured. During that time, the poured concrete will be kept moist, and runoff from the wet concrete will not be allowed to enter a live stream. Commercial sealants (e.g., Deep Seal, Elasto-Deck Reservoir Grade) may be applied to the poured concrete surface where difficulty in excluding water flow for a long period may occur. If a sealant is used, water will be excluded from the site until the sealant is dry. 3. Dry sacked concrete will not be used in any channel. 4. An area outside of the channel and floodplain will be designated to clean out concrete transit vehicles.

BMP Number and Title	BMP Text
WQ-7: Isolate Work in Tidal Areas with Use of Coffer Dam	For work in tidal areas, it is preferable to isolate one side of the channel with a cofferdam and allow flows to continue on the other side of the creek. If downstream flows cannot be diverted around the project site, the creek waters will be transmitted around the site through cofferdam bypass pipes. By isolating the work area from tidal flows, water quality impacts are minimized. 1. Installation of coffer dams will begin at low tide. 2. Waters discharged through tidal coffer dam bypass pipes will not exceed 10 percent in areas where natural turbidity is greater than 50 Nephelometric Turbidity Units (NTU) over the background levels of the tidal waters into which they are discharged. 3. Coffer dams in tidal areas may be made from earthen or gravel material. If earth is used, the downstream and upstream faces will be covered by a protected covering (e.g., plastic or fabric) and anchored to minimize erosion. 4. Cofferdams and bypass pipes will be removed as soon as possible but no more than 72 hours after work is completed. Flows will be restored at a reduced velocity to minimize erosion, turbidity, or harm to downstream habitat.
WQ-8: Minimize Hardscape in Bank Protection Design	Bank repair techniques appropriate to a given site based on hydraulic and other site conditions will be selected. 1. Biotechnical repair methods include construction with living materials; willow wattling; erosion control blankets; brush matting; and, installation of root wads and boulders in banks. 2. The repair will be designed and installed so that it will be self-sustaining and use vegetation that adds structural integrity to the stream bank.
WQ-9: Use Seeding for Erosion Control, Weed Suppression, and Site Improvement	Disturbed areas shall be seeded with native seed as soon as is appropriate after activities are complete. An erosion control seed mix will be applied to exposed soils down to the ordinary high water mark in streams. 1. The seed mix should consist of California native grasses, (for example *Hordeum brachyantherum*; *Elymus glaucus*; and annual *Vulpia microstachyes*) or annual, sterile hybrid seed mix (e.g., *Regreen*™, a wheat x wheatgrass hybrid). 2. Temporary earthen access roads may be seeded when site and horticultural conditions are suitable, or have other appropriate erosion control measures in place.
WQ-10: Prevent Scour Downstream of Sediment Removal	After sediment removal, the channel will be graded so that the transition between the existing channel both upstream and downstream of the work area is smooth, and continuous between the maintained and non-maintained areas, and does not present a sudden vertical transition (wall of sediment) or other blockage that could erode once flows are restored to the channel.

BMP Number and Title	BMP Text
WQ-11: Maintain Clean Conditions at Work Sites	The work site, areas adjacent to the work site, and access roads will be maintained in an orderly condition, free and clear from debris and discarded materials on a daily basis. Personnel will not sweep, grade, or flush surplus materials, rubbish, debris, or dust into storm drains or waterways. For activities that last more than one day, materials or equipment left on the site overnight will be stored as inconspicuously as possible, and will be neatly arranged. Any materials and equipment left on the site overnight will be stored to avoid erosion, leaks, or other potential impacts to water quality Upon completion of work, all building materials, debris, unused materials, concrete forms, and other construction-related materials will be removed from the work site.
WQ-12: Manage Well or Exploratory Boring Materials	All materials or waters generated during drilling, well or exploratory boring construction, well development, pump testing, or other activities associated with wells or exploratory borings, will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case will these materials and/or waters be allowed to enter, or potentially enter, on- or off-site storm sewers, dry wells, or waterways. Such materials/waters must not be allowed to move off the property where the work is being completed.
WQ-13: Protect Groundwater from Contaminates Via Wells or Exploratory Borings	Any substances or materials that may degrade groundwater quality will not be allowed to enter any well or boring. Lubricants used on drill bits, drill pipe, or tremie pipe will not be comprised of oily or greasy substances or other materials that may degrade groundwater quality. Well openings or entrances will be sealed or secured in such a way as to prevent the introduction of contaminants.
WQ-15: Prevent Water Pollution	Oily, greasy, or sediment laden substances or other material that originate from the project operations and may degrade the quality of surface water or adversely affect aquatic life, fish, or wildlife will not be allowed to enter, or be placed where they may later enter, any waterway. The project will not increase the turbidity of any watercourse flowing past the construction site by taking all necessary precautions to limit the increase in turbidity as follows: 1. where natural turbidity is between 0 and 50 NTU, increases will not exceed 5 percent; 2. where natural turbidity is greater than 50 NTU, increases will not exceed 10 percent; 3. where the receiving water body is a dry creek bed or storm drain, waters in excess of 50 NTU will not be discharged from the project. Water turbidity changes will be monitored. The discharge water measurements will be made at the point where the discharge water exits the water control system for tidal sites and 100 feet downstream of the discharge point for non-tidal sites. Natural watercourse turbidity measurements will be made in the receiving water 100 feet upstream

BMP Number and Title	BMP Text
	of the discharge site. Natural watercourse turbidity measurements will be made prior to initiation of project discharges, preferably at least 2 days prior to commencement of operations.
WQ-16: Prevent Stormwater Pollution	To prevent stormwater pollution, the applicable measures from the following list will be implemented: 1. Soils exposed due to project activities will be seeded and stabilized using hydroseeding, straw placement, mulching, and/or erosion control fabric. These measures will be implemented such that the site is stabilized and water quality protected prior to significant rainfall. In creeks, the channel bed and areas below the Ordinary High Water Mark are exempt from this BMP. 2. The preference for erosion control fabrics will be to consist of natural fibers; however, steeper slopes and areas that are highly erodible may require more structured erosion control methods. No non-porous fabric will be used as part of a permanent erosion control approach. Plastic sheeting may be used to temporarily protect a slope from runoff, but only if there are no indications that special-status species would be impacted by the application. 3. Erosion control measures will be installed according to manufacturer's specifications. 4. To prevent stormwater pollution, the appropriate measures from, but not limited to, the following list will be implemented: ▪ Silt Fences ▪ Straw Bale Barriers ▪ Brush or Rock Filters ▪ Storm Drain Inlet Protection ▪ Sediment Traps or Sediment Basins ▪ Erosion Control Blankets and/or Mats ▪ Soil Stabilization (i.e., tackified straw with seed, jute or geotextile blankets, etc.) ▪ Straw mulch. 5. All temporary construction-related erosion control methods shall be removed at the completion of the project (e.g., silt fences). 6. Surface barrier applications installed as a method of animal conflict management, such as chain link fencing, woven geotextiles, and other similar materials, will be installed no longer than 300 feet, with at least an equal amount of open area prior to another linear installation.

BMP Number and Title	BMP Text
Transportation and Traffic	
TR-1: Use Suitable Public Safety Measures	Fences, barriers, lights, flagging, guards, and signs will be installed as determined appropriate by the public agency having jurisdiction, to give adequate warning to the public of the construction and of any dangerous condition to be encountered as a result thereof.

Chapter 3
ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

3.1 Introduction

3.1.1 Introduction to Environmental Setting and Impact Analysis

Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures,* of this ~~D~~EIR contains 13 sections that describe the environmental resources and environmental impacts of the proposed project. Sections 3.2 through 3.14 contain the following information about each resource topic:

- description of the environmental setting and background information about the resource topic to help the reader understand the resources that could be affected by the proposed project;
- summary of federal, state, and regional statutes, regulations, plans, and policies that are relevant to project activities or affected environmental resources;
- discussion of the criteria and thresholds used in determining the significance of the proposed project's environmental impacts;
- discussion of the impacts of the proposed project on environmental resources, including the significance of each impact and a summary table of impacts and levels of significance;
- discussion of BMPs from the District's Handbook (SCVWD 2014) and listed in Table 2-3 that would be applied to project activities to avoid or minimize impacts; and
- description of mitigation measures that would allow the District to avoid, minimize, or compensate for any significant impacts.

Appendix B includes relevant local plans and policies for each resource topic.

This EIR has been prepared at a project level. According to State CEQA Guidelines Section 15161, a project-level EIR should focus primarily on the changes in the environment that would result from development of all phases of the project, including construction and operation. Each section of Chapter 3 examines the construction and operation phases of the proposed project. Note that the proposed project's operational impact analysis evaluates the effects of new operation and maintenance activities that would occur within the project area, in addition to or beyond those existing maintenance activities already addressed under the District's ongoing SMP.

During the course of the EIR evaluation, it was determined that four CEQA checklist resource topics would result in no impacts based on the nature and scope of the proposed project activities. As such, the following resource topics have been eliminated from further analysis: agriculture and forestry resources, mineral resources, population and housing, and public services. A brief summary and description of these resource topics, along with the rationale for the no impact conclusions, are provided below in Section 3.1.3.

3.1.2 Impact Terminology and Use of Language in CEQA

The categories used to designate impact significance are described below:

- *No Impact (NI)* A project is considered to have no impact if there is no potential for impacts, or if the environmental resource does not exist within the project area or the area of potential effect. For example, there would be no impacts related to wastewater disposal if the project would not involve the production of wastewater.
- *Less than Significant (LS)* This determination applies if there is some impact, but the degree of impact does not qualify as significant according to the impact significance criteria for that resource.
- *Less than Significant with Mitigation (LM)* This determination applies to impacts that exceed significance criteria, but for which feasible mitigation is available to reduce the impacts to a less-than-significant level.
- *Significant (S)* This determination applies to impacts that exceed significance criteria without mitigation.
- *Significant and Unavoidable (SU)* This determination applies to impacts that are significant but (1) no feasible mitigation has been identified to reduce the impact to a less-than-significant level; or (2) feasible mitigation has been identified but the residual impact remains significant after mitigation is applied. Therefore, the impact is considered significant and unavoidable.

The analysis of potential impacts and mitigation measures is based on predetermined significance criteria. The significance criteria used in this EIR are generally taken from the Environmental Checklist Form included in Appendix G of the State CEQA Guidelines.

Where impacts are significant, feasible mitigation measures are presented. The ~~D~~EIR evaluates the effectiveness of identified mitigation measures to reduce significant impact to less-than-significant levels.

In some cases, when impacts are not significant and thus no mitigation is required, the ~~D~~EIR nevertheless discusses mitigation measures developed to address other significant impacts but would also reduce a less-than-significant impact in another topic area.

3.1.3 Sections Eliminated from Further Analysis

Agriculture and Forestry Resources

The project area is not used or zoned for agricultural or forestry activities. According to the California Department of Conservation (CDOC), the project area is located on land designated "urban and built-up land" (CDOC 2014, 2016). As a result, the proposed project would not alter land use designations or farmland/timberland classifications designated at either the local or state level. No Prime Farmland, Unique Farmland, Farmland of Statewide Importance, forest lands, or lands under a Williamson Act contract would be converted by or conflict with the proposed project. Therefore, no impact on agriculture or forestry resources would result.

Mineral Resources

The project area does not have any designated mineral resources zones, nor does it contain any significant oil or gas resource–producing areas. According to the CDOC's Division of Mines and Geology (which became the California Geological Survey in 2006), the project area is classified as MRZ-1, a mineral resource zone in which adequate information indicates that no significant mineral deposits are present, or in which it is judged that little likelihood exists for their presence (Stinson et al. 1987). In addition, the proposed project would not involve any activities that could directly affect mineral production sites or prevent future availability of mineral resources. Therefore, no impact on mineral resources would result.

Population and Housing

The proposed project would provide flood protection along Lower Penitencia Creek and would primarily take place within the District's ROW. Throughout the construction phase, approximately 40 construction workers would be employed. It is anticipated that the regional or local labor force could meet the project's construction and workforce requirements. Although some workers might temporarily relocate from other areas, the increase in workers would be temporary and minimal. Operation and maintenance activities of the proposed project would be conducted by the District's existing workforce.

The proposed project does not include construction of new homes or businesses and would not remove obstacles to growth by extending any existing roads, water supply facilities, wastewater facilities, or other infrastructure. The proposed project would not displace any housing units or people. Additionally, the project area is surrounded by existing urban development. Ongoing and future redevelopment of the area is addressed by the City of Milpitas General Plan, which serves as a blueprint for land uses and development density in the City of Milpitas. The proposed project would not modify the general plan or change the types or densities of land uses allowed in the project vicinity. As such, the proposed project would not induce substantial population growth or result in impacts related to displacement of people or housing. There would be no impact on population and housing.

Public Services

The proposed project involves flood protection improvements along Lower Penitencia Creek and would not induce growth or increase population of the area. Therefore, it would not increase the need for public services or government facilities, including fire protection, police protection, schools, parks, or other services. During project construction, potential incidents could require law enforcement, fire protection, or emergency services; however, the project is located within an urbanized area of Milpitas and is currently served by existing public services (e.g., police and fire protection, schools, and parks). The temporary increase in such incidents would not be substantial and would not result in the need to construct new or physically altered governmental facilities to maintain acceptable service ratios or response times or meet performance objectives. Operation and maintenance activities described in Chapter 2, *Project Description*, would not be substantially different from existing maintenance and operation activities; therefore, operation of the proposed project would not change the demand for public services and would not create a need for new or physically altered governmental facilities to maintain acceptable service ratios or response times or meet performance objectives of public service providers. Construction and operation of the proposed project would not substantially affect public services.

3.2 Aesthetics

3.1.1 Overview

This section describes concepts and terminology used in this section of the EIR to discuss aesthetic resources; the existing aesthetic resources within the project area; and pertinent state regulations regarding the protection of visual and scenic resources. The impacts on scenic resources, public views of scenic vistas, visual character of the potentially affected area, and light and glare effects from construction and operation of the proposed project are evaluated. Applicable BMPs are identified, and mitigation is proposed to address the impacts found to be significant.

Concepts and Terminology

Visual character, *visual quality*, and *visual sensitivity* are three terms used throughout this section. Visual character is the unique set of landscape features that combines to make a view, including native landforms, water, and vegetation patterns, as well as built features such as buildings, roads, and other structures. Visual quality is the intrinsic appeal of a landscape or scene due to the combination of natural and built features in the landscape. Natural and built features combine to form unique perspectives with varying degrees of visual quality, which is rated in this analysis as high, moderate, or low. A high visual quality rating indicates the presence of visual resources that are unique or exemplary of the region's natural or cultural scenic amenities. A moderate visual quality rating indicates visual resources typical or characteristic of the region's natural and/or cultural visual amenities. A low visual quality rating refers to areas generally lacking in natural or cultural visual resource amenities typical of the region.

Visual sensitivity reflects the level of interest or concern that viewers and responsible land management agencies have for a particular visual resource, with visual quality taken into account. Visual sensitivity is a measure of how noticeable proposed changes might be in a particular setting and is determined based on the distance from a viewer, the contrast of the proposed changes, and the duration that a particular view would be available to viewers. For example, areas such as scenic vistas, parks, trails, and scenic roadways typically have a high visual quality and visual sensitivity because these locales are publicly protected, appear natural, view durations are typically long, and close-up views are more commonly available.

3.1.2 Regulatory Setting

Federal Laws, Regulations, and Policies

No federal regulations are applicable to aesthetics in relation to the proposed project.

State Laws, Regulations, and Policies

California Scenic Highway Program

In 1963, the California State Legislature established the California Scenic Highway Program, a provision of the Streets and Highways Code, to preserve and enhance the natural beauty of California. The state highway system includes designated scenic highways and those that are eligible for designation as scenic highways. There are no state-designated scenic highways in Milpitas (California Department of Transportation [Caltrans] 2016); therefore, the proposed project would not be subject to the Scenic Highway Program.

3.1.3 Environmental Setting

Regional Setting

The City of Milpitas is characterized as a predominantly urban community located at the base of the Diablo Range and just east of the southern end of the San Francisco Bay. The foothills are sparsely settled and form a backdrop for many of the east-facing views from Milpitas.

According to the *City of Milpitas General Plan* (City of Milpitas 2002), the foothills and the tree-lined Coyote Creek corridor provide Milpitas with a scenic backdrop and visual reference points. General Plan Figure 4-6 shows specific hillsides, ridges, visually significant vegetation, and scenic routes that are critical in shaping the City's scenic identity. To maintain and improve the character and views of scenic resources from streets and maximize access to parks, open space, and other resources, the general plan establishes a well-integrated network of scenic routes. These are streets or corridors that pass through an area of scenic value, provide connectivity between such areas, or provide distant views of scenic resources. The general plan identifies various scenic resources, including scenic corridors, scenic connectors, major visual gateway, visually significant hilltop or ridge, visually significant vegetation, and visually significant hillsides. The following discussion describes how these terms are used in the general plan and describes designated scenic corridors and scenic connectors within the project area:

> *Scenic corridors* are located along designated streets that pass through an area of scenic value and are subject to special development controls for the purpose of retaining and enhancing nearby views or maintaining unobstructed distant views. There are no scenic corridors in the project vicinity.
>
> *Scenic connectors* are designated streets connecting or providing access to scenic corridors or distant views. Scenic connectors may not necessarily traverse an area of scenic value, but it is recommended that special design treatments (e.g., landscaping, undergrounding of utilities, and street furnishings) be undertaken to provide visual continuity with the scenic corridors. In the project vicinity, I-880 is a designated scenic connector; however, views of Lower Penitencia Creek are mostly obscured by the highway itself.
>
> *Major visual gateways* are generally located at the terminus of a scenic corridor and scenic connector. The I-880 and Dixon Landing Road junction is designated as a major visual gateway in the general plan.
>
> *Visually significant vegetation* generally occurs adjacent to creeks to the east of the urbanized area of Milpitas. There is no visually significant vegetation in the project vicinity.
>
> *Visually significant hilltops or ridges* includes hilltops or ridges where scenic views are likely available; however, the project area is not located in these areas.

Visually significant hillside includes hillsides to the east of the urbanized area of Milpitas. The project area is not located in these areas.

Project Vicinity

The project area is characterized by the Lower Penitencia Creek channel itself and the surrounding land uses, including open space in the vicinity of the Coyote Creek/Lower Penitencia Creek confluence, single-family homes and condominiums, and commercial and office/industrial park buildings. Lower Penitencia Creek and the vegetation and trees within and along the channel provide important visual features as it introduces a natural element and variety into the developed urban landscape. The following viewer groups have visual access to the project site: recreation users, residents, motorists, office workers, and individuals that attend the nearby Hindu temple referred to as BAPS Shri Swaminarayan Mandir.

The visual quality, viewer types and volumes, and viewer exposures associated with the proposed project are described below. **Figure 3.2-1** shows the photo viewpoint locations, and **Figure 3.2-2** includes representative photos of the project area from public viewpoints. The following text describes key views of each project reach along with the visual quality and sensitivity of those views. Following the photos and descriptions, **Table 3.2-1** summarizes the viewer sensitivity of the major viewer types that would be affected by the proposed project.

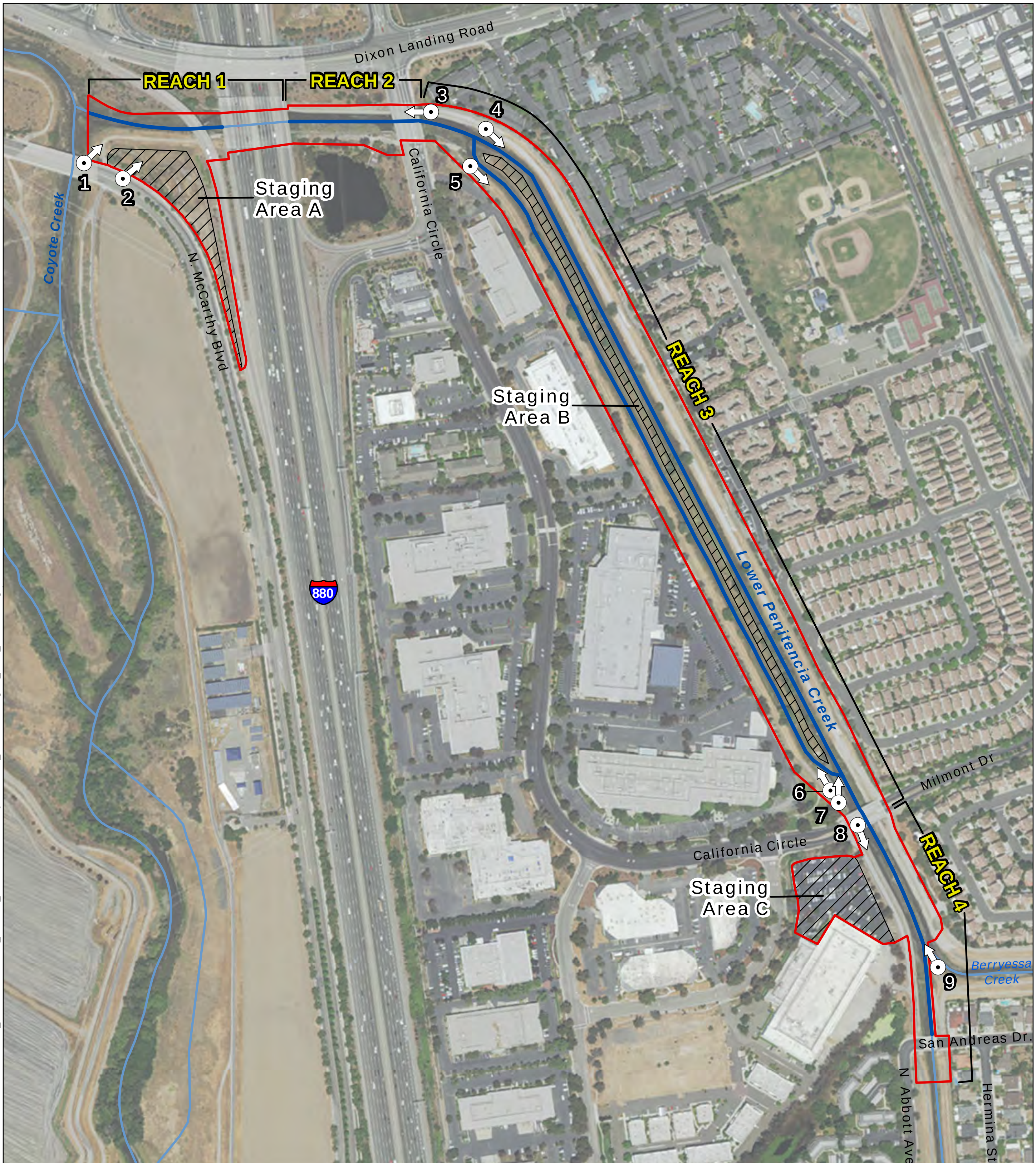
Viewer Exposure, Visual Quality, and Visual Sensitivity

Reach 1

Reach 1 is visible to motorists and recreationists.

Motorists. For motorists traveling on North McCarthy Boulevard, views of Reach 1 are available from a short segment of the road. Outside that segment, views of the creek are obscured due to the road's elevation above the reach and the railing located along the road. Similarly, fleeting views looking westward at Reach 1 are also available from the I-880 southbound on-ramp, which is considered a scenic connector in the *City of Milpitas General Plan* (2002) but is not a state-designated scenic highway. Due to the high speed of travel on I-880 and because views of the creek are somewhat obscured by the highway itself, no photos of Reach 1 were captured from this highway. For these reasons, the visual sensitivity of motorists is considered low.

Recreationists. In comparison to motorists, recreationists (e.g., walkers and joggers) using the sidewalks along North McCarthy Boulevard would have clearer and longer duration views of Reach 1, consisting of the creek channel, some trees, grasses and other low-lying shrubs, and the District maintenance road. Figure 3.2-2, Photo 1 shows a view of Reach 1 looking northeast from the sidewalk along the northbound side of North McCarthy Boulevard. Figure 3.2-2, Photo 2 presents a close-up view (looking eastward) of the proposed Reach 1 levee setback area and Staging Area A from the sidewalk along the eastern side of North McCarthy Boulevard. The creek and low-lying vegetation in the Reach 1 work area provide visual contrast to the nearby urban environment, are characteristic of the region's natural visual amenities, and are judged to have moderate visual quality.



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Feet

Prepared by:

Horizon WATER and ENVIRONMENT

Photo Vantage Point and View Direction

Project Boundary

Staging Area

Figure 3.2-1
Vantage Points for Photos

Lower Penitencia Creek Improvements Project

Photo 1. View of Reach 1 looking eastward from North McCarthy Boulevard (June 26, 2015)

Photo 2. View of proposed Staging Area A south of Reach 1 from North McCarthy Boulevard looking eastward (June 26, 2015)

Figure 3.2-2.
Views of the Project Site

Horizon WATER and ENVIRONMENT

Lower Penitencia Creek Improvements Project

Photo 3. View of east side of Reach 2 from California Circle looking westward (June 26, 2015)

Photo 4. View of northern segment of Reach 3 looking southeast from the Penitencia Creek Trail (north side of creek) (June 26, 2015)

Figure 3.2-2.
Views of the Project Site

Lower Penitencia Creek Improvements Project

Horizon WATER and ENVIRONMENT

Photo 5. View of northern portion of Reach 3 looking southeast from District's maintenance road (on south side of creek) (June 26, 2015)

Photo 6. View of southern portion of Reach 3 looking north from District's maintenance road (west of creek); photo taken on June 26, 2015, prior to sediment removal and vegetation management activities as part of the District's SMP

Figure 3.2-2.
Views of the Project Site

Lower Penitencia Creek
Improvements Project

Horizon WATER and ENVIRONMENT

Photo 7. View of southern portion of Reach 3 looking north from Milmont Drive; photo taken on October 30, 2015, after the District performed channel maintenance, including sediment removal

Photo 8. View of Reach 4 looking south from the District's maintenance road (on west side of creek) near Milmont Drive (June 26, 2015)

Horizon WATER and ENVIRONMENT

Figure 3.2-2.
Views of the Project Site

Lower Penitencia Creek Improvements Project

Photo 9. View of southern end of Reach 4 looking north from the District's maintenance Road at the confluence of Berryessa Creek and Lower Penitencia Creek (June 26, 2015)

Horizon
WATER and ENVIRONMENT

Figure 3.2-2.
Views of the Project Site

Lower Penitencia Creek
Improvements Project

The sidewalk on the east side of North McCarthy Boulevard parallels the Coyote Creek Pedestrian and Bicycle Trail, which is located 200 to 400 ft. to the west and connects to North McCarthy Boulevard near the confluence of Lower Penitencia and Coyote Creek. The Coyote Creek trail offers recreationists a nearby off-road alternative to the North McCarthy Boulevard sidewalk. Based on observations by District staff at various times of year, the east sidewalk along North McCarthy Boulevard receives low to moderate use by recreationists. For these reasons, the visual sensitivity for recreationists is considered moderate.

Reach 2

Reach 2 is primarily visible to motorists traveling on Dixon Landing Road and California Circle, and pedestrians using the sidewalks along the south side of Dixon Landing Road and east side of California Circle.

Motorists. For motorists passing Reach 2 on California Circle, views facing west toward the channel are fleeting and somewhat obstructed by the road itself and the railing at the creek crossing. Similarly, for motorists passing Reach 2 on Dixon Landing Road, views of the site are fleeting and obstructed due to topography and the presence of vegetation. Thus, the visual sensitivity for motorists is considered low.

Recreationists. Figure 3.2-2, Photo 3 shows a view of Reach 2 from the sidewalk on the east side of California Circle and characterizes a typical view for pedestrians or joggers using this sidewalk. As shown, views of Reach 2 are largely screened by the road and railing. Mature trees located on the outboard side of the levee and maintenance road and some ruderal vegetation can be seen from this viewpoint but the creek channel is not visible. These natural elements provide pleasing visual contrast to the surrounding urban landscape; thus, the visual quality is considered moderate. From California Circle, the visual sensitivity of pedestrians is considered low to moderate. In addition, views of Reach 2 are available from the southern sidewalk along Dixon Landing Road. Due to the short duration of views for pedestrians passing by the reach and the limited number of pedestrians expected from these perspectives, the visual sensitivity from Dixon Landing Road is considered moderate.

Other viewers of Reach 2 may consist of recreationists using the existing maintenance roads located on the levee crests on both sides of the creek. These maintenance roads are not connected to pedestrian sidewalks, however, so it is anticipated that these maintenance roads are infrequently used by recreationists.

Reach 3

Reach 3 is visible to motorists, recreationists, residents, and other viewers using office space and the nearby Hindu temple referred as BAPS Shri Swaminarayan Mandir.

Motorists traveling on California Circle and Milmont Drive have brief views of the northern and southern ends of Reach 3, respectively. Due to the speed of travel, motorists traveling northbound on California Circle have short duration views of the creek channel and maintenance roads. Similarly, motorists traveling on Milmont Drive have short duration views of the creek channel, vegetation lining the channel, and adjacent maintenance roads. Therefore, the visual sensitivity of motorists is considered low to moderate.

Recreationists using the Penitencia Creek Trail on the north/east bank of the creek in Reach 3 have unobstructed, close-up views of Reach 3. Recreationists who use the District maintenance road on the south/west bank of the creek also have close-up views of this reach. Figure 3.2-2, Photo 4 shows a representative view of the creek corridor from the perspective of recreationists using the public trail along Reach 3. Photo 4 is taken from the Penitencia Creek Trail north of the creek looking southeast. Because the creek and its vegetation present provide pleasing visual contrast to nearby residential and office park development, the visual quality of Reach 3 is considered moderate. Views from this location are dominated by the creek and its natural vegetation. Electric transmission lines, residential development, and trees lining the trail are also visible. Figure 3.2-2, Photo 5 presents the perspective of a recreationist located on the maintenance road south of the creek, which is not open to public use; however, unauthorized use may occur. At the time this photograph was taken, construction of the Waterstone and iStar residential developments was underway on the parcels west of Reach 3, as is evident by the metal fencing (west of the channel).

Figure 3.2-2, Photos 6 and 7 show views of the southern end of Reach 3 facing north near Milmont Drive. Photo 6 was taken on June 26, 2015; Photo 7 was taken near the same location on October 30, 2015, shortly after sediment removal took place as part of the District's SMP. Both photos are presented to show the varying visual conditions of the project area before and after creek maintenance. Since the creek, vegetation, and trees provide visual contrast to the surrounding residential and office park development, the visual quality is moderate and the visual sensitivity is considered moderate for recreationists using the District's maintenance roads. From the perspective of recreationists using Penitencia Creek Trail, the visual sensitivity is considered moderate to high.

Residents. Other viewers of this reach (with varying levels of visibility) include residents located east and west of the creek. For many residents to the east, vegetation lining the maintenance road and trail, and the levee bank itself screen views of the creek. In some cases, views from residences east of Reach 3 are not available due to changes in elevation and topography. At the northeastern end of Reach 3, some residents situated on the second floor of apartment buildings may have clearer views than those situated at the bottom floor where views of the creek are obstructed by trees and vegetation along the maintenance road. Similarly, from Palisades Drive, some residents have partial views of Reach 3 from the second floor of homes but most views from the first floor are blocked due to the presence of fencing. While CEQA does not require an evaluation of visual effects on private residents, the visual sensitivity of residents to the east of Reach 3 is considered moderate.

Although no one lives in the iStar and Waterstone residential developments (west of Reach 3) yet, the closest residents to the project site will have close-up views of Reach 3. Residents on the bottom floor of buildings situated closest to the creek would have partial views of the creek, though wooden fencing installed around the perimeter of the development partially screens views of the creek. Clearer views of the creek channel may be accessible from the second and third story of these developments. Due to proximity to the project area, the visual sensitivity of the iStar and Waterstone residents are considered moderate.

Other Viewers. Partial views of Reach 3 are also available from an office building and a Hindu temple located west of the creek. Most close-up views of Reach 3 are available from the parking lot adjacent to these buildings. Due to topography, the presence of fencing and vegetation, and because office workers and individuals at the Hindu temple are expected to be focused on indoor activities, limited views of the creek are likely available from the office building and temple. The visual sensitivity of these viewers is considered low.

Reach 4

Reach 4 is visible to motorists driving along Milmont Drive and San Andreas Drive, recreationists using the public trail and maintenance road along the creek, residents, and an office building to the west of Reach 4.

For **motorists** passing by, views of Reach 4 are available from Milmont Drive and San Andreas Drive, although fleeting and somewhat obstructed by the chain-link fence at the creek crossings. Thus, the visual sensitivity for motorists is considered low to moderate.

Recreationists. Figure 3.2-2, Photos 8 and 9 show representative views of Reach 4 from the perspective of recreationists using Penitencia Creek Trail (also serves as the District's maintenance road). Photo 8 shows a view from Milmont Drive (looking south) and Photo 9 shows a view from the Penitencia Creek Trail/maintenance road at the confluence of Lower Berryessa Creek and Lower Penitencia Creek. From the viewpoint shown in Photo 8, views consist of the creek, residential uses to the east, office buildings and a parking lot to the west, electrical transmission lines, and trees and shrubs scattered along the roads. Views from the perspective of Photo 9 primarily include the concrete-lined creek channel, as well as the maintenance roads and nearby vegetation on both sides of the creek. Because the creek and vegetation provide pleasing visual contrast to the surrounding development, the visual quality of Reach 4 is moderate. From the perspective of recreationists using the maintenance roads, the visual sensitivity is moderate.

Residents on Summerwind Drive, San Andreas Drive and North Abbott Avenue may have partial views of the creek in Reach 4. The level of visibility for these residences varies due to the presence of trees and fencing. Views of Reach 4 are likely clearer from the second floor of these residences. The visual sensitivity of these residents is considered moderate.

Other Viewers. Lastly, some office workers using the building at 380 Fairview Way could have foreground views of Reach 4. Most close-up views of Reach 4 are available from the parking lot and are of short duration. Due to topography and presence of fencing and vegetation, limited views of Reach 4 are likely available from the office building. The visual sensitivity of office workers is considered low.

Table 3.2-1. Summary of Visual Sensitivity Findings Based on Viewer Types, Visual Exposures, and Visual Quality

Viewer Type/ Location	Visual Quality	View Exposure	Reach	Visual Sensitivity
Motorists				
I-880	Moderate	Foreground/middleground distance Obstructed view due to highway itself High number of viewers Short view duration	Reach 1	Low
North McCarthy Boulevard	Moderate	Foreground distance Partially obstructed view due to road and railing Moderate number of viewers Short view duration	Reach 1	Low
Dixon Landing Road	Moderate	Foreground distance Partially obstructed view due to road/topography High number of viewers Short view duration	Reach 2	Low
California Circle	Moderate	Foreground distance Partially obstructed view due to road Moderate number of viewers Short view duration	Reaches 2 and 3	Low to Moderate
Milmont Drive/ San Andreas Drive	Moderate	Foreground distance Unobstructed view Low to moderate number of viewers Short view duration	Reaches 3 and 4	Low to Moderate
Recreationists				
Penitencia Creek Trail	Moderate	Foreground distance Unobstructed view Moderate number of viewers Moderate to long view duration	Reach 3	Moderate to High
Unauthorized use of levee access roads adjacent to Reach 2	Moderate	Foreground distance Unobstructed view Low number of viewers Moderate to long view duration	Reach 2	Moderate
North McCarthy Boulevard adjacent to Reach 1	Moderate	Foreground distance Unobstructed view Low number of viewers Moderate to long view duration	Reach 1	Moderate

Viewer Type/ Location	Visual Quality	View Exposure	Reach	Visual Sensitivity
Dixon Landing Road sidewalk	Moderate	Foreground distance Unobstructed view Low number of viewers Moderate to long view duration	Reach 2	Moderate
California Circle sidewalk	Moderate	Foreground distance Partially obstructed view due to road and railing Low number of viewers Moderate to long view duration	Reaches 2 and 3	Low to Moderate
Unauthorized use of levee access roads adjacent to Reaches 3 and 4	Moderate	Foreground distance Unobstructed view Moderate number of viewers Moderate to long view duration	Reaches 3 and 4	Moderate
Residents				
Residences on Dixon Landing Road (Mill Creek Apartments), Alegra Terrace, Cil Del Sol, Palisades Drive, Elkwood Drive, Summerwind Drive, and San Andreas Drive and North Abbott Avenue; residences at the Waterstone and iStar residential developments (on California Circle)	Moderate	Foreground to background distance Obstructed to unobstructed view Long view duration	Reaches 3 and 4	Moderate
Office Buildings Hindu Temple				
Offices on California Circle and Fairview Way and Hindu Temple at BAPS Shri Swaminarayan Mandir	Moderate	Foreground to background distance Obstructed to unobstructed view Long view duration	Reaches 3 and 4	Low

3.1.4 Impact Analysis

Methodology

This section evaluates whether construction and operation of the proposed project would result in significant impacts related to aesthetic resources. The visual analysis is based on field observations, aerial and ground-based photographs of the reaches, and information from the *City of Milpitas General Plan*.

Visual effects were assessed based on the significance criteria listed below. The evaluation of temporary or short-term visual impacts considers whether construction activities could substantially degrade the existing visual character or quality of the site or surrounding area, as well as the duration over which any such changes would occur. Because of their short-term nature, construction activities occurring in an area for less than 1 year are typically considered to have a less-than-significant effect on visual quality. However, construction activities occurring in an area for more than 1 year have been evaluated for significant visual impacts.

Activities with long-term visual effects, such as construction of new or altered structures, grading of roads, removal of trees, and introduction of new sources of light and glare, can permanently alter the landscape in a manner that could affect the existing visual character or quality of the area, depending on the perspective of the viewer. To determine impact potential, the impact analysis considers the visual sensitivity of the project area.

This analysis takes into consideration potential visual effects on future residents at the Waterstone and iStar residential developments. Although these developments were being constructed at the time this EIR was prepared, these projects will be completed before construction of the proposed project begins. Given the high demand of housing in the Milpitas area, it is likely that these residential units would be occupied by the time construction of the proposed project begins. For this reason and because of their close proximity to the project site, this section evaluates the project's short-term and long-term effects on views from the Waterstone and iStar developments.

Criteria for Determining Significance

Based on Appendix G of the State CEQA Guidelines, the proposed project would result in a significant impact on aesthetics if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

Impact Summary **Table 3.2-1** summarizes impacts of the proposed project on aesthetic resources.

Table 3.2-2. Summary of Impacts Aesthetics

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance After Mitigation
AES-1: Have a substantial adverse effect on a scenic vista	NI	None	NI
AES-2: Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	NI	None	NI
AES-3: Substantially degrade the existing visual character or quality of the site and its surroundings	LS	None	LS
AES-4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area	LS	None	LS

Notes:
NI = No Impact; LS = Less than Significant

Environmental Impacts

Impact AES-1: Have a substantial adverse effect on a scenic vista (No Impact)

There are no scenic vistas in the project area designated by Caltrans or the City of Milpitas. As such, the proposed project would have no impact on scenic vistas. No further discussion regarding this criterion is presented.

Impact AES-2: Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway (No Impact)

As described in Section 3.2.3, "Environmental Setting," above, there are no state-designated scenic highways in the project vicinity. There is no potential for the project to damage or otherwise affect scenic resources such as trees, rock outcroppings, or historic buildings along a scenic highway. No impact would occur.

Impact AES-3: Substantially degrade the existing visual character or quality of the site and its surroundings (Less than Significant)

Construction Impacts

Construction of the proposed project could result in temporary impacts on the visual character and quality of the site and its immediate vicinity. As described in Chapter 2, *Project Description*, project construction would be spread over 2 years, with the majority of work occurring during the dry season between June and October. The presence of operating equipment and materials, site preparation, and earth-moving activities would be most noticeable during the construction phase. In general, construction activities would include vegetation removal and excavation, especially when constructing the wetland bench in Reach 1. Large quantities of soil would be moved to construct the wetland bench and the relocated levee in Reach 1, and a large volume of sediment would be removed from Reaches 2 and 4. In addition, excavation and sheet pile wall installation work would be noticeable during construction of the ~~Reaches 2, 3 and 4~~ floodwalls along all project reaches. Some concrete form work would be seen during construction of the San Andreas Drive headwalls.

While fleeting views of the above-described activities would be available from nearby roads, sidewalks, and overpasses, the Penitencia Creek Trail would be closed for the duration of project construction each year. The District access roads would also be closed to the public throughout the duration of project construction. As such, trail users or unauthorized trail users would not have views of construction activities.

Views of construction equipment and activities would be most noticeable to residents immediately west and east of Reaches 3 and 4. Views of construction activities would also be visible to people working in the office buildings that have direct line-of-sight views of the project area to the west in Reaches 3 and 4. Due to topography and the presence of vegetation, trees, and fencing, residents on the second floor of residential buildings would have clearer views of the work areas than would residents on the first floor. From the perspective of office workers located in the buildings west of Reaches 3 and 4, workers on the floors above the ground floor would have clearer and unobstructed views of construction activities that occur in Reach 3. Workers in the buildings just west and south of Staging Area C may have unobstructed and close-up views of this staging area. Temporary views of the Reach 3 work area may also be visible from the nearby Hindu temple.

Construction activities associated with individual project elements would be short term (i.e., completed within approximately 4 months) at a given work area, and overall construction would be completed within 2 years. Throughout this time, construction activities, equipment, and materials in work areas and staging areas would be visible from public roads such as North McCarthy Boulevard, California Circle, Milmont Drive, San Andreas Drive, and residences and offices near Reaches 3 and 4. Tree and shrub removal would also occur along Reaches 1, 2 ~~and~~ 3, and 4 to accommodate the new replacement levee and floodwalls. Earth-moving activities and heavy equipment would be visible, and vehicles have potential to generate dust clouds, which could be distracting to nearby receptors. Implementation of District BMPs AQ-1 (Dust Control Measures) and WQ-11 (Maintain Clean Conditions at Work Sites) would help reduce dust emitted from operating construction equipment and ensure work areas are kept tidy. Construction activities and construction traffic are common visual elements in urbanized areas; traffic associated with the proposed project would be temporary, would appear similar to existing construction activities and construction traffic from the nearby Waterstone and iStar development projects, and would not substantially degrade the project area's visual character. Therefore, during the construction phase, effects on the visual quality and character of the project area and surrounding area would be less than significant.

Operational Impacts

Once construction is complete, the primary project elements that would result in a permanent visual change are the relocated and raised levee and wetland bench in Reach 1; the headwalls at the San Andreas Drive bridge; the floodwalls along Reaches 1, 2, 3, and 4;

the raised levee along Reach 4; and tree removal along Reaches 1, 2, and 3. Operational and maintenance effects of each project element are described below.

Setback Replacement Levee. Shifting the south levee in Reach 1 farther south and raising it by approximately 2.5 feet would result in a visual change. The relocated levee would be hydroseeded, which would consist of distributing native and naturalized grass seeds and mulch. Implementation of District BMP BI-8 would require that a qualified biologist or vegetation specialist select ecologically appropriate seed control mixes, which would ensure that newly planted vegetation appears consistent with vegetation seen in the project vicinity. Similar to current practice, maintenance activities would include vegetation management, trash and debris removal, and maintenance road grading.

From the viewpoint shown in Figure 3.2-2, Photo 1, the raised levee could partially block views of I-880 in the background, but the replacement levee would not detract from views of the creek or the foothills in the background. Given the moderate visual sensitivity of pedestrians and low visual sensitivity from the perspective of motorists using North McCarthy Boulevard, the Reach 1 replacement levee would not have a substantial adverse effect on the site's visual character or visual quality.

Wetland Bench. The proposed wetland bench in Reach 1 would be constructed to increase channel capacity and improve aquatic habitat. Within this reach, the wetland bench would be approximately 50 feet wide and planted with salt-tolerant wetland vegetation. Per District BMP BI-8, to the extent feasible, the wetland bench would be designed to include local native plant species. As described above, the District would conduct routine maintenance to remove trash and debris.

Because the wetland bench would be established along the existing channel and would appear similar to existing vegetation found in and along the creek, this project component would not result in a substantial adverse effect on the site's visual character or quality.

San Andreas Drive Bridge Headwalls. New concrete headwalls would be constructed on the downstream and upstream faces of the San Andreas Drive bridge. The headwalls would connect with the east and west bank levees and new floodwalls. The headwalls would be approximately 70 feet long, 1 foot wide, and approximately 6.5 feet tall. The headwalls would block views of the creek and substantially alter views for motorists using North Abbott Avenue and San Andreas Drive. Recreationists using the Penitencia Creek Trail/maintenance road west of Reach 4 would also have views of the new headwalls but would continue to have views of the creek channel. Thus, from the perspective of recreationists, the headwalls would not substantially affect sensitive views. As shown in Table 3.2-1, the visual sensitivity is low-to-moderate from the perspective of motorists but is moderate to high from the perspective of recreationists that use the trail. Given the low-to-moderate visual sensitivity of motorists and because view durations would be short in duration, this particular component of the project would not result in a substantial adverse effect on the site's visual character or quality.

Floodwalls. New steel sheet pile floodwalls would be installed on top of the levees in Reaches 1, 2, 3, and 4. In Reaches 2 and 4, the floodwalls would be 6 feet tall; in Reach 3, they would be 5.5 feet tall. Reach 3 would also have a pedestrian crossing over the east levee floodwall to allow for continued use of the existing Penitencia Creek Trail. As discussed in Chapter 2, the pedestrian crossing would consist of earthen ramps on both sides of the floodwall. While most of the floodwalls would be on the outboard side of the levees, the eastern floodwall within Reach 3 (from Milmont Drive to the point at which the

Penitencia Creek Trail merges with the District's maintenance road) would be on the inboard side of the maintenance road.

As indicated in Table 3.2-1, the visual sensitivity of this area is considered moderate-to-high from the perspective of recreationists using the Penitencia Creek Trail and the visual sensitivity is moderate from the perspective of unauthorized recreationists using District maintenance roads. For nearby residents, the visual sensitivity is moderate and for office workers, the visual sensitivity is low. Motorists on nearby roads also have a low to moderate visual sensitivity.

The floodwalls would introduce a new vertical built element to the project area. **Figure 3.2-3,** Simulations 1 and 2, show photo simulations of the Reach 3 floodwalls looking west from the Penitencia Creek Trail and Mill Creek Apartments, both of which are located east of the channel. Note that these simulations represent what the floodwalls could look like; the color of the floodwalls has not been determined as the project is in the preliminary design phase. As shown in Figure 3.2-3, the new floodwalls would have a linear, articulated form. As shown in Simulation 1, the floodwall and new residential development would be clearly visible to recreationists using the Penitencia Creek Trail and District maintenance roads. Since most of the floodwalls would be on the outboard side of the levee and maintenance roads, recreationists using the northern portion of the Penitencia Creek Trail and the District maintenance roads would continue to have views of the creek and vegetation in and around the creek. The portion of floodwall that would be installed on the inboard side of the District's maintenance road (east side of Reach 3 between Milmont Drive and the point where the road merges with the Penitencia Creek Trail) is not open to the public and therefore would not affect views of the creek from this perspective.

The following discussion describes the effects on nearby residential views. From the perspective of residences located east of Reach 3, views of the eastern floodwall would be partially visible at varying degrees due to the presence of trees, shrubs, carports, and topography. As shown in Figure 3.2-3, Simulation 2, the floodwalls on both sides of the channel would be visible from the second floor of the Miller Creek Apartments. The eastern floodwall would obstruct views of the creek channel from this particular perspective.

West of Reach 3, residents at the Waterstone and iStar developments that are adjacent to the project area (approximately 10 feet away) would have views of the new floodwalls. The new residences are being constructed on concrete pads such that the ground floor would be at the same elevation as the levee crest. **Figure 3.2-3, Simulations 3 and 4,** show simulations of the new Reach 3 floodwall from the perspective of residents at the Waterstone development. Simulation 3 presents a close-up view of the proposed floodwall and fence line from the perimeter of the development; the bottom photo shows a simulated view of the floodwall from the interior of the Waterstone development. As shown in these simulations, from the ground level, an approximately 1-foot portion of the Reach 3 floodwall would be visible but the majority of the floodwall would be screened by the wooden fence.

From the ground level, views looking eastward toward the creek channel would be screened, though views of the hillsides in background would still be visible. From the second and third floors of the new Waterstone and iStar residences located adjacent to the floodwall, views of the creek channel would be available.

Simulation 1. Simulated view of Reach 3 floodwall looking southwest from Penitencia Creek Trail.

Simulation 2. Simulated view of Reach 3 floodwalls looking southwest from Mill Creek Apartments.

Source: SCVWD 2017

Figure 3.2-3.
Simulations of Proposed Reach 3 Floodwalls

Horizon WATER and ENVIRONMENT

Lower Penitencia Creek Improvements Project

Simulation 3. Simulated view of Reach 3 floodwall (west bank) looking east from eastern perimeter of the Waterstone development.

Simulation 4. Simulated view of Reach 3 floodwall (west bank) looking east from interior of the Waterstone development.

Source: SCVWD 2017

Figure 3.2-3.
Simulations of Proposed Reach 3 Floodwalls

Horizon WATER and ENVIRONMENT

Lower Penitencia Creek Improvements Project

Other views of the floodwalls would be available at varying degrees from residences located east of Reaches 3 and 4 (e.g., from Palisades Drive, Cil Del Sol, Summerwind Drive, and San Andreas Drive). Some views would be partially obstructed by existing topography, fencing, trees and shrubs. Due to angle and height views of the channel may still be available from the second floor of some homes.

Similarly, the floodwalls may be partially visible from office buildings and the Hindu temple to the west of the project area. However, since office workers and individuals at the temple would likely be focused on indoor activities and given their low visual sensitivity, effects on these viewers would be insubstantial. Additionally, motorists traveling on public roads (e.g., California Circle, Milmont Drive, and San Andreas Drive) would have short duration views of the floodwalls. Due to the speed of travel and because motorists should be focused on safe driving, the floodwalls would not substantially degrade views for motorists.

Based on the above discussion and simulations presented, the floodwalls would be consistent with the linear form of the channel and adjacent levees. While such structures currently do not exist in the project area, floodwalls such as the ones proposed, are commonly seen along flood control channels. As described in Chapter 2, although the color coating of the floodwalls has not been selected, the District would select a color coating that blends in with the surrounding environment. For these reasons, the proposed floodwalls would not substantially degrade the project area's visual character and visual quality. This impact is less than significant.

Raised Levee. On the east bank, the existing earthen levee would be raised by about 5.5 feet, from Milmont Drive to the Lower Berryessa Creek confluence, where it would connect to an existing raised levee along Lower Berryessa Creek. The modified levee would be visible from Milmont Drive and recreationists using Penitencia Creek Trail on the west bank of Reach 4. The fencing along the channel reach would substantially block views of the raised levee from adjacent residences. Given the moderate visual sensitivity and because the levee would not detract from views of the creek or the foothills in the background, the raised levee would not substantially degrade the project area's visual character and visual quality. This impact would be less than significant.

Tree and Shrub Removal. As noted above, tree and shrub removal would occur along portions of Reaches 1, 2, 3, and 4 to accommodate the replacement levee and new floodwalls. An estimated total of 33~~22~~ live trees with diameter at breast height (dbh) of 6 inches or more would be removed during project construction.

In particular, in Reach 1, some vegetation located at the proposed locations of the setback levee and wetland bench would be removed during construction. This vegetation consists primarily of low ground cover, with scattered small shrubs. One~~No~~ tree~~s~~ with a dbh of 6 inches or more would be removed in Reach 1. ~~Five~~Four live trees with dbh of 6 inches or more located on the south bank of Reach 2 would be removed to accommodate the ramp that would be constructed behind the floodwall. One tree with dbh of 6 inches or more would be removed on the north bank of Reach 2. In Reach 3, existing primarily non-native trees and shrubs would be removed along the outboard sides of the east bank and west bank levees. In Reach 3, 17 live trees with dbh of 6 inches or more would be removed. In Reach 4, ten live trees with dbh of 6 inches or more would be removed~~a small number of trees and shrubs~~ on the east bank south of Milmont Drive would be removed during construction of the raised levee in this area. ~~None of the trees that would be removed in Reach 4 have dbh exceeding 6 inches.~~ From the perspective of recreationists using the Penitencia Creek Trail, removal of trees and vegetation along in Reach 1 and on the outboard levee slopes in Reaches 2, 3, and 4 would be noticeable. This vegetation provides a pleasing visual contrast to the surrounding urban development. The vegetation to be removed at Reach 1 consists primarily of non-native of low ground cover and the creation of a wetland bench vegetated with native plants in this reach would improve the overall esthetics of this Reach 1. Trees would be removed in Reaches <u>1, </u>2, 3, and 4; however, they would be replaced in compliance with the City of Milpitas Tree Maintenance and Protection ordinance, which is described in more detail in Section 3.4, *Biological Resources*. Implementation of BMP BI-8 would improve aesthetics by ensuring plants and vegetative ground cover are well suited to the local soil and climatic conditions; thereby reducing the potential for unsightly failure of the plantings. BMPs AQ-1 and WQ-11 would prevent excessive dust generation which could temporarily reduce visibility in the project area and improve the cleanliness and appearance of the construction areas when viewed by the general public.

This impact would be less than significant.

Impact AES-4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area (Less than Significant)

Construction Impacts

Project construction would generally occur between the hours of 7:00 A.M. and 7:00 P.M. Monday through Friday. Construction may occur infrequently on weekends. Because nighttime construction would occur infrequently and would be of short duration, adverse effects on nighttime views would be less than significant. Any glare generated by construction equipment or vehicles would be minor relative to the numerous existing sources of glare from the surrounding urban environment (e.g., vehicle windows, metallic fencing, and building sidings). As such, light or glare effects would be less than significant.

Operational Impacts

No new lighting would be installed for the proposed project. The wetland bench in Reach 1 and hydroseeded levees throughout the project area would not generate any new sources of glare but would help reduce glare in the project vicinity.

The new headwalls at the San Andreas Drive bridge would be composed of concrete, which has a smooth finish and would not generate a substantial source of glare. The new floodwalls in Reaches 2, 3, and 4 could be a substantial source of glare due to the length of added steel surfaces and lack of vegetative cover that could filter sunlight reflecting upon these structures. Glare is typically generated by smooth reflective surfaces. The top two photos in Figure 2-5 show representative steel sheet pile floodwalls, and it is expected that the floodwalls for the proposed project would appear similar. As shown in Figure 2-5, the floodwalls would be composed of smooth coated steel and would be painted. Since the District would select neutral color and non-reflective coating for the sheet pile walls, the finish of the floodwalls would not generate a new substantial source of glare. This impact is less than significant.

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3.3 Air Quality

3.3.1 Overview

This section evaluates the proposed project's air quality impacts. The section first describes the air quality regulatory and environmental settings. The impact evaluation begins by describing the significance criteria and methodology used to evaluate significance, and then identifies the impacts of the proposed project with regard to air quality. Applicable District BMPs are identified and mitigation measures are described for impacts that are determined to be significant.

Air quality is described for a specific location as the concentration of various pollutants in the atmosphere. Air quality conditions at a particular location are a function of the type and amount of air pollutants emitted into the atmosphere, the size and topography of the regional air basin, and the prevailing meteorological conditions.

3.3.2 Regulatory Setting

Federal Laws, Regulations, and Policies

The Clean Air Act is implemented by the U.S. Environmental Protection Agency (USEPA) and sets ambient emission limits, the National Ambient Air Quality Standards (NAAQS), for six criteria air pollutants: particulate matter of aerodynamic radius of 10 microns or less (PM_{10}), particulate matter of aerodynamic radius of 2.5 microns or less ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), ground-level ozone (O_3), and lead (Pb). Of these criteria pollutants, particulate matter and ground-level ozone pose the greatest threats to human health.

Table 3.3-1 shows the current attainment status for the NAAQS in the project area's air basin.

Table 3.3-1. Attainment Status of the Federal and State Ambient Air Quality Standards

Contaminant	Averaging Time	Concentration	State Standards Attainment Status[1]	Federal Standards Attainment Status[2]
Ozone (O_3)	1-hour	0.09 ppm	N	See footnote 3
	8-hour	0.070 ppm	N	N See footnote 3
Carbon Monoxide (CO)	1-hour	20 ppm	A	
		35 ppm		A
	8-hour	9.0 ppm	A	A[4]
Nitrogen Dioxide (NO_2)	1-hour	0.18 ppm	A	
		0.100 ppm[6]		U
	Annual arithmetic mean	0.030 ppm	A	
		0.053 ppm		A

Contaminant	Averaging Time	Concentration	State Standards Attainment Status[1]	Federal Standards Attainment Status[2]
Sulfur Dioxide (SO_2)	1-hour	0.25 ppm	A	
		0.075 ppm		A
	24-hour	0.04 ppm	A	
Particulate Matter (PM_{10})	24-hour	50 µg/m³	N	
		150 µg/m³		U
	Annual arithmetic mean	20 µg/m³	N	
Fine Particulate Matter ($PM_{2.5}$)	24-hour	35 µg/m³		N[7]
	Annual arithmetic mean	12 µg/m³	N	U/A
Sulfates	24-hour	25 µg/m³	A	
Lead (Pb)[8]	30-day average	1.5 µg/m³	A	
	Calendar quarter	1.5 µg/m³		A
	Rolling 3-month average	0.15 µg/m³		A
Hydrogen Sulfide	1-hour	0.03 ppm	U	
Vinyl Chloride[8] (chloroethene)	24-hour	0.010 ppm	U	
Visibility Reducing Particles	8 hour (10:00 to 18:00 PST)	See footnote 5	U	

A – attainment ppm – parts per million

N – non-attainment µg/m³ – micrograms per cubic meter

U – unclassified

Notes:

1 California standards for ozone, carbon monoxide, sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter - PM_{10}, and visibility-reducing particles are values that are not to be exceeded. The standards for sulfates, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour, or 24-hour average (i.e., all standards except for lead and the PM_{10} annual standard), then some measurements may be excluded. In particular, measurements that are excluded include those that the California Air Resources Board (CARB) determines would occur less than once per year on average.

2 National standards shown are the "primary standards" designed to protect public health. National air quality standards are set by USEPA at levels determined to be protective of public health with an adequate margin of safety. National standards other than for ozone, particulates, and those based on annual averages are not to be exceeded more than once per year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th highest daily concentrations is 0.075 ppm (75 parts per billion) or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m³. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of 98th percentiles is less than 35 µg/m³. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM_{10} is met if the 3-year average falls below the standard at every site. The annual $PM_{2.5}$ standard is met by spatially averaging annual averages across officially designated clusters of sites and then determining if the 3-year average of these annual averages falls below the standard.

3 The national 1-hour ozone standard was revoked by USEPA on June 15, 2005. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 ppm to 0.070 ppm. An area will meet the standard if the fourth-highest maximum daily 8-hour ozone concentration per year, averaged over three years, is equal to or less than 0.070 ppm. The attainment status provided in this table for the NAAQS ozone standard is based on the 2008 8-hour NAAQS standard of 0.075 ppm since there are not yet available attainment status determinations for the 2015 standard.

4 In April 1998, the Bay Area was redesignated to attainment for the national 8-hour carbon monoxide standard.

5 Statewide Visibility-Reducing Particle Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

6 To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average of nitrogen dioxide at each monitoring station within an area must not exceed 0.100 ppm (effective January 22, 2010).

7 On January 9, 2013, USEPA issued a final rule to determine that the Bay Area attains the 24-hour $PM_{2.5}$ national standard.

8 CARB has identified lead and vinyl chloride as toxic air contaminants with no threshold level of exposure below which there are no adverse health effects determined.

Sources: CARB 2015; USEPA 2015a, 2015b, 2015c, and 2016; Bay Area Air Quality Management District (BAAQMD) 2016a

USEPA and, in California, the California Air Resources Board (CARB) regulate various stationary sources, area sources, and mobile sources of air pollutant emissions. USEPA has regulations involving performance standards for specific sources that may release toxic air contaminants (TACs), known at the federal level as hazardous air pollutants (HAPs). In addition, USEPA has regulations involving emission criteria for off-road sources such as emergency generators, construction equipment, and vehicles, as well as other releases of toxic chemicals.

State Laws, Regulations, and Policies

CARB sets standards for criteria pollutants in California that are more stringent than the NAAQS and include the following additional contaminants: visibility-reducing particles, hydrogen sulfide, sulfates, and vinyl chloride. Table 3.3-1 provides the California ambient air quality standards (CAAQS) and their corresponding attainment status for the proposed project's air basin. Milpitas and the project area are located in Santa Clara County within the San Francisco Bay Area Air Basin, which is managed by the Bay Area Air Quality Management District (BAAQMD). The BAAQMD has the responsibility to monitor ambient air pollutant levels throughout the basin and to develop and implement strategies to attain the applicable federal and state standards.

CARB is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB also establishes passenger vehicle fuel specifications. Airborne Toxic Control Measures (ATCMs), including the following relevant measures, are implemented to address sources of TACs:

- ATCM for Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater
- ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling
- ATCM to Reduce Particulate Emissions from Diesel-Fueled Engines Standards for Non-vehicular Diesel Fuel
- ATCM for Stationary Compression Ignition Engines

In addition to ATCMs, TACs are controlled under several regulations in California, including the Tanner Air Toxics Act, Air Toxics Hot Spots Information Act, and Assembly Bill (AB) 2588: Air Toxics "Hot Spots" Information and Assessment Act. In addition, Proposition 65 (the Safe

Water and Toxic Enforcement Act of 1996) requires the state to publish a list of chemicals known to cause cancer or birth defects or other reproductive harm. Proposition 65 requires businesses to notify Californians about substantial amounts of chemicals in the products they purchase or that are released into the environment.

Regional Laws, Regulations, and Policies

Bay Area Air Quality Management District

The BAAQMD is the primary agency that regulates sources of air pollution in the nine San Francisco Bay Area (Bay Area) counties to achieve and maintain air quality standards. The district adopts and enforces rules and regulations, issues air quality permits for equipment that emits air pollutants, and monitors air quality and meteorological conditions. BAAQMD has local air quality jurisdiction over the proposed project area.

BAAQMD 2010 Clean Air Plan

The Bay Area 2010 Clean Air Plan details planned efforts to improve Bay Area air quality and protect public health, while simultaneously updating the Bay Area 2005 Ozone Strategy to comply with state air quality planning requirements. The 2010 Clean Air Plan contains a control strategy that includes measures for stationary and area sources, mobile sources, transportation controls, land use and local impacts, energy and climate, and additional measures to control ozone and its precursors, PM_{10}, $PM_{2.5}$, and TACs (BAAQMD 2010a).

Although the Bay Area 2010 Clean Air Plan is the current adopted plan, the BAAQMD has developed the *Spare the Air-Cool the Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area Draft 2017 Clean Air Plan* (Draft 2017 Plan), which if adopted would supersede the 2010 plan (BAAQMD 2017).

Particulate Matter Plan

On January 9, 2013, USEPA issued a final rule to determine that the Bay Area attains the 24-hour $PM_{2.5}$ standard (78 Federal Register 1760; January 9, 2013). This USEPA rule suspends key SIP requirements as long as monitoring data continue to show that the Bay Area attains the standard. Despite this USEPA action, the Bay Area will continue to be designated as “nonattainment” for the national 24-hour $PM_{2.5}$ standard until the BAAQMD submits a “redesignation request” and a “maintenance plan” to USEPA, and USEPA approves the proposed redesignation.

The BAAQMD has developed various rules, programs, and measures to identify and control sources of PM, including general PM emission requirements, a Winter Spare the Air program, and control measures identified in the 2010 Clean Air Plan (BAAQMD 2016b). The draft 2017 Plan includes a variety of control measures to reduce PM emissions, including but not limited to expanding the BAAQMD’s fugitive dust visible emissions limits to a wider array of sources, reducing DPM emissions from emergency generators, and developing a rule to prevent mud/dirt trackout from construction and other sites (BAAQMD 2017).

BAAQMD 2005 Ozone Strategy

The Bay Area 2005 Ozone Strategy includes stationary-source control measures to be implemented through BAAQMD regulations; mobile-source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with the Metropolitan Transportation Commission (MTC), local governments, transit agencies, and other agencies (BAAQMD 2006).

BAAQMD Rules

The BAAQMD supports incentive programs to reduce criteria pollutant emissions within the district. BAAQMD's Carl Moyer Program funds control projects for off-road and on-road emission sources. The Transportation Fund for Clean Air (TFCA) Program likewise provides financial incentives for on-road vehicle retrofits.

The proposed project may be subject to the following BAAQMD rules:

- **Regulation 2 Permits:** outlines the air permitting program including exemptions and sources needing permitting
  - **Regulation 2, Rule 1 – Permits General Requirements** outlines permitting requirements and exemptions.
  - **Regulation 2, Rule 2 – New Source Review** outlines permitting process for new sources.
  - **Regulation 2, Rule 5 – New Source Review of Toxic Air Contaminants** outlines guidance for evaluating TAC emissions and their potential health threats.
- **Regulation 6, Rule 1 – Particulate Matter** restricts emissions of PM.
- **Regulation 8, Rule 15 – Emulsified and Liquid Asphalts** limits emissions of volatile organic compounds (VOCs) caused by paving materials.
- **Regulation 9, Rule 8 – Stationary Internal Combustion Engines** limits emissions of NO_X and CO from stationary internal combustion engines of more than 50 horsepower.

3.3.3 Environmental Setting

San Francisco Bay Air Basin – Santa Clara Valley Region

CARB has divided California into regional air basins according to topographic and air drainage features. The following discussion provides climate and meteorological information associated with the Santa Clara Valley's climatological subregion of the San Francisco Bay Air Basin, which includes Milpitas.

The northwest-southeast–oriented Santa Clara Valley is bounded by the Santa Cruz Mountains to the west, the Diablo Range to the east, San Francisco Bay to the north, and the convergence of the Gabilan and Diablo Ranges to the south. Temperatures are warm in summer under mostly clear skies, although a relatively large diurnal temperature range results in cool nights. Winter temperatures are mild, except for very cool but generally frostless mornings. At the northern end of the Santa Clara Valley, mean maximum temperatures at the San Jose International Airport range from the high 70s (in degrees Fahrenheit [°F]) to the low 80s during the summer to the high 50s or low 60s during the winter; mean minimum temperatures range from the high 50s during the summer to the low 40s during the winter. Farther inland, where the moderating effect of San Francisco Bay is not as strong, temperature extremes are greater. For example, temperatures in San Jose can be more than 10 °F warmer on hot summer afternoons and more than 10°F cooler during cold winter nights. Rainfall amounts are modest, ranging from 13 inches in the lowlands to 20 inches in the hills.

The wind patterns in the Santa Clara Valley are influenced greatly by the terrain, resulting in a prevailing flow generally parallel to the Valley's northwest-southeast axis, with a north-northwesterly sea breeze extending up the valley during the afternoon and early evening and a light south-southeasterly drainage flow occurring during the late evening and early morning. In summer, a convergence zone is sometimes observed in the southern end of the valley between Gilroy and Morgan Hill, when air flowing from Monterey Bay through the Pajaro Gap is channeled northward into the south end of the Santa Clara Valley and meets with the prevailing north-northwesterly winds. Wind speeds are greatest in the spring and summer, and least in the fall and winter seasons. Nighttime and early morning hours have light winds and are frequently calm in all seasons, while summer afternoons and evenings are quite breezy. Strong winds are rare, coming only with an occasional winter storm.

The air pollution potential of the Santa Clara Valley is high. The valley has a large population and the largest complex of mobile sources in the Bay Area, making it a major source of carbon monoxide, particulate, and photochemical air pollution. In addition, photochemical precursors from San Francisco, San Mateo, and Alameda Counties can be carried along by the prevailing winds to the Santa Clara Valley, making it also a major ozone receptor. Geographically, the valley tends to channel pollutants to the southeast with its northwest/southeast orientation and concentrate pollutants by its narrowing to the southeast. Meteorologically, on high-ozone, low-inversion summer days, the pollutants can be recirculated by the prevailing northwesterly winds in the afternoon and the light drainage flow in the late evening and early morning, increasing the impact of emissions substantially. On days with high particulate and carbon monoxide levels during late fall and winter, clear, calm, and cold conditions associated with a strong surface-based temperature inversion prevail (BAAQMD 1998).

Project Area

The project area is adjacent to I-880 (a 10-lane highway) and commercial and residential areas. In addition, the project area is located approximately 2,000-3,000 feet east of the San Jose–Santa Clara Regional Wastewater Facility's drying beds and lagoons.

Existing Air Quality Conditions

Air Monitoring Data

USEPA, CARB, and local air districts (including the BAAQMD) operate an extensive air monitoring network to measure progress toward attainment of the NAAQS and CAAQS. **Table 3.3-2** shows the most recent three years of available data. The closest station is the San Jose station.

Table 3.3-2. Air Monitoring Data for 2013-2015

Monitoring Station	Pollutant Standard		2015		2014		2013	
	Pollutant	State/Federal Standards	No. Exceed[1]	Maximum Concentration	No. Exceed[1]	Maximum Concentration[1]	No. Exceed[1]	Maximum Concentration[1]
San Jose (Jackson Street)	PM_{10} 24-hour	50/150 µg/m^3	1/0	58 µg/m^3	1/0	55 µg/m^3	5/0	58 µg/m^3
	$PM_{2.5}$ 24-hour	NA/35 µg/m^3	NA/2.1	49.4 µg/m^3	NA/2	60.4 µg/m^3	NA/6	57.7 µg/m^3
	Ozone 8-hour	0.070 ppm	2/2	0.081 ppm	0/0	0.066 ppm	1/1	0.079 ppm
	Ozone 1-hour	0.09 ppm	0/0	0.094 ppm	0/0	0.089 ppm	0/0	0.093 ppm
	CO 8-hour	9.0 ppm	0/0	1.8 ppm	0/0	1.9 ppm	0/0	2.5 ppm
	CO 1-hour	20 ppm	0/0	2.4 ppm	0/0	2.4 ppm	0/0	3.1 ppm
	NO_2 1-hour	0.18/0.1 ppm	0/0	0.049 ppm	0/0	0.058 ppm	0/0	0.059 ppm
	SO_2 24-hour	0.04 ppm / N/A	0/NA	0.0011 ppm	0/NA	0.0009 ppm	0/NA	0.0014 ppm
	SO_2 1-hour	0.25/0.075 ppm	0/0	0.0031 ppm	0/0	0.003 ppm	0/0	0.0025 ppm

Notes:

CO = carbon monoxide; NO_2 = nitrogen dioxide; $PM_{2.5}$ = particulate matter of 2.5 micrometers or less; PM_{10} = particulate matter of 10 micrometers or less; SO_2 = sulfur dioxide; NA = not available; ppb = parts per billion; ppm = parts per million; µg/m^3 = micrograms per cubic meter

1. Indicates the number of exceedance days recorded annually at this monitoring station for a particular constituent compared to that constituent's NAAQS and CAAQS. The first number is the state value and the second number is the federal value if they are different.

Source: CARB 2016a, BAAQMD 2016a

Air Pollutants

Carbon Monoxide

CO is an odorless, colorless gas that is highly toxic. CO is formed by the incomplete combustion of fuels and is emitted directly into the air. Ambient CO concentrations normally are considered a localized effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic, forming pollutant hot spots. CO concentrations are also influenced by wind speed and atmospheric mixing. Under inversion conditions, CO concentrations may be distributed more uniformly over an area to some distance from vehicular sources. CO binds with hemoglobin, the oxygen-carrying protein in blood, and reduces the blood's capacity for carrying oxygen to the heart, brain, and other parts of the body. At high concentrations, CO can cause heart difficulties in people with chronic diseases, impair mental abilities, and cause death. (BAAQMD 2010b, CAPCOA 2017).

Nitrogen Oxides

Nitrogen oxides (NO_X) are a family of gaseous nitrogen compounds and are precursors to the formation of ozone and PM. NO_2, the major component of NO_X, is a reddish-brown gas that is toxic at high concentrations. NO_X result primarily from the combustion of fossil fuels under high temperature and pressure. Fuel combustion, primarily from on-road and off-road motor vehicles, and industrial sources are the major sources of this air pollutant. (BAAQMD 2010b, CAPCOA 2017).

Volatile Organic Compounds

VOCs are hydrocarbon compounds that exist in the ambient air. VOCs contribute to the formation of smog and/or may themselves be toxic. VOC emissions are a major precursor to the formation of ozone. VOCs are also commonly referred to as reactive organic gases (ROG). (BAAQMD 2010b, SBCAPCD 2010).

Ozone

O_3 is a reactive gas consisting of three oxygen atoms. In the stratosphere, ozone exists naturally and shields the Earth from harmful incoming ultraviolet radiation. In the troposphere (the lowest region of the atmosphere), however, it is a secondary pollutant that is formed when NO_X and VOC react in the presence of sunlight. Ozone at the earth's surface causes numerous adverse health effects and is a major component of smog. High concentrations of ground-level ozone can adversely affect the human respiratory system and aggravate cardiovascular disease and many respiratory ailments. Ozone also damages natural ecosystems such as forests, foothill communities, and agricultural crops, as well as some human-made materials, such as rubber and plastics. (BAAQMD 2010b, CAPCOA 2017).

Particulate Matter

PM is a complex mixture of extremely small particles and liquid droplets. PM is made up of multiple components, including acids, organic chemicals, metals, and soil or dust particles. Particle size is directly linked to the potential for causing health problems. PM_{10} is of concern because these particles pass through the throat and nose and are deposited in the thoracic region of the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. PM_{10} is typically found near roadways and around dusty industrial sites. $PM_{2.5}$, which is found in smoke and haze, penetrates even more deeply into the thoracic and alveolar regions of the lungs. (BAAQMD 2010b, CAPCOA 2017).

Sulfur Dioxide

Sulfur dioxide (SO_2) is a colorless, irritating gas with a "rotten egg" smell formed primarily by the combustion of sulfur-containing fossil fuels. Suspended SO_2 particles contribute to poor visibility and are a component of PM_{10}. (CAPCOA 2017).

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. Historically, the major sources of lead emissions have been mobile and industrial sources. The health effects of lead poisoning include loss of appetite, weakness, apathy, and miscarriage. Lead poisoning can also cause lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract. (BAAQMD 2010b, CAPCOA 2017).

In the past, gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels. Because the use of leaded fuel has been mostly phased out, ambient concentrations of lead have decreased dramatically.

Hydrogen Sulfide

Hydrogen sulfide (H_2S) is associated with geothermal activity, oil and gas production and refining, sewage treatment plants, and confined animal feeding operations. H_2S is extremely hazardous in high concentrations and can cause death. (OEHHA 2000).

Sulfates

Sulfates are the fully oxidized, ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds result primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates is comparatively rapid and complete in urban areas of California due to regional meteorological features. (CARB 2009).

CARB's sulfate standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels that exceed the standard include decreased ventilatory function, aggravation of asthmatic symptoms, and increased risk of cardiopulmonary disease. Sulfates are particularly effective in degrading visibility and, because they are usually acidic, can harm ecosystems and damage materials and property.

Vinyl Chloride

Vinyl chloride is a colorless gas that does not occur naturally; it is formed when substances such as trichloroethane, trichloroethylene, and tetrachloroethylene are broken down. Vinyl chloride is used to make polyvinyl chloride (PVC), which is used in plastic products such as pipes, wire and cable coatings, and packaging materials. (Agency for Toxic Substances & Disease Registry 2006).

Toxic Air Contaminants

TACs are air pollutants that may lead to serious illness or increased mortality, even when present in relatively low concentrations. Hundreds of different types of TACs exist, with varying degrees of toxicity. Many TACs are confirmed or suspected carcinogens or are known or suspected to cause birth defects or neurological damage. For some chemicals, such as carcinogens, no threshold exists below which exposure can be considered risk free. Examples of TAC sources associated with the proposed project are fossil fuel combustion sources and chemicals used in the automobile maintenance area.

Sources of TACs include stationary sources, area-wide sources, and mobile sources. USEPA maintains a list of 187 TACs, identified federally as HAPs. These HAPs are included on CARB's list of TACs, along with additional chemicals identified as TACs in California (CARB 2016b). According to the *California Almanac of Emissions and Air Quality* (CARB 2013), many researchers consider diesel particulate matter (DPM) to be a primary contributor to health risk from TACs because particles in diesel exhaust carry many harmful organic compounds and metals, rather than being a single substance. According to estimates by CARB, outdoor (ambient) DPM concentrations in 2012 have decreased by 68 percent from 1990 levels (from approximately 1.8 μg/m^3 to less than 0.6 μg/m^3) (CARB 2016c).

Sensitive Receptors

Sensitive receptors are those segments of the population most susceptible to the effects of poor air quality: children, the elderly, and individuals with serious pre-existing health problems affected by air quality (e.g., asthma) (CARB 2005). Examples of locations that contain sensitive receptors are residences, schools and school yards, parks and playgrounds, daycare centers, nursing homes, and medical facilities. Residences include houses, apartments, and senior living complexes. Medical facilities can include hospitals, convalescent homes, and health clinics. Playgrounds include play areas associated with parks or community centers.

In general, sensitive receptors near the project area are located east or south of the project area. Sensitive receptors include residences, schools (Curtner Elementary School and Joseph Weller Elementary School), daycare facilities (Crescent Montessori Preschool and Kiran Childcare), medical facilities (Wellbound of Milpitas and Santa Clara Valley Medical Center), and assisted living facilities (Good Samaritan Care Home and Capri Homes Inc.). Approximate distances between each project reach and these sensitive receptors are shown in **Table 3.3-3**.

Table 3.3-3. Estimated Sensitive Receptor Distances from Project Area

	Approximate Distance to Sensitive Receptor Type (feet)				
Project Reach	**Residence**	**School**	**Daycare/ Preschool**	**Medical**	**Assisted Living**
Reach 1 – Coyote Creek to I-880	720	4,994	3,402	2,018	6,072
Reach 2 – I-880 to California Circle	163	4,424	2,812	1,454	5,650
Reach 3 -California Circle to Milmont Drive	10*	2,254	253	5,755	1,174
Reach 4 - Milmont Drive to San Andreas Drive	77	1,468	251	5,031	607

* This value indicates the distance between the project site and the closest residences of the iStar and Waterstone developments (currently underway).

3.3.4 Impact Analysis

Methodology

This discussion describes the methodology used to evaluate whether construction and operation of the proposed project would result in significant impacts related to air quality and odors. Once construction is complete, operation of the proposed project would be similar to existing conditions and would generally entail typical maintenance activities that are currently conducted (e.g., mowing the channel banks, removing vegetation along maintenance roads, maintenance road grading, graffiti removal, and fence repair). Some additional maintenance activities, such as periodic visual inspection of the floodwalls, headwalls, and Reach 1 replacement levee, would be conducted. Repair of structures would be conducted on an infrequent and as-needed basis. Routine sediment removal activities would likely be decreased or eliminated compared to existing conditions, and such activities would be conducted under the District's SMP. No substantially new long-term operational sources of emissions would be generated by the project that are not already covered by the SMP. The majority of maintenance activities conducted within the project area would be the same as those conducted under the District's SMP; the operational emissions of the SMP are addressed in the SMP Subsequent EIR (SCVWD 2012). The newly installed floodwalls and San Andreas Drive bridge headwalls would be visually inspected one to two times per year, and repairs would only be conducted if damage threatens the integrity of the structure. Because such inspections would be conducted infrequently and would generate a minimal increase in emissions compared to existing conditions, this impact analysis evaluates construction emissions generated by the project but does not evaluate future maintenance and operational activities.

During construction of the proposed project, the combustion of fossil fuels for operation of fossil-fueled construction equipment, material hauling, and worker commute vehicles would result in construction-related emissions of criteria air pollutants. These emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2013.2.2 and based on the construction equipment, phasing, duration, and worker quantities summarized in **Appendix C** (Air Quality and Greenhouse Gas Emissions). These assumptions were generally based on similar project types <u>and the excavation and fill volumes presented in the District's Planning Study Report (SCVWD 2016)</u>. <u>Since publication of the DEIR, project design has advanced and the excavation and fill volumes have been reduced; mainly the net import value would be about 3,430 cy and all excavated soil would be reused on-site. As such, the assumptions used to estimate the project's construction emissions are overestimated and the calculated emissions in Appendix C are considered conservative.</u>

Construction activities in each reach were separated into multiple construction phases to account for differences in activities, number of workers, duration of construction activities, and construction equipment needs. These phases generally included site preparation, earthwork/grading or concrete placement, and planting (i.e., revegetation of the site). For the purposes of estimating emissions associated with each construction phase and to identify the potential maximum daily emissions if multiple phases were performed concurrently, the construction schedules and durations identified in **Table 3.3-4** were used.

The CalEEMod output files are provided in Appendix C, which also contains all of the applicable inputs.

Table 3.3-4. Potential Construction Schedules Assumed in Air Quality Analysis

Construction Phase	Approximate Construction Start Date	Approximate Construction End Date
Reach 1 – Site Preparation	6/15/2018	6/28/2018
Reach 2 – Site Preparation		
Reach 4 – Site Preparation		
Reach 1 – Grading	6/30/2018	9/28/2018
Reach 2 – Floodwall Activities		
Reach 4 – Floodwall Activities		

Construction Phase	Approximate Construction Start Date	Approximate Construction End Date
Reach 1 – Planting	9/30/2018	10/12/2018
Reach 2 – Hydroseeding/Winterization		
Reach 4 – Hydroseeding/Winterization		
Reach 3 – Site Preparation	6/15/2019	6/28/2019
Reach 3 – Floodwall Activities	7/1/2019	9/27/2019
San Andreas Drive Bridge		
Reach 3 – Hydroseeding/Winterization	9/30/2019	10/11/2019

Source: Appendix C, Air Quality and Greenhouse Gas Emissions.

Emissions were compared to applicable thresholds of significance for construction emissions, as detailed by BAAQMD.

Criteria for Determining Significance

Based on Appendix G of the State CEQA Guidelines, the proposed project would have a significant effect related to air quality if the proposed project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard established by USEPA or CARB, or contribute substantially to an existing or projected air quality violation, in comparison to the BAAQMD thresholds below;
- 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);
- Expose sensitive receptors to substantial air pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

BAAQMD Thresholds

The BAAQMD has established mass emission thresholds of significance (BAAQMD 2010b) to determine if air emissions would contribute to an existing or projected air quality violation, result in a cumulatively considerable contribution to an existing air quality violation, or result in a cumulatively considerable net increase of a criteria pollutant such that the air basin would be in nonattainment for CAAQS or NAAQS. Although the BAAQMD established significance thresholds for construction- and operation-related emissions previously (BAAQMD 1999), the 2010 thresholds were selected for this analysis since the 1999 construction-related significance thresholds were primarily limited to PM_{10} emissions. ~~At the time of Draft EIR preparation, the BAAQMD was not recommending use of these construction thresholds due to ongoing litigation on unrelated thresholds.~~ In May 2017, the BAAQMD initiated an effort to update its CEQA Guidelines including release of a May 2017 version of the guidelines. The May 2017 Guidelines Update includes revisions made to the 2010 Guidelines to incorporate the California Supreme Court's opinion in California Building Industry Association v. Bay Area Air Quality Management District, 62 Cal. 4th 369. The BAAQMD is currently working to update outdated references, links, analytical methodologies or other technical information in the May 2017 Guidelines Update. The thresholds in the May 2017 Guidelines Update remain the same as those shown in the 2010 Guidelines. In view of the Supreme Court's opinion, local agencies may continue to rely on the BAAQMD thresholds after determining that those thresholds reflect an appropriate measure of a project's impacts. ~~However, the~~The District considers ~~these~~the BAAQMD thresholds (presented in **Table 3.3-5**) to be appropriate for use in this analysis because they are based on substantial evidence developed by the BAAQMD as the level to ensure attainment of air quality standards.

Table 3.3-5. BAAQMD Construction Air Quality Thresholds of Significance

Pollutant	Average Daily Emissions (pounds per day)
ROG	54
NO_X	54
PM_{10} (Exhaust)	82
$PM_{2.5}$ (Exhaust)	54
PM_{10}/$PM_{2.5}$ (Fugitive Dust)	Best Management Practices (BMPs)
Local CO	None

Source: BAAQMD 2010b

The BAAQMD recommends implementation of BMPs for all projects to reduce fugitive dust emissions. With implementation of fugitive dust BMPs, the BAAQMD considers the impact of fugitive dust emissions to be less than significant.

The BAAQMD established screening criteria that specify an acceptable distance between sensitive receptors and common sources of odors, such as landfills and wastewater treatment plants. The BAAQMD also specifies that an odor source with five or more confirmed complaints per year averaged over 3 years would be considered to have a significant impact on receptors within the screening distance. The BAAQMD acknowledges that a lead agency has discretion under CEQA to use established odor detection thresholds or other significance thresholds for CEQA review. Because the proposed project does not involve any odor sources included in the BAAQMD's screening criteria, this analysis uses a qualitative assessment of potential odor sources and their impact.

Impact Summary

Table 3.3-6 summarizes air quality impacts of the proposed project.

Table 3.3-6. Summary of Impacts – Air Quality

Impact	Significance Level Before Mitigation	Applicable Mitigation Measures	Significance Level After Mitigation
AQ-1. Conflict with or obstruct implementation of the applicable air quality plan	LS	None	LS

Impact	Significance Level Before Mitigation	Applicable Mitigation Measures	Significance Level After Mitigation
AQ-2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation	S	Mitigation Measure AQ-1	LM
AQ-3: 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)	S	Mitigation Measure AQ-1	LM
AQ-4: Expose sensitive receptors to substantial pollutant concentrations	LS	None	LS
AQ-5: Create objectionable odors affecting a substantial number of people	S	Mitigation Measure AQ-2	LM

LS = Less than Significant; LM = Less than Significant with Mitigation; S = Significant

Environmental Impacts

Impact AQ-1: Conflict with or obstruct implementation of the applicable air quality plans (Less than Significant)

The proposed project would have a significant impact if it would conflict with or impair implementation of applicable air quality plans. Applicable air quality plans include the Bay Area 2001 Ozone Attainment Plan, Bay Area 2010 Clean Air Plan, the Draft 2017 Plan, and *City of Milpitas General Plan* (2002).

The Bay Area 2001 Ozone Attainment Plan contains a control strategy that includes stationary-source, mobile-source, and transportation measures to reduce ozone and ozone precursors. The Bay Area 2010 Clean Air Plan contains a control strategy that includes measures for stationary sources, mobile sources, transportation controls, land use and local impacts, energy and climate, and additional measures to control ozone and its precursors (ROG and NO_X), PM_{10}, $PM_{2.5}$, and TACs. The 2017 Draft Plan (BAAQMD 2017) similarly provides ozone control strategies related to numerous potential ozone precursor sources, including stationary sources, transportation, natural and working lands, waste management, energy, and buildings. In particular, policy TR 19, which provides incentives for lower emission trucks, and policy TR 22, which provides incentives for the use of lower-emitting construction equipment, would reduce transportation- and construction-related ozone precursor emissions (BAAQMD 2017). The *City of Milpitas General Plan* has transportation and land use policies that aim to improve air quality in the City of Milpitas.

The proposed project would not include activities covered in the Bay Area 2010 Clean Air Plan or the Bay Area 2001 Ozone Attainment Plan. The proposed project would involve temporary construction emissions, would not result in induced growth, and would not result in a permanent new source of emissions. In addition, the proposed project would not affect land uses anticipated in the *City of Milpitas General Plan* for long-range air quality planning, and would not facilitate further growth. In-channel construction activities, which includes most of the project construction, would occur only during the summer dry season from June 15 through October 15 over two years. Because construction would occur during two four-month periods, construction emissions generated by the project would not conflict with applicable air quality plans, and this impact would be less than significant.

Impact AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation (Less than Significant with Mitigation)

The proposed project would emit criteria pollutants through the combustion of fossil fuels by construction equipment, worker vehicles, and material hauling trucks. In addition, the proposed project's grading and excavation activities would disturb soils and generate fugitive dust (particulate matter emissions). Implementation of District BMP AQ-1 would reduce NO_X and other criteria pollutant emissions by minimizing idling times of construction equipment and ensuring that all equipment is properly maintained and tuned in accordance with manufacturer's specifications. In addition, the dust control measures included in District BMP AQ-1 would minimize fugitive dust emissions during project construction activities and would be in compliance with the BAAQMD's requirements. As demonstrated in the emissions calculations presented in **Table 3.3-7**, **Table 3.3-8**, and Appendix C, the proposed project would result in construction emissions of NO_X that exceed the BAAQMD thresholds for grading activities proposed in Reach 1 and other construction activities proposed within Reaches 1, 2, and 4, if they were performed concurrently. As shown in Table 3.3-7, with implementation of District BMP AQ-1 in accordance with the BAAQMD's requirements, all pollutants except NO_X would be lower than the BAAQMD significance thresholds. These construction emissions would not be permanent or contribute to added emissions once construction of the proposed project is complete. The emissions would, however, contribute to existing air quality impairments during the construction period. Since the proposed project's NO_X emissions would still exceed the BAAQMD NO_X significance criteria even with implementation of District BMP AQ-1, this impact is significant.

Mitigation Measures

Mitigation Measure AQ-1: Implement Construction NO_X Emission Reductions

The District or its contractor(s) will develop a construction plan demonstrating that off-road equipment (greater than 50 horsepower) and material hauling vehicles used during project construction (i.e., owned, leased, and subcontracted vehicles) will not result in average daily NO_X emissions of more than 54 pounds per day, which will require achieving a project-wide fleet-average of at least 22 percent NO_X reduction compared to unmitigated emissions. As part of developing this construction plan, the District or its contractor(s) will conduct additional air quality modeling to confirm that the NO_X emissions threshold will be met. This limit of 54 pounds per day of NO_x emissions shall be achieved through a combination of approaches, including phasing of construction activities in a manner that reduces the daily emissions generated from the proposed project; the use of late model engines (e.g., Tier 3 or 4 engines), low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or add-on devices such as particulate filters; and/or other options as such become available.

Table 3.3-7. Estimated Criteria Pollutant Emissions during each Phase of Project Construction

Construction Phase	ROG	NO_X	CO	SO_2	Fugitive PM_{10}	Exhaust PM_{10}	Fugitive $PM_{2.5}$	Exhaust $PM_{2.5}$
	Total Construction Emissions (ppd)							
Reach 1 – Site Preparation	2.73	25.65	17.19	2.56	25.97	14.72	6.76	1.41
Reach 2 – Site Preparation	2.80	28.21	24.49	0.03	12.58	1.41	6.76	1.30
Reach 4 – Site Preparation	2.87	28.86	25.07	0.03	12.60	1.46	6.76	1.34
Reach 1 – Grading	5.61	**58.15**	49.20	0.10	3.37	2.50	1.33	2.35
Reach 2 – Concrete Placement	2.12	15.40	19.61	0.04	1.33	0.88	0.35	0.86
Reach 4 – Concrete Placement	2.24	17.11	20.87	0.05	1.47	0.91	0.39	0.88
Reach 1 – Planting	0.84	7.21	8.42	0.02	0.68	0.40	0.18	0.37
Reach 2 – Planting	0.77	6.76	7.89	0.02	0.73	0.32	0.19	0.30
Reach 4 – Planting	1.30	13.44	13.00	0.04	1.15	0.49	0.31	0.45
Reach 3 – Site Preparation	2.69	26.97	23.93	0.03	12.76	1.33	6.78	1.23
Reach 3 – Concrete Placement	2.67	24.10	26.70	0.08	2.20	0.92	0.58	0.88
San Andreas Drive Bridge	1.82	12.87	18.17	0.04	1.24	0.74	0.33	0.72
Reach 3 - Planting	1.48	16.09	15.40	0.05	1.63	0.49	0.41	0.45
BAAQMD Threshold of Significance (ppd)								
BAAQMD Thresholds	54	54	N/A	N/A	BMPs	82	BMPs	54

Notes:

Emissions are based on construction assumptions provided in Appendix C.

CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = particulate matter 10 microns or less in diameter; $PM_{2.5}$ = fine particulate matter 2.5 microns or less in diameter; ppd = pounds per day; ROG = reactive organic gases; SO_2 = sulfur dioxide; — = no emissions or no emissions calculated as *de minimis*. N/A = no applicable thresholds. BMPs = best management practices. **Bold** font = emissions that would exceed the applicable air quality significance threshold.

Table 3.3-8. Estimated Criteria Pollutant Emissions during Construction, Combined by Construction Phase

Construction Phase	Approximate Construction Start Date	Approximate Construction End Date	ROG	NO_X	CO	SO_2	Fugitive PM_{10}	Exhaust PM_{10}	Fugitive $PM_{2.5}$	Exhaust $PM_{2.5}$
			Total Construction Emissions (ppd)							
Reach 1 – Site Preparation Reach 2 – Site Preparation Reach 4 – Site Preparation	6/15/2018	6/28/2018	8.40	**82.72**	66.76	2.62	51.16	17.58	20.29	4.05
Reach 1 – Grading Reach 2 – Concrete Placement Reach 4 – Concrete Placement	6/30/2018	9/28/2018	9.97	**90.66**	89.69	0.19	6.17	4.29	2.07	4.08
Reach 1 – Planting Reach 2 – Planting Reach 4 – Planting	9/30/2018	10/12/2018	2.92	27.40	29.32	0.08	2.57	1.21	0.68	1.12
Reach 3- Site Preparation	6/15/2019	6/28/2019	2.69	26.97	23.93	0.03	12.76	1.33	6.78	1.23
Reach 3 – Concrete Placement San Andreas Drive Bridge	7/1/2019	9/27/2019	4.49	36.97	44.87	0.11	3.45	1.66	0.91	1.61
Reach 3 – Planting	9/30/2019	10/11/2019	1.48	16.09	15.40	0.05	1.63	0.49	0.41	0.45
			Peak Daily Emissions (ppd)							
			9.97	**90.66**	89.69	2.62	51.16	17.58	20.29	4.08
			BAAQMD Threshold of Significance (ppd)							
BAAQMD Thresholds			54	54	N/A	N/A	BMPs	82	BMPs	54
Exceed Significance Thresholds?			N	**Y**	--	--	N	N	N	N
Unmitigated Average Daily NOx (ppd)			--	**66**	--	--	--	--	--	--
Average Daily NOx (ppd) with Mitigation			--	52	--	--	--	--	--	--
Exceed Significance Thresholds after Mitigation?			N	N	--	--	N	N	N	N

Notes: Emissions are based on construction assumptions provided in Appendix C.

CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = particulate matter 10 microns or less in diameter; $PM_{2.5}$ = fine particulate matter 2.5 microns or less in diameter; ppd = pounds per day; ROG = reactive organic gases; SO_2 = sulfur dioxide, — = no emissions or no emissions calculated as *de minimis.* N/A = no applicable thresholds. BMPs = best management practices. **Bold** font = emissions that exceed the applicable air quality significance threshold.

Significance After Mitigation

Implementation of **Mitigation Measure AQ-1** would ensure that emissions from individual construction phases for each reach and combined reach emissions would not exceed the BAAQMD's significance thresholds, particularly for NO_X. Appendix C includes unmitigated emissions as well as potential mitigated emissions should the District and/or its contractor decide to use Tier 3 engines for the primary construction equipment (all excavators, dozers, scrapers, and backhoes/loaders). As illustrated in Appendix C and Table 3.3-8, use of Tier 3 engines per Mitigation Measure AQ-1 would be sufficient to reduce NO_X emissions by at least 22 percent such that the average daily emissions were less than the BAAQMD threshold of 54 pounds per day. Thus, Mitigation Measure AQ-1 would be a feasible and effective measure to reduce the significance of this impact. Therefore, the proposed project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, this impact would be less than significant with mitigation.

Impact AQ-3: 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) (Less than Significant with Mitigation)

~~The nonattainment status of ozone, PM_{10}, and $PM_{2.5}$ is considered a significant cumulative impact.~~ The BAAQMD has established significance thresholds that also apply to cumulative impacts, which were developed considering the other sources of air pollutants and growth of emissions in the air basin. Specifically, a~~A~~ project that does not exceed these significance thresholds would not considerably contribute to any cumulative air quality impacts. As discussed in Impact AQ-2 above, ~~D~~during construction of the proposed project, NO_X emissions would exceed the BAAQMD threshold and thus would result in~~would be~~ a cumulatively considerable net increase of criteria pollutants. This would be a significant impact.

The proposed project's cumulative operation-related criteria for air pollutants and precursor emissions are identical to the thresholds listed in Table 3.3-5 above. ~~These thresholds represent the levels at which a project's individual emissions of criteria air pollutants or precursors would result in a cumulatively considerable contribution to the air basin's existing air quality conditions.~~ As discussed in Impact AQ-2 above, ~~T~~the project's operational emissions would be minimal and would not exceed the thresholds listed in Table 3.3-5; therefore, the project's operational impacts relating to cumulative air quality effects would be less than significant.

Mitigation Measures

Mitigation Measure AQ-1: Implement Construction NO_X Emission Reductions (see full text of measure in Impact AQ-2 analysis above)

Significance After Mitigation

Implementation of Mitigation Measure AQ-1 would ensure the proposed project's emissions are reduced to a level such that it would not make a considerable contribution to cumulative air quality impacts even when considering the other projects occurring in the area. This impact would be less than cumulatively considerable with mitigation.

Impact AQ-4: Expose Sensitive Receptors to Substantial Pollutant Concentrations (Less than Significant)

The closest sensitive receptors to the proposed project's construction reaches would be the occupants of residences located approximately 10-720 feet from the various reaches (Table 3.3-3). The pollutants of concern and TACs that would affect sensitive receptors are particulates, specifically PM_{10} and $PM_{2.5}$ contained in fugitive dust, and DPM from construction equipment. As discussed in Impact AQ-2, implementation of District BMP AQ-1 would involve dust control measures, such as periodic watering of disturbed areas, to reduce fugitive dust emissions during construction. In-channel construction activities, which include most of the project construction, would occur only during the summer dry season from June 15 through October 15 over two years. Because construction would occur during two four-month periods, construction (8 months total over a two-year timeframe), and that construction activities occurring within a specific reach near a specific sensitive receptor would take place during only a portion of that period, project construction would not emit substantial quantities of DPM. DPM exposure for short durations is generally not quantified, as cancer potency factors are based on lifetime exposure and there is considerable uncertainty in trying to evaluate the cancer risk from project activities that would last only a small fraction of a lifetime (California Governor's Office of Environmental Health Hazard Assessment 2015). With implementation of District BMP AQ-1, the proposed project would not pose long-term or substantial health risks to nearby residents and workers in the vicinity of the project's construction reaches. The impact on sensitive receptors from fugitive dust and other TACs would be less than significant.

Impact AQ-5: Potential to create objectionable odors affecting a substantial number of people during construction (Less than Significant with Mitigation)

Construction activities associated with the proposed project would not generate permanent or long-term objectionable odors but could generate odors related to excavated material and the operation of gasoline- or diesel-powered equipment. Odors may also be associated with decaying organic material contained in excavated or dredged material. Although District BMP AQ-2 would be implemented and requires that potentially odorous materials be removed as soon as possible, which would eliminate the odor impact to nearby residents. However, it is possible that some excavated or dredged material could not be immediately removed from the project site. If this material remains on site and is located in close proximity to sensitive receptors, it might cause odor impacts to nearby sensitive receptors. Therefore, this impact would be significant.

Mitigation Measures

Mitigation Measure AQ-2: Locate Stockpiles of Odorous Materials at a Distance from Sensitive Receptors

The District will require that contractors handle stockpiles of potentially odorous excavated or dredged material, or other potentially odorous materials, in a manner that avoids affecting residential areas or other sensitive receptors to the extent feasible. Stockpiles will be placed as far as possible from these receptors and will be covered if immediate off-site disposal is not feasible.

Significance After Mitigation

Implementation of **Mitigation Measure AQ-2** would ensure that any stockpiled material remaining on the project site would be placed at a distance as far as possible from sensitive receptors until they could be removed. Therefore, the potential for the proposed project to create objectionable odors that would affect a substantial number of people would be less than significant with mitigation.

3.4 Biological Resources

3.4.1 Overview

This section describes the potential for the proposed project to affect open water, wetland, riparian, and upland habitats and the plant and wildlife species that might use these habitats. Specifically, this section discusses federal, state, and local regulations relevant to vegetation and wildlife resources that might be affected by the proposed project; describes the existing environmental setting in the project area; and identifies special-status plant and wildlife species and sensitive habitats potentially affected by the proposed project. This section also describes District BMPs that would reduce project-related effects and proposes mitigation measures to avoid or reduce significant impacts on biological resource.

3.4.2 Regulatory Setting

Federal Laws, Regulations, and Policies

Endangered Species Act

The Endangered Species Act (ESA) (16 U.S. Government Code [USC] Section 1531 *et seq*.; 50 Code of Federal Regulations [CFR] Parts 17 and 222) provides for the conservation of species that are endangered or threatened throughout all or a substantial portion of their range, as well as protection of the habitats on which they depend. The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) share responsibility for implementing the ESA.

Section 9 of the ESA and its implementing regulations prohibit the "take" of any fish or wildlife species listed under the ESA as endangered or threatened, unless otherwise authorized by federal regulations. Section 7 of the ESA (16 USC Section 1531 *et seq*.) outlines the procedures for federal interagency cooperation to conserve federally listed species and designated critical habitats.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act governs all fishery management activities that occur in federal waters within the United States' 200-nautical-mile limit. The San Francisco Bay is officially listed as Essential Fish Habitat (EFH) related to the Pacific Coast Salmon Fishery Management Plans (FMP) and, in the South Bay, the Central Valley fall-run Chinook salmon (*Oncorhynchus tshawytscha*) represents this FMP (Pacific Fishery Management Council 1999). However, Chinook are not known to spawn in any creeks flowing into the project area, and although occasional strays may be found in these creeks, they are expected to occur in the project area irregularly at best.

A number of fish species regulated by the Coastal Pelagics and Pacific Groundfish FMPs, such as the leopard shark (*Triakis semifasciata*), English sole (*Parophrys vetulus*), starry flounder (*Platichthys stellatus*), big skate (*Raja binoculata*), northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax*), and jack mackerel (*Trachurus symmetricus*), occur in tidal habitats of South San Francisco Bay and may occasionally disperse upstream into the reach of Lower Penitencia Creek in the project area, which is tidally influenced. Thus, NMFS may consider these waters to be EFH related to all three of the aforementioned FMPs.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC Chapter 7, Subchapter II) prohibits killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. Most actions that result in take or the permanent or temporary possession of a migratory bird constitute violations of the MBTA. The act also prohibits the destruction of a nest that contains eggs or young. USFWS is responsible for overseeing compliance with the MBTA. All native bird species in the project area are protected by the MBTA.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC Section 668; 50 CFR Part 22) prohibits take of bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) and their occupied and unoccupied nests. USFWS administers the Bald and Golden Eagle Protection Act. Suitable nesting habitat for bald and golden eagles is not present in the project area.

Clean Water Act

The Clean Water Act (CWA) (33 USC Section 1251) establishes the basic structure for regulating discharges of pollutants (including dredged or fill material) into waters of the United States, including wetlands, and for regulating quality standards for surface waters. The CWA provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation’s waters.

CWA Section 404 prohibits the discharge of dredged or fill material into waters of the U.S., including wetlands, without a permit from USACE. CWA Section 401 requires that an applicant for a federal license or permit that allows activities with the potential to result in a discharge to waters of the U.S., including wetlands, obtain a state Section 401 water quality certification.

River and Harbors Act

Section 10 of the Rivers and Harbors Act of 1899 prohibits the creation of any obstruction to the navigable capacity of waters of the U.S., including discharge of fill and the building of any wharfs, piers, jetties, and other structures without congressional approval or authorization by the Chief of Engineers and Secretary of the Army (33 USC Section 403). Navigable waters of the U.S., as defined in 33 CFR Part 329.4, include all waters subject to the ebb and flow of the tide, and/or those which are presently or have historically been used to transport commerce. The shoreward jurisdictional limit of tidal waters is further defined in 33 CFR Part 329.12 as “the line on the shore reached by the plane of the mean (average) high water.”

As mentioned above, Section 404 of the CWA authorizes USACE to issue permits to regulate the discharge of dredged or fill material into waters of the U.S. If a project also proposes to discharge dredged or fill material and/or introduce of other potential obstructions in navigable waters of the U.S., a Letter of Permission (i.e., Section 10 permit) authorizing these impacts must be obtained from USACE under Section 10 of the Rivers and Harbors Act.

Because the entire reach of Lower Penitencia Creek within the project area is tidally influenced, the proposed project would affect waters currently under Section 10 jurisdiction, which includes all areas of the site at or below the elevation of the mean high water (MHW) line of approximately 7 feet North American Vertical Datum of 1988 (NAVD88); this is the long-term average over the most recent tidal epoch (1983–2001) based on the benchmark datum for the nearest station to the site (Gold Street Bridge, Alviso Slough; Station 9414551) (National Oceanic and Atmospheric Administration [NOAA] 2004).[1] Impacts on current Section 10 waters would require a Letter of Permission from USACE. However, the project occurs entirely outside historical Section 10 waters, as verified by reviewing the extent of historical sloughs, which are depicted on historical maps with a double-blue line, and therefore, landside activities proposed as part of the proposed project would not require a Letter of Permission.[2]

State Laws, Regulations, and Policies

Porter-Cologne Water Quality Control Act

The State Water Resources Control Board (SWRCB) works in coordination with the nine regional water quality control boards (RWQCBs) to preserve, protect, enhance, and restore water quality. The project area falls under the jurisdiction of the San Francisco Bay RWQCB, which may, under the Porter-Cologne Water Quality Control Act (Porter-Cologne), issue Waste Discharge Requirements for projects that could discharge pollutants into waters of the state. The RWQCB has authority to regulate activities that could result in a discharge of dredged or fill material under the CWA and the Porter-Cologne Water Quality Control Act (Porter-Cologne). The SWRCB has recently developed a Preliminary Draft Water Quality Control Policy that addresses numerous policy elements, including development of a wetland definition and description of methodology to be used in defining wetlands as part of waters of the state (SWRCB 2016).

Pursuant to Section 401 of the CWA, projects that are regulated by USACE must obtain a water quality certification from the RWQCB. This certification ensures that the proposed project would meet state water quality standards. Under Porter-Cologne, the SWRCB and the nine RWQCBs also have the responsibility of granting CWA National Pollutant Discharge Elimination System (NPDES) permits for certain point-source and non-point-source discharges to waters. These regulations limit impacts on aquatic and riparian habitats from a variety of urban sources. Although a discharge may be eligible for coverage under the general permit, the RWQCB may determine that a project would be better regulated under an individual permit or waste discharge requirements.

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[1] Benchmark MHW line data for the Gold Street Bridge, Alviso Slough (NOAA 2004) are relative to the mean lower low water (MLLW) at the monitoring station (8.7 feet). Differences between MLLW and the NAVD88 datum were calculated using the guidance provided by Foxgrover et al. (2005).

[2] The dataset used to determine the extent of historical sloughs integrates several sources of data describing the historical features of tidal marshes in the region, and was developed by the San Francisco Estuary Institute (SFEI 2015). The primary source is the maps of the U.S. Coast Survey (later U.S. Coast and Geodetic Survey), a federal agency renowned for the accuracy and detail of its 19th-century maps of America's shoreline. In most parts of the country, these maps provide the best early pictures of coastal and estuarine habitats prior to substantial Euro-American modification.

California Endangered Species Act

The California Endangered Species Act (CESA) (California Fish and Game Code [F&G Code] Chapter 1.5, Sections 2050–2116) prohibits the take of any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with CESA, the California Department of Fish and Wildlife (CDFW) has jurisdiction over state-listed species.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) and the CEQA Guidelines provide guidance in evaluating impacts of projects on biological resources and determining which impacts will be significant. CEQA defines “significant effect on the environment” as “a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” Under CEQA Guidelines Section 15065, a project's effects on biotic resources are deemed significant where the project would:

- “substantially reduce the habitat of a fish or wildlife species”
- “cause a fish or wildlife population to drop below self-sustaining levels”
- “threaten to eliminate a plant or animal community”
- “substantially reduce the number or restrict the range of a rare or endangered plant or animal”

In addition to species listed on the federal and state lists of protected species, Section 15380(b) of the State CEQA Guidelines provides that a species not listed on these lists may be considered rare if the species can be shown to meet certain specified criteria. CDFW has produced three lists (amphibians and reptiles, birds, and mammals) of “species of special concern” that serve as “watch lists.” Species on these lists are of limited distribution or the extent of their habitats has been reduced substantially, such that threat to their populations may be imminent. Thus, their populations should be monitored. They may receive special attention during environmental review as potential rare species, but they do not have specific statutory protection. All potentially rare or sensitive species, or habitats capable of supporting rare species, are considered in this analysis in accordance with Section 15380(b).

The California Native Plant Society (CNPS), a non-governmental conservation organization, has developed rankings for plant species of concern in California in the *CNPS Inventory of Rare and Endangered Plants*. Lichens, vascular plants, and non-vascular plants are ranked using the California Rare Plant Rank (CRPR) system:

Rank 1A: Plants considered extinct

Rank 1B: Plants rare, threatened, or endangered in California and elsewhere

Rank 2A: Plants considered extinct in California but more common elsewhere

Rank 2B: Plants rare, threatened, or endangered in California but more common elsewhere

Rank 3: Plants about which more information is needed review list

Rank 4: Plants of limited distribution-watch list

These CNPS rankings are further described using the following threat code extensions:

.1: seriously endangered in California
.2: fairly endangered in California
.3: not very endangered in California

Although CNPS is not a regulatory agency and plants on these lists have no formal regulatory protection, plants designated as CRPR 1B or 2 are, in general, considered to meet CEQA's Section 15380 criteria, and adverse effects on these species may be considered significant. Impacts on plants that are designated as CRPR 3 or 4 are also considered during CEQA review, although because these species are typically not as rare as CRPR 1B or 2 species, impacts on them are less frequently considered significant.

Compliance with State CEQA Guidelines Section 15065(a) requires consideration of natural communities of special concern, in addition to plant and wildlife species. Vegetation types of "special concern" are tracked in the California Natural Diversity Database (CNDDB 2016). Further, CDFW ranks sensitive vegetation alliances based on their global (G) and state (S) rankings analogous to those provided in the CNDDB and using NatureServe's (2016) standard heritage program methodology (also see California Department of Fish and Game [CDFG] 2007). CDFW provides the Vegetation Classification and Mapping Program's (VegCAMP's) currently accepted list of vegetation alliances and associations (CDFG 2010).

California Fish and Game Code

The California Fish and Game Code (F&G Code) includes various statutes that protect biological resources, including the Native Plant Protection Act of 1977 (NPPA), CESA, and requirements for notification of lake or streambed alteration.

The NPPA (F&G Code Sections 1900–1913) authorizes the Fish and Game Commission to designate plants as endangered or rare and prohibits take of any such plants, except as authorized under limited circumstances.

CESA (F&G Code Sections 2050–2098) prohibits state agencies from approving a project that would jeopardize the continued existence of a species listed under CESA as endangered or threatened. CDFW may issue an incidental take permit authorizing take of listed and candidate species if that take is incidental to an otherwise lawful activity, subject to specified conditions.

F&G Code Sections 3503, 3513, and 3800 protect native and migratory birds, including their active or inactive nests and eggs, from all forms of take. In addition, species that are fully protected from all forms of take are listed in Section 3511 (birds), Section 5515 (fish), Section 4700 (mammals), and Section 5050 (amphibians).

CDFW regulates activities that will interfere with the natural flow of, or substantially alter, the channel, bed, or bank of a lake, river, or stream. Section 1602 of the F&G Code requires that CDFW be notified of lake or streambed alteration activities. If CDFW subsequently determines that such an activity might adversely affect an existing fish and wildlife resource, the agency has the authority to issue a streambed alteration agreement, including requirements to protect biological resources and water quality.

Along Lower Penitencia Creek, CDFW jurisdiction under Section 1602 of the F&G Code may extend up to the top of bank. In two areas where the riparian tree canopy extends (barely) landward of the top of bank, the landward canopy edge demarcates the likely lateral limit of CDFW jurisdiction. Impacts on these areas would require a Section 1602 Lake and Streambed Alteration Agreement. All native bird species, as well as most other native vertebrates, that occur in the project area are protected by the F&G Code.

McAteer-Petris Act

The McAteer-Petris Act, enacted on September 17, 1965, serves as a legal provision under California state law to preserve San Francisco Bay from indiscriminate filling. The act initially established the San Francisco Bay Conservation and Development Commission (BCDC) as a temporary state agency charged with preparing a plan for the long-term use of San Francisco Bay. In August 1969, the McAteer-Petris Act was amended to make BCDC a permanent regulatory agency to incorporate the policies of the Bay Plan (BCDC 2012). The area of BCDC jurisdiction is defined in California Government Code Sections 66610-66611. California Government Code Sections 66610-66611(e)(2) states that the BCDC has jurisdiction over Coyote Creek and its branches in Santa Clara and Alameda Counties, to the easternmost point of Newby Island. The northwestern edge of the project area, just upstream from the confluence of Lower Penitencia Creek and Coyote Creek is approximately 800 feet from the eastern edge of the Newby Island property. Therefore, the project area is located outside of BCDC jurisdiction.

Local Laws, Regulations, and Policies

City of Milpitas Code of Ordinances

The City of Milpitas has the Tree Maintenance and Protection Ordinance, which serves as a tree protection and heritage tree program. Under this program, it is unlawful to remove, without a permit issued by the city Department of Public Works, trees within the city limits that meet the following criteria:

- All trees (including non-natives) that have a 56-inch or greater circumference of any trunk measured 4.5 feet from the ground and located on developed residential property;
- All trees that have 37-inch or greater circumference of any trunk measured 4.5 feet from the ground and located on developed commercial or industrial property;
- All trees that have a 37-inch or greater circumference of any trunk measured 4.5 feet from the ground, when removal relates to any transaction for which zoning approval or subdivision approval is required; any tree existing at the time of a zoning or subdivision approval and that was a specific subject of such approval or otherwise covered by previously mentioned provisions;
- All trees that have a 37-inch or greater circumference of any trunk measured 4.5 feet from the ground and located on a vacant, undeveloped, or underdeveloped property; or
- All heritage trees or groves of trees.

Heritage tree designation may be applied by resolution of the City Council to individual trees or a grove of trees of any size or species within the City of Milpitas that are distinctive, of special historical value, or of significant community benefit. A tree or grove of trees may be designated as a heritage tree or heritage tree grove upon a finding that it is unique and of importance to the community because of any of the following factors: (1) it is an outstanding specimen or grove of a desirable species; (2) it is one of the largest or oldest trees or groves of trees in Milpitas; or (3) the tree or grove of trees possesses distinctive form, size, age, location, and/or historical significance.

City of Milpitas General Plan

The Open Space and Environmental Conservation Element of the *City of Milpitas General Plan* (2002) contains several policies regarding protection of biological resources. Policy 4.b-G-1c calls for protection and conservation of open spaces which are necessary for wildlife habitats and unique ecological patterns. Policy 4.d-P-5 requires developments to conform, where feasible, to natural landforms, avoid excessive grading and disturbance of vegetation and soils, retain native vegetation and significant trees, and maintain natural drainage patterns. Policy 4.d-P-4 calls for the preservation, creation, or restoration of riparian corridors and wetlands. Where possible, development should be set back from these areas sufficiently to maximize habitat values (City of Milpitas, 2002).

Other policies that provide for protection of biological resources and are relevant to the proposed project include the following:

4.b-G-2: Preserve and protect populations and supporting habitat of special-status species within the Planning Area, including species that are state or federally listed as Rare, Threatened, or Endangered, all federal "candidate" species for listing and other species proposed for listing, and all California Species of Special Concern.

4.b-I-2: Preserve remaining stands of trees.

4.b-I-3: Recreation use of essentially virgin areas should be centered around activities which have a minimally disruptive effect on natural vegetation.

4.b-I-4: Require a biological assessment of any project area where sensitive species are present, or where habitats that support known sensitive species are present.

4.b-I-5: Utilize sensitive species information acquired through biological assessments, project land use, planning, and design.

4.d-G-1: Protect and enhance the quality of water resources in the Planning Area.

3.4.3 Environmental Setting

Surveys and Methods

To assist in identifying existing biological conditions in the project area, the following information sources were reviewed:

- The District's 2011 *Stream Maintenance Program (SMP) Update Final Subsequent Environmental Impact Report* (SCVWD 2012); the SMP Update biological assessments prepared for USFWS (H. T. Harvey & Associates 2011a) and NMFS (H. T. Harvey & Associates 2012); and the CESA incidental take permit application for the SMP Update (H. T. Harvey & Associates 2011b);

- *Preliminary Delineation of Wetland and Other Waters for the Lower Penitencia Creek Improvements Project* (H. T. Harvey & Associates 2016; included as Appendix D of this ~~D~~EIR);
- *Dixon Landing Road/ I-880 Interchange Potential Additional Wetland Mitigation Sites* (H. T. Harvey & Associates 1996a);
- *Dixon Landing Road/I-880 Interchange Mitigation and Monitoring Plan* (H. T. Harvey & Associates 1996b);

This analysis also relies on data on special-status wildlife species occurrences compiled by the District since 2001; CNDDB records (2016); the *Breeding Bird Atlas of Santa Clara County* (Bousman 2007a); *California Bird Species of Special Concern* (Shuford and Gardali 2008); and unpublished records of bird observations in the general project vicinity, defined as a 5-mile radius surrounding the project area (Santa Clara County Bird Data, unpublished).

The analysis for plants involved review of all species on current CNPS CRPR 1A, 1B, 2A, and 2B lists in the Milpitas, California U.S. Geological Survey (USGS) 7.5-minute quadrangle and the surrounding eight quadrangles (Newark, Niles, La Costa Valley, Mountain View, Calaveras Reservoir, Cupertino, San Jose West, and San Jose East). Because quadrangle-level results are not maintained for CRPR 3 and 4 species, a search was also conducted of the CNPS Inventory records for these species occurring in Santa Clara County (CNPS 2016). In addition, the CNDDB (2016) was queried for natural communities of special concern that occur within the project region.

Surveys for biological resources, including special-status species, have been conducted in the project area and vicinity as part of the District's planning efforts for the region (e.g., EDAW 2008; SCVWD 2008). Surveys have also been conducted as part of the SMP, which requires the assessment of habitat suitability for special-status species prior to the implementation of stream maintenance activities. The discussion below summarizes previous surveys and monitoring efforts that were used in developing the environmental setting for the proposed project.

Vegetation Mapping

In 2010, Aerial Information Systems, Inc. (AIS) mapped vegetation types over most of the project area. Vegetation types were mapped using aerial photograph interpretation and interactive computer digitization. The vegetation classification system was based on *A Manual of California Vegetation* (Sawyer et al. 2009). Each vegetation type was coded to the group level (or alliance level, where possible) and assigned a cover class density for the vegetation type mapped. Because the AIS mapping was done at a relatively coarse scale, and because sediment excavation and vegetation removal maintenance activities occurred within the project area subsequent to the AIS mapping, the boundaries of the communities as mapped by AIS were field verified within the project area by qualified H. T. Harvey & Associates plant ecologist Maya Goklany, M.S. This effort was conducted concurrently with the reconnaissance survey on June 23, 2015, and during a wetland delineation survey that took place from November 3 through November 5, 2015. Where field conditions were other than as represented in the AIS mapping, a global positioning system (GPS) unit was used to record actual field conditions.

More than 50 individual trees exist in the project area, including native species such as the red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), Fremont cottonwood (*Populus fremontii*), and ash (*Fraxinus* sp.), as well as nonnatives such as the blackwood acacia (*Acacia melanoxylon*), London plane (*Platanus hybrida*), and eucalyptus (*Eucalyptu*s spp.). Trees are located on the inboard and outboard slopes of existing levees, on a berm that stretches from California Circle to Milmont Drive between the main channel and the secondary channel (Reach 3), and in Staging Area A. At least 36 trees within the project area are of sufficient diameter to be protected by the City ordinance. However, no trees in the project area have been designated as heritage trees by the City of Milpitas (D. Gordillo, pers. comm.).

Jurisdictional Waters and Wetland Delineation Survey

The entire project area was surveyed for areas potentially meeting the regulatory definition of waters of the U.S./state by Ms. Goklany from November 3 through November 5, 2015, and again on September 15, 2016. The survey used the three-parameter approach described in the "Routine Determination Method" section of the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), which documents the presence/absence of hydrophytic vegetation, hydric soils, and wetland hydrology. The survey utilized updated data forms, vegetation sampling methods, and hydric soil and hydrology indicators developed specifically for the Arid West region (USACE 2008). See **Appendix D**.

As described in the preliminary wetland delineation, 9.89 acres of potentially jurisdictional waters of the U.S. are present in the project area. Other jurisdictional waters subject to Section 404 of the CWA include tidal aquatic habitat within the Lower Penitencia Creek channel. Jurisdictional wetlands subject to Section 404 of the CWA that were evident during the November 2015 and September 2016 wetland delineation (Appendix D) include a non-tidal seasonal saline wetland and three disjunct patches of coastal brackish marsh. An artificial, concrete-lined ditch excavated in uplands near Reach 1, but that supports hydrophytic vegetation, is expected to be non-jurisdictional (subject to USACE concurrence) due to its artificial hydrology and the fact that it does not discharge to Lower Penitencia Creek or any other jurisdictional waters. Potential waters of the U.S. are subject to verification by USACE. A Section 404 permit from USACE, with an associated Section 401 water quality certification from the RWQCB, would be required for discharges of dredged or fill material into waters of the U.S.

In addition to the 9.89 acres of waters of the U.S. occurring below the ordinary high water mark (OHWM) the Lower Penitencia Creek channel contains 6.78 acres of land located between the OHWM and the top of the channel bank. This area is primarily vegetated with grasses and ruderal ground cover, but scattered trees and shrubs are also present (see, Appendix D). This area includes small sections of hardscape, including concrete ramps, concrete bank linings, and concrete retaining walls. Levees run along the outer edge of the project area and were created from placement of fill material when the existing developments were constructed. Thus, the top of bank (associated with Lower Penitencia Creek) is the topographic hinge point at the top of the inboard side of the levee, which demarcates the bank-full capacity of the channel. Vegetated areas between the OHWM and the top of bank are considered riparian habitat. Mostly non-native vegetation is also located on the outboard side of levees in reaches 1, 2, 3, and 4. The vegetation on the outboard side of the levees is separated from the creek channel by existing maintenance roads located on the levee crests, and is therefore not riparian habitat.

Previous Fisheries Surveys

In 2008, the District performed fish relocations at a maintenance activity work site within Lower Penitencia Creek upstream of the project area (SCVWD 2008). Fish species, disposition, and abundance data were collected in samples, and summaries of the fish captured and released (natives) or sacrificed (non-natives) were prepared, thus providing information on fish potentially present in the project area.

Previous Amphibian Surveys

Annually, between 2004 and 2010, the District conducted general presence/absence surveys for amphibians in Lower Penitencia Creek as part of the preconstruction BMPs for the aquatic spray work conducted under the SMP (L. Porcella, 2011, pers. comm.), thus providing information on amphibians potentially occurring in the project area.

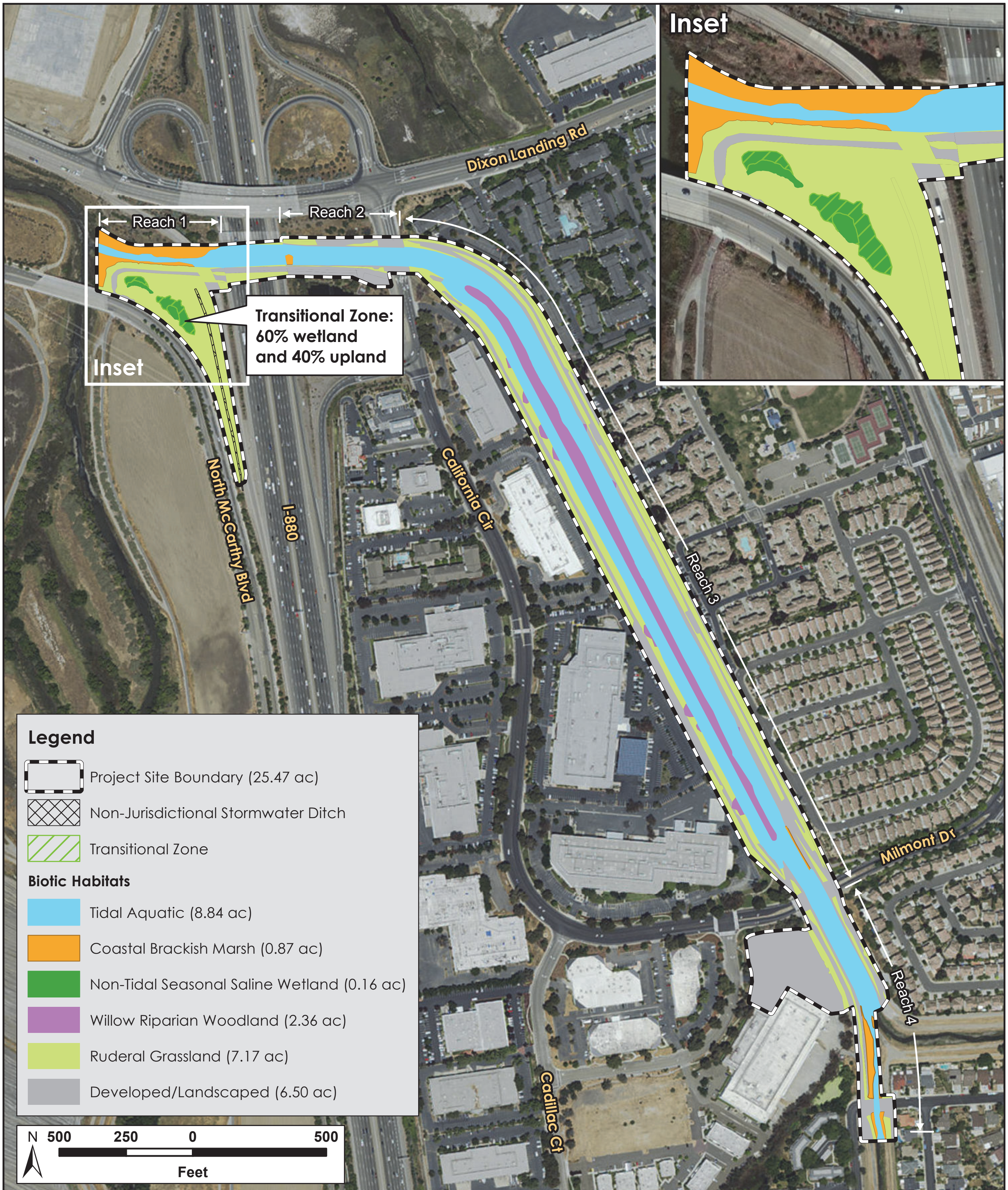
Bird Surveys

In 2007 and 2008, EDAW conducted a habitat assessment, burrow mapping study, and standardized protocol surveys for burrowing owl (*Athene cunicularia*) along sections of multiple District-managed waterways, including Lower Penitencia Creek (EDAW 2008). The study was designed to comply with the District's Biodiversity Monitoring Plan and to monitor burrowing owl distribution, abundance, and trends within the SMP program area.

On June 23 and November 3, 2015, H. T. Harvey & Associates wildlife ecologist Craig Fosdick, M.S., conducted a focused field assessment to determine the potential suitability of habitat for burrowing owls within and immediately adjacent to the project area. During that survey, he also assessed habitat suitability for several other special-status species within and immediately adjacent to the project area, including the California Ridgway's rail (*Rallus obsoletus obsoletus*), California black rail (*Laterallus jamaicensis coturniculus*), tricolored blackbird (*Agelaius tricolor*), Alameda song sparrow (*Melospiza melodia pusillula*), Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), San Francisco common yellowthroat (*Geothlypis trichas sinuosa*), white-tailed kite (*Elanus leucurus*), and loggerhead shrike (*Lanius ludovicianus*).

Mammal Surveys

On June 23 and November 3, 2015, Mr. Fosdick conducted a focused field assessment of habitat in the project area for its potential suitability for the salt marsh harvest mouse. The focus of the assessment was the brackish tidal marshes in the lowermost project reaches (see **Figure 3.4-1**) and vegetation, dominated by Pacific pickleweed (*Salicornia pacifica*). Mr. Fosdick also conducted focused surveys for nests of San Francisco dusky-footed woodrats (*Neotoma fuscipes annectens*) and potential bat roosting habitat throughout the project area.



Source: H.T. Harvey 2017

Figure 3.4-1. Biotic Habitats Map

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Lower Penitencia Creek Improvements Project

Vegetation and Land Cover

Six general habitat types were identified within the 25.47-acre project area: tidal aquatic, developed/landscaped, ruderal grassland, willow riparian woodland, coastal brackish marsh, and non-tidal seasonal saline wetland. **Table 3.4-1** provides a summary of the habitat acreages on the site and Figure 3.4-1 shows their distribution and extent. Descriptions of the typical plant and animal species found in each habitat type are provided below. The descriptions are based on the results of the reconnaissance surveys conducted for the project area and the biologists' decades of experience working in similar habitats in the South Bay Area.

Table 3.4-1. Habitat Acreages in the Project Area

Habitat	Area (acres)*
Tidal aquatic	8.84
Ruderal grassland	7.17
Developed/Landscaped	6.50
Willow riparian woodland	2.36
Coastal brackish marsh	0.87
Non-tidal seasonal saline wetland	0.16
Total	***25.90+***

* Values are subject to rounding errors.

+ Total is greater than the acreage of the project site due to the occurrence of 0.43 acres of overlap of tidal aquatic habitat and willow riparian woodland (i.e., riparian tree canopy overhangs the aquatic habitat).

Source: H. T. Harvey and Associates 2016; Appendix D.

Tidal Aquatic

Vegetation. Aquatic or open water habitats are permanently or semi-permanently flooded and support less than 5 percent vegetation cover in emergent or submerged states. In the project area, aquatic habitat (8.84 acres) is represented by non-wetland areas within the active channel of Lower Penitencia Creek and storm drain outfalls (0.02 acre) (Figure 3.4-1). The entire extent of the creek within the project boundary is tidally influenced.

In October 2015, sediment and vegetation were removed from the Lower Penitencia Creek channel as part of regular and ongoing maintenance activities conducted by the District under its SMP, which underwent separate environmental review and permitting. Following completion of the maintenance activities, aquatic habitat was identified by the presence of standing or running water during both low and high tides, and a lack of vegetation. Because field indicators of the HTL were not evident in all portions of the project area, surveys were scheduled to occur during high tide to aid in mapping the lateral limits of the channel and to help estimate the HTL elevation in these areas. To further aid in determining the HTL, tidal elevation data for 2015 were compiled for the NOAA station nearest the project area (Gold Street Bridge, Alviso Slough; Station 9414551), which indicate that high tides during 2015 reached an elevation of approximately 10 feet NAVD88 (NOAA 2015). The entire portion of the channel in the project area up to approximately 10 feet NAVD88 is within the HTL elevation for the area.

Wildlife. Lower Penitencia Creek provides relatively lower quality habitat for most wildlife species compared to that in naturally formed streams, due to its channelized nature, the lack of high-quality habitat complexity such as riffle and pool complexes and well-developed riparian woodland, and regular disturbance of habitats and associated species due to ongoing maintenance. The creek flows through a mix of urban, business park, and light industrial settings before emptying into Coyote Creek.

In 2008, the District relocated fish within two reaches of Lower Penitencia Creek (upstream of the project area) as part of the SMP (SCVWD 2008). Eight species of fish were identified during the relocations. Five species were non-native: common carp (*Cyprinus carpio*), western mosquitofish (*Gambusia affinis*), fathead minnow (*Pimephales promelas*), red shiner (*Cyprinella lutrensis*), and yellowfin goby (*Acanthogobius flavimanus*). Three species were native: California roach (*Lavinia symmetricus*), prickly sculpin (*Cottus asper*), and three-spined stickleback (*Gasterosteus aculeatus*). The non-native crayfish (*Procambarus clarkii*) is also likely present in the channel.

Common bird species using the tidal aquatic habitat include great blue heron (*Ardea herodias*), snowy egret (*Egretta thula*), great egret (*Ardea alba*), mallard (*Anas platyrhynchos*), and American coot (*Fulica americana*). Insectivores such as dragonflies, bats, and fly-catching birds forage aerially over the channel, while herons and egrets forage in the channel. Common amphibians, such as the native Sierran chorus frog (*Pseudacris sierrae*) and western toad (*Anaxyrus boreas*), as well as the non-native American bullfrog (*Lithobates catesbeianus*), breed and forage in the channel. Raccoon (*Procyon lotor*) tracks were observed under the North McCarthy Boulevard bridge, and raccoons forage on the edge of this habitat.

Developed/Landscaped

Vegetation. Within the project boundaries, developed areas include gravel and impermeable surfaces (such as concrete and asphalt) along trails, as well as roadways and parking lots. Landscaped areas are present within the parking lots and along North McCarthy Boulevard. Landscaping includes young planted trees, such as London plane and oak (*Quercus* spp.). Developed/landscaped areas within the project boundaries total 6.50 acres.

Wildlife. Developed/landscaped habitat generally supports only a few relatively common wildlife species, rather than a diverse wildlife community. Common species using the developed/landscaped habitat in the project area include the common raven (*Corvus corax*), Anna's hummingbird (*Calypte anna*), red-shouldered hawk (*Buteo lineatus*), northern mockingbird (*Mimus polyglottos*), black phoebe (*Sayornis nigricans*), Say's phoebe (*Sayornis saya*), California towhee (*Melozone crissalis*), house finch (*Haemorhous mexicanus*), American goldfinch (*Spinus tristis*), lesser goldfinch (*Spinus psaltria*), bushtit (*Psaltriparus minimus*), and, in winter, white-crowned sparrow (*Zonotrichia leucophrys*) and golden-crowned sparrow (*Zonotrichia atricapilla*). Common mammal species that occur in the developed/landscaped habitats include the native raccoon and striped skunk (*Mephitis mephitis*) and the non-native Norway rat (*Rattus norvegicus*).

On June 23 and November 3, 2015, H. T. Harvey & Associates biologist Craig Fosdick conducted a focused inspection of bridges to look for evidence of nesting birds and habitat for roosting bats. Evidence of cliff swallow colonies was observed on both the North McCarthy Boulevard bridge over Coyote Creek, which is adjacent to but outside the project area, and the I-880/Nimitz Freeway on-ramp bridge over Lower Penitencia Creek. Unoccupied cliff swallow nests could serve as roosts for certain species of bats, such as the Brazilian free-tailed bat (*Tadarida brasiliensis*). On the North McCarthy Boulevard bridge, cracks and crevices in the bridge structure itself may also provide potential bat roosting habitat.

Ruderal Grassland

Vegetation. Ruderal grassland (7.17 acres) is present along the outermost edges of the project area along the maintenance roads and trails atop the levees. Ruderal grassland also occurs along the streambanks of the Lower Penitencia Creek channel. These areas are dominated by non-native grasses, such as wild oats (*Avena* sp.), ripgut brome (*Bromus diandrus*), and Bermuda grass (*Cynodon dactylon*), and non-native forbs such as Italian thistle (*Carduus pycnocephalus*). All of the dominant species in this habitat are rated as "moderately" invasive by the California Invasive Plant Council (Cal-IPC 2016) and have substantial, but not severe, ecological impacts. Other common species present include fat hen (*Atriplex prostrata*), wild radish (*Raphanus sativus*), mustard (*Brassica* sp.), prickly lettuce (*Lactuca serriola*), and cheeseweed (*Malva parviflora*). Prior to the recent sediment removal activities in the Lower Penitencia Creek channel, ruderal grassland on the streambanks may have extended below the HTL; however, this was not evident during the survey conducted in November 2015 because herbaceous vegetation had been removed below this elevation.

Ruderal grassland habitat was also observed in the area surrounding the non-tidal seasonal saline wetland, and in patches interspersed throughout the transitional zone of the marsh (Figure 3.4-1). Dominant species in this area include perennial grasses, such as Idaho fescue (*Festuca idahoensis*), Harding grass (*Phalaris aquatica*), and smilo grass (*Stipa mileacea*), and forbs such as bristly ox-tongue (*Helminthotheca echioides*).

Wildlife. The ruderal grasslands in the project area are relatively small, generally occur either in long linear patches or in small patches, and are separated from larger grasslands in the region by extensive urbanization. Human disturbance in the ruderal grassland habitat in the project area is frequent, as paved levee-crest trails are open for public use on the east bank of Reach 3 and the west bank of Reach 4. As such, this habitat contains common species, such as the red-tailed hawk (*Buteo jamaicensis*), common raven, northern mockingbird, black phoebe, Say's phoebe, and California towhee, rather than species typically associated with extensive, contiguous grasslands. Other common bird species using this habitat in winter include white-crowned sparrows and golden-crowned sparrows.

The scattered trees in the ruderal grasslands provide perches and foraging opportunities for some common species that might not otherwise occur in ruderal grasslands, such as the red-shouldered hawk, Anna's hummingbird, bushtit, house finch, and American goldfinch. Other common wildlife species occurring in ruderal grasslands in the project area are the western terrestrial garter snake (*Thamnophis sirtalis*), western toad, house mouse (*Mus musculus*), California vole (*Microtus californicus*), valley pocket gopher (*Thomomys bottae*), deer mouse (*Peromyscus maniculatus*), striped skunk, and raccoon.

Willow Riparian Woodland

Vegetation. Willow riparian woodland habitat (2.36 acres) in the project area currently supports riparian tree species such as Fremont cottonwood, arroyo willow, and red willow.

Most of this habitat type occurs on a berm that stretches from California Circle to south of Milmont Drive in the center of the main channel of Lower Penitencia Creek (Figure 3.4-1). The berm is below the top-of-bank elevation but above the OHW and HTL of the stream. The berm supports ruderal grassland and riparian habitat (including riparian trees, shrubs, and herbaceous vegetation). Most of the herbaceous plant community on the berm is composed of “highly” invasive species, which are known to have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment, and most are widely distributed ecologically (Cal-IPC 2016). On the berm, highly invasive species include common fennel (*Foeniculum vulgare*), English ivy (*Hedera helix*), Himalayan blackberry (*Rubus armeniacus*), and broadleaved pepperweed (*Lepidium latifolium*). Harding grass, smilo grass, and wild radish are also prevalent in the understory of this habitat.

Recent (2015) District maintenance activities resulted in relatively few impacts on the riparian trees in the area, with the exception of removing some tree limbs, but did temporarily remove herbaceous vegetation. As such, the existing conditions of the berm at the time of the July 2015 survey included a barren understory with scattered and mature willows. The barren understory was a temporary condition, however, and the herbaceous vegetation is expected to begin to regrow within one growing season. Additional disjunct patches of willow riparian woodland have been mapped along the outer edges of the main stream channel where willow and Fremont cottonwood trees occurred. The understories of these patches are contiguous with the adjacent ruderal grassland described above.

Wildlife. In general, relatively few species and individuals are expected to use the willow riparian woodland habitat in the project area because of the sparse distribution of trees and the accompanying lack of foraging and cover resources. Nevertheless, common bird species that make use of this habitat include the common raven, northern mockingbird, black phoebe, Say’s phoebe, house finch, California towhee, and American goldfinch. In winter, white-crowned sparrows and golden-crowned sparrows may be found in this habitat. As herbaceous riparian vegetation re-establishes, bird species more strongly associated with riparian habitat, such as the San Francisco common yellowthroat and Alameda song sparrow, are expected to nest and forage here. Raccoons may use this habitat to access tidal aquatic habitat for foraging opportunities, and Norway rats and house mice may forage in this habitat.

Coastal Brackish Marsh

Vegetation. Coastal brackish marsh habitat, totaling 0.87 acre, was documented in the project area in small, disjunct patches immediately east and west of the I-880 overpass and just north and south of the Milmont Drive bridge at the southern end of the project alignment (Figure 3.4-1). Coastal brackish marsh generally occurs below the HTL of the Lower Penitencia Creek channel, although the northernmost patch extends several feet above this demarcation. As such, these wetlands are exposed to full tidal influence and receive freshwater input from the upper watershed, incident rainfall, and stormwater runoff. Coastal brackish marsh is dominated by California tule (*Schoenoplectus californica*), with fat hen along its landward edge. Prior to recent sediment and vegetation removal in the stream channel, coastal brackish marsh was much more prevalent in the project area, as observed during a site visit in June 2015.

Wildlife. Coastal brackish marsh supports moderate diversity of common species of amphibians, reptiles, birds, and mammals. Common amphibians occurring in this habitat include the native Sierran chorus frog and western toad, and the non-native bullfrog. Bird species found in this habitat during the nesting season include the American coot, black-crowned night-heron (*Nycticorax nycticorax*), great blue heron, great egret, snowy egret, gadwall (*Anas strepera*), mallard, black phoebe, and marsh wren (*Cistothorus palustris*). Cliff swallows (*Petrochelidon pyrrhonota*) and northern rough-winged swallows (*Stelgidopteryx serripennis*) forage above this habitat and the surrounding area. Wintering birds found in coastal brackish marsh habitat include the white-crowned sparrow, golden-crowned sparrow, and subspecies of song sparrow other than the Alameda song sparrow. Mammals using this habitat include the raccoon and the California vole.

Non-tidal Seasonal Saline Wetlands

Vegetation. There is 0.16 acre of non-tidal seasonal saline wetlands present at the northern end of the project area, between the on-ramp for I-880 and North McCarthy Boulevard (Figure 3.4-1). Historically, this area occurred outside of sloughs of San Francisco Bay. Aerial images from 1993 (Google Inc. 2016) indicate that this area was hydrologically isolated from the Bay and was comprised of upland habitat types at that time. Several years later, the area became a wetland mitigation site for the Coyote Creek Flood Protection Project (H. T. Harvey & Associates 1996a, 1996b). In approximately 2003, the Dixon Landing/I-880 Interchange Project excavated an area of the mitigation site to install a Pacific Gas and Electric (PG&E) gas pipeline. Native soil was used as fill material following the completion of the project, and hydrophytes recolonized the site.

Within the project boundaries, non-tidal seasonal saline wetlands occur outside of the Lower Penitencia Creek channel in a concave depression that serves as a stormwater basin. During large storm events, fresh water from incident rainfall and runoff collects in the basin and is delivered to Lower Penitencia Creek through a culvert. The culvert outlet is situated above the HTL elevation, and thus, the marsh is not tidally influenced under normal circumstances, although it is possible that during king tides of great magnitude brackish water enters this culvert and washes into the basin. A wetland delineation survey (H. T. Harvey & Associates 2016) and analysis of historical aerial images (Google Inc. 2016) indicate that the center of the non-tidal seasonal saline wetland (approximately 0.07 acre at the lowest elevation within this habitat type) retains water for a longer period than the transitional zone along the outer margins of the wetlands.

The plant community in this portion of the wetlands is dominated by hydrophytic species, such as Pacific pickleweed and alkali bulrush (*Bolboschoenus maritimus*). The outer margins of the non-tidal seasonal saline wetlands are composed of a mosaic of wetland and upland patches, and are considered a transitional zone between the two habitat types. Approximately 60 percent of the transitional zone supports wetland vegetation; 0.10 acre of non-tidal seasonal saline wetland is interspersed in this zone with patches of ruderal grassland (Figure 3.4-1).

Wetland patches in the transitional zone are dominated by Pacific pickleweed, in addition to other strongly hydrophytic species such as spreading alkali weed (*Cressa truxillensis*) and alkali heath (*Frankenia salina*). In addition, tall wheatgrass (*Elymus ponticus*), a species that is known to occur in wet and alkaline soils (Natural Resources Conservation Service [NRCS], no date), dominates swaths in the outer margins of the non-tidal seasonal saline wetlands.

Other marginally hydrophytic species observed in the transitional zone include saltgrass (*Distichlis spicata*), seaside barley (*Hordeum marinum*), and broadleaved pepperweed, the latter of which is highly invasive (Cal-IPC 2016).

Wildlife. The non-tidal seasonal saline wetland habitat in the project area is relatively small and isolated, and therefore provides relatively limited habitat for associated wildlife species. Many of the species that occur on the site are common species that are not strongly associated with this habitat, but also occur in adjacent habitats. Such species include the raccoon, California vole, house mouse, northern mockingbird, black phoebe, and song sparrow. Wintering birds found in this habitat include the white-crowned sparrow and golden-crowned sparrow. Amphibians such as the western toad, and snakes such as the western terrestrial garter snake may also use non-tidal seasonal saline wetland habitat. However, in general, the relatively small size of this habitat patch and its relative isolation from similar habitat likely limit the use of this patch of habitat for most species.

Special-status Species

For the purposes of this EIR, special-status plant and wildlife species are those species that meet one or more of the following criteria:

- Species that are listed as threatened or endangered under ESA (50 CFR Part 17.12 for listed plants, 50 CFR Part 17.11 for listed animals);
- Species that are candidates for possible future listing as threatened or endangered under ESA (76 FR 66370);
- Species that are listed or proposed for listing by the State of California as threatened or endangered under CESA (14 CCR Section 670.5);
- Plants listed as rare under the NPPA (F&G Code Section 1900 et seq.);
- Plants considered by CNPS to be "rare, threatened, or endangered in California";
- Species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines Section 15380); and
- Animals fully protected in California (F&G Code Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

Special-status Plants

CNPS (2016) and the CNDDB (2016) identify 71 special-status plant species as potentially occurring in the nine 7.5-minute USGS quadrangles containing and/or surrounding the project area for CRPR 1 and 2 plants, and in Santa Clara County for CRPR 3 and 4 plants (see **Appendix E** for a full list of these species). Fifteen of these 71 special-status plant species have been documented by the CNDDB in the project vicinity, and these records are shown in **Figure 3.4-2**.

Fourteen of the 15 special-status plant species identified during the background review were determined to be absent from the project area for one or more of the following reasons:

- A lack of specific habitat (e.g., vernal pools) and/or edaphic requirements (e.g., serpentine soils) for the species in question;
- The elevation range of the species is outside of the range in the project area; or

- The species has been extirpated from the site vicinity.

Most of the CNDDB records in the project vicinity document extirpated populations of special-status plant species. With the exception of two records for Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*, CRPR 1B.1), the remaining extant populations of other special-status plant species in the site vicinity occur in vernal pool complexes north of the area in the City of Fremont, such as the Pacific Commons Preserve in Don Edwards National Wildlife Refuge. These complexes, some of which have undergone ecological restoration, occur within the margin of historical sloughs of San Francisco Bay and support a mosaic of vernal pools, connecting swales, and native grasslands, which provide suitable habitat for these special-status plant species. Soils in the vernal pool complexes of Don Edwards National Wildlife Refuge are saline-alkaline and are almost exclusively part of the Pescadero soil series (NRCS 2016). Comparable habitat types and edaphic conditions do not exist in the project area; although soils in the project area are saline and potentially alkaline, they are comprised of non-native, imported fill in the Urbanland soil series and native soil in the Campbell series. Additionally, the project site is outside of the historical slough margin and lacks the microtopography (e.g., hummocks) that is typical of vernal pool habitat. As such, all special-status plant species with the exception of Congdon's tarplant were determined to be absent from the project area.

Congdon's tarplant has the potential to occur in the project area based on the presence of marginally suitable habitat and records of extant populations in the project vicinity. It is an annual herb in the composite family (Asteraceae) that is endemic to California. Congdon's tarplant has a variable blooming period extending from May through November. It occurs in valley and foothill grassland habitat, floodplains, and swales, particularly those with alkaline substrates; and in disturbed areas with non-native grasses such as various species of wild oats, ripgut brome, Italian ryegrass, and seaside barley (SCVWD 2011; Baldwin et al. 2012; CNDDB 2016; CNPS 2016).

Congdon's tarplant occurs in Alameda, Contra Costa, Monterey, San Luis Obispo, San Mateo, Santa Clara, Santa Cruz, and Solano Counties (CNDDB 2016). Two populations of Congdon's tarplant have been documented by the CNDDB in the project vicinity; one occurs in swales and seasonal wetlands on the San Jose–Santa Clara Regional Wastewater Treatment Plant property, and the other occurs in seasonal wetland and disturbed ruderal grassland habitats in Sunnyvale Baylands Park. Ruderal grasslands in the project area are considered marginal habitat for this species because the site is underlain by soils in the Urbanland series that may be saline, but are not generally considered alkaline.

Special-status Animals

The legal status and potential for occurrence of special-status wildlife species known to occur or potentially occurring in the general vicinity of the project area are given in **Table 3.4-2**. Expanded descriptions are included in **Appendix F** for those species that are known to occur in the project area; for which potentially suitable habitat occurs within or in the general vicinity of the project area; for which the site is accessible to animals from known populations; and for which resource agencies have expressed particular concern, such that more expanded discussion is required. Species that are listed in Table 3.4-2 but not discussed in detail in Appendix F have no reasonable expectation of occurrence in the project area. CNDDB records of special-status animals in the project area vicinity are shown in **Figure 3.4-3**.

Several special-status species identified during the background review were determined to be absent from the project area because of a lack of suitable habitat and/or isolation of the project area from known populations by urbanization and associated barriers to dispersal. These species are the California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), foothill yellow-legged frog (*Rana boylii*), long-eared owl (*Asio otus*), California least tern (*Sterna antillarum browni*), western snowy plover (*Charadrius alexandrinus nivosus*), California Ridgway's rail (*Rallus obsoletus obsoletus*) San Francisco dusky-footed woodrat, short-eared owl (*Asio flammeus*), salt marsh wandering shrew (*Sorex vagrans halicoetes*), and Townsend's big-eared bat (*Corynorhinus townsendii*). These species are present in some less urbanized settings in the South Bay.

A number of other special-status animal species are addressed in greater detail below because they are known to breed or could potentially breed in the project area or its vicinity; occur fairly commonly as non-breeders in the project area (and thus could be substantially affected by proposed project activities); and/or are of particular concern to regulatory agencies. These are the Central Valley fall-run Chinook salmon, Central California Coast steelhead, green sturgeon (*Acipenser medirostris*), longfin smelt, western pond turtle (*Actinemys marmorata*), golden eagle, American peregrine falcon, white-tailed kite, northern harrier (*Circus cyaneus*), burrowing owl, loggerhead shrike, San Francisco common yellowthroat, Alameda song sparrow, yellow warbler (*Setophaga petechia*), tricolored blackbird, Bryant's savannah sparrow, salt marsh harvest mouse, pallid bat (*Antrozous pallidus*), and western red bat (*Lasiurus blossevillii*).

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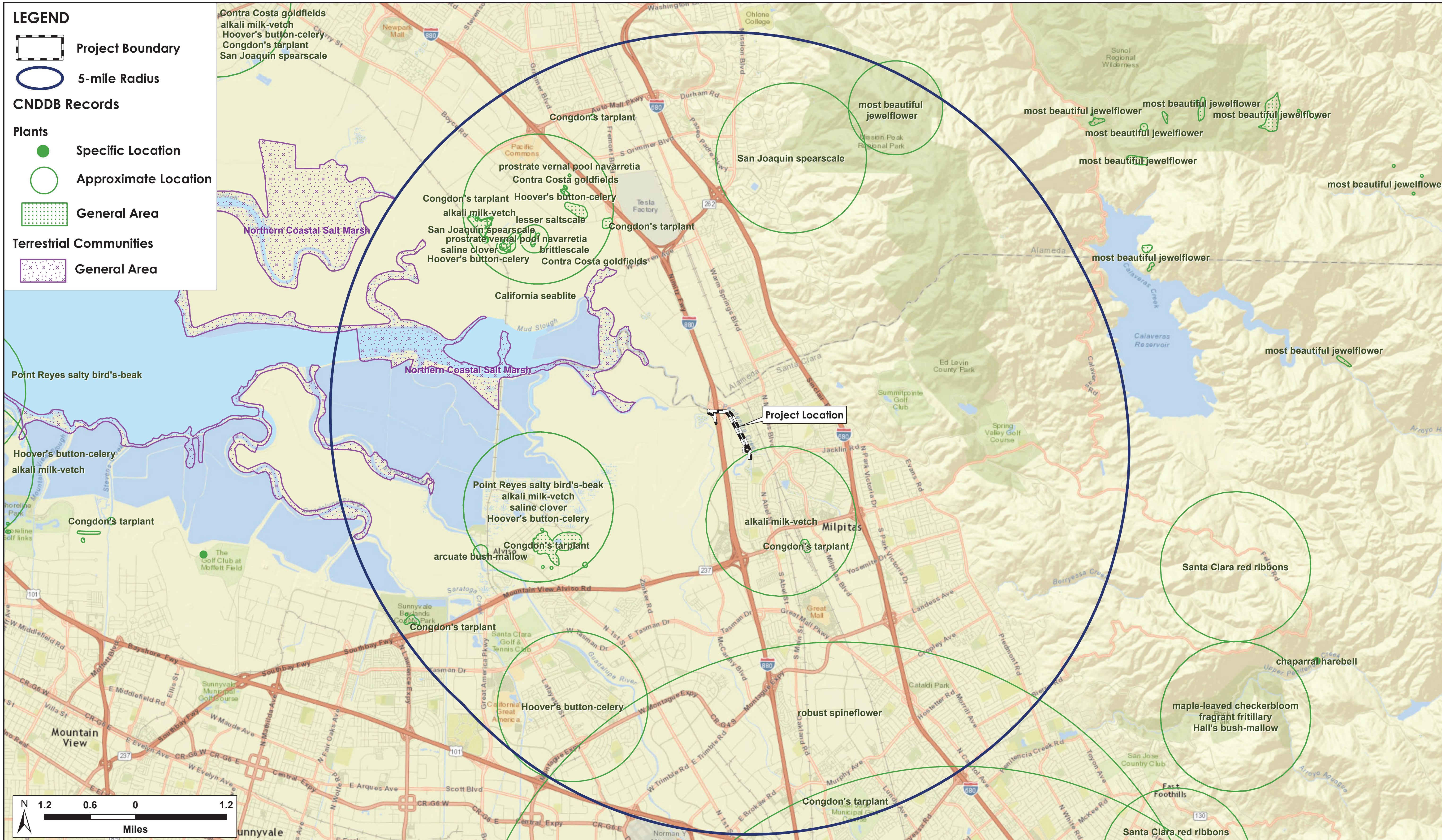

Source: H.T. Harvey 2017

Prepared by: Horizon Water and Environment

Figure 3.4-2. CNDDB Records for Plants

Lower Penitencia Creek Improvements Project

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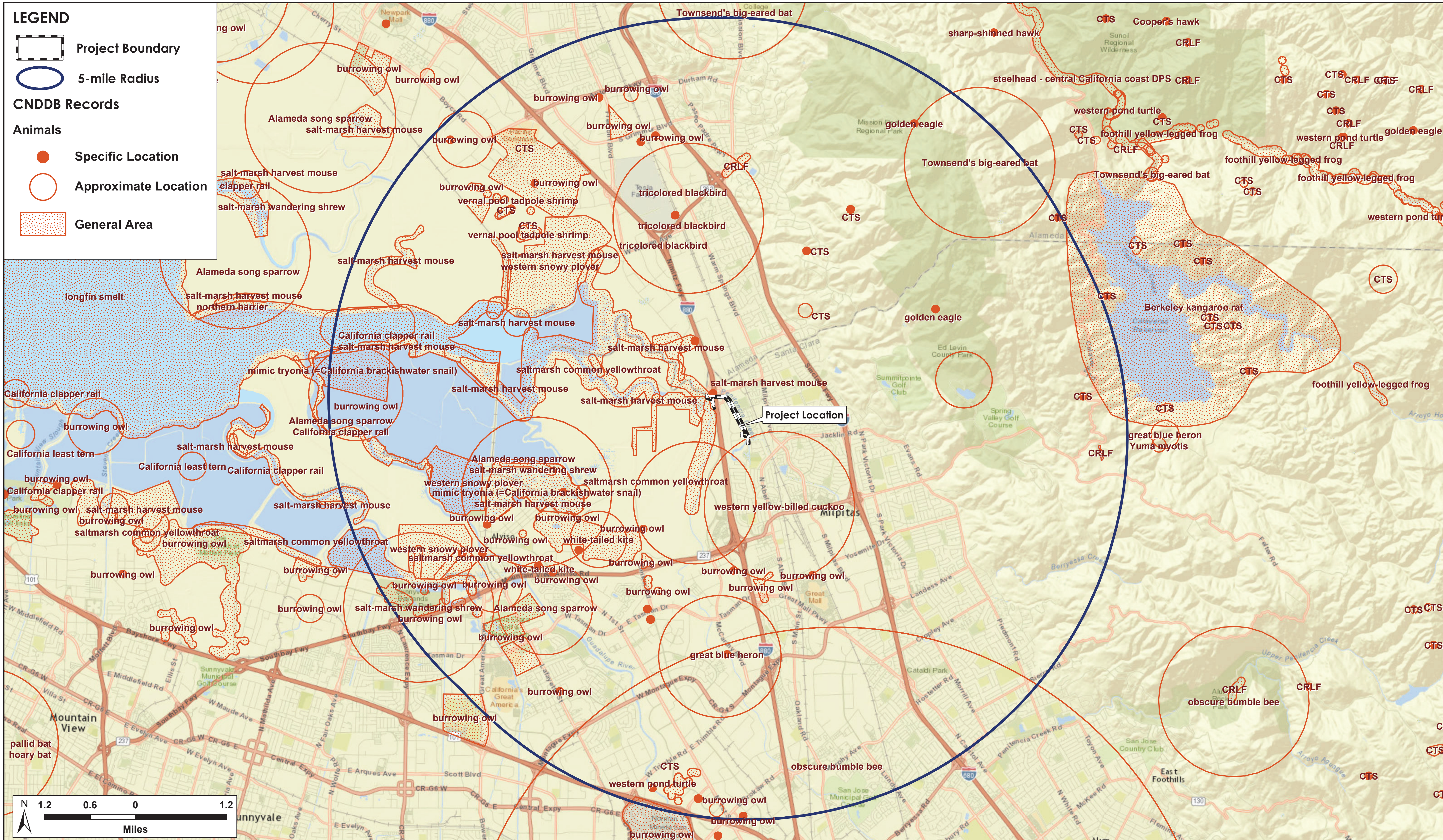

Source: H.T. Harvey 2017

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Figure 3.4-3. CNDDB Records for Animals

Lower Penitencia Creek Improvements Project

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Table 3.4-2. Special-Status Plant and Animal Species Known to Occur within the Vicinity of the Project Area

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	General Habitat	Potential to Occur in the Project Area
Federally Listed and State-listed Species						
Acipenser medirostris	green sturgeon	FT	CSSC	--	Spawns in large river systems such as the Sacramento River; forages in nearshore oceanic waters, bays, and estuaries.	**Absent.** Known to occur in San Francisco Bay, although it apparently occurs only as a rare, nonbreeding visitor in the South Bay and has not been recorded with certainty in Santa Clara County. This species is not expected to occur in Lower Penitencia Creek due to its highly modified nature and lack of suitable spawning conditions, and due to its distance from open waters of San Francisco Bay. Designated critical habitat for this species (NMFS 2009), which includes all tidally influenced areas of San Francisco Bay, San Pablo Bay, and Suisun Bay up to the elevation of mean higher high water, does not extend to the project area. Along Coyote Creek/Coyote Slough, critical habitat does not extend upstream from a point approximately 600 feet downstream of the confluence of Lower Penitencia Creek and Coyote Creek. Thus, critical habitat is not present in the project area, and this species is not expected to occur in the project area.
Spirinchus thaleichthys	longfin smelt	--	ST, CSSC	--	Spawns in fresh water in the upper end of San Francisco Bay; occurs year-round in the South Bay.	**Absent as Breeder.** Fish sampling in Coyote Slough and the Island Ponds has detected the species only in January and March, suggesting that it may be absent during the summer (Hobbs et al. 2012). Species may be present in the tidal reaches of sloughs in the South Bay. Stray individuals could occur within the reach of Lower Penitencia Creek in the project area, which is tidally influenced, albeit likely infrequently and in small numbers (if at all), and only from late fall to early spring.
Oncorhynchus mykiss	Central California Coast steelhead	FT	--	--	Cool streams with suitable spawning habitat and conditions allowing migration between spawning and marine habitats. Steelhead usually cannot survive long in pools or streams with water temperatures above 70°F.	**Absent as Breeder.** The species has not been documented in the project area and suitable spawning habitat is not present anywhere in Lower Penitencia Creek. However, small numbers of stray, individual steelhead associated with spawning streams elsewhere in the South Bay could occasionally wander into the project area to forage. Because no suitable spawning habitat occurs within the project area or upstream, this species is not expected to spawn or occur regularly in Lower Penitencia Creek.
Ambystoma californiense	California tiger salamander	FT	ST	--	Vernal or temporary pools in annual grasslands or open woodlands.	**Absent.** Populations located on the valley floor have been extirpated due to habitat loss, and the species is now considered absent from most of the valley floor, including the project area and the surrounding vicinity (H. T. Harvey & Associates 1999a, 2011b; SCVWD 2011).
Rana draytonii	California red-legged frog	FT	CSSC	--	Streams, freshwater pools, and ponds with emergent or overhanging vegetation.	**Absent.** Populations located on the valley floor have been extirpated due to habitat loss and the introduction of predators such as non-native fishes and bullfrogs. The species is now considered absent from most of the valley floor, including the project area and the surrounding vicinity (H. T. Harvey & Associates 1997; SCVWD 2011).
Rallus obsoletus	California Ridgway's rail	FE, SE, SP	--	--	Salt marsh habitat dominated by pickleweed and cordgrass (*Spartina* spp.).	**Absent.** California Ridgway's rails typically nest in broad marshes with well-developed tidal channels (conditions that are absent from the project area). Suitable foraging habitat is also absent from the project area, and potential foraging habitat downstream of the project area (for several hundred yards) is marginal at best. Therefore, the California Ridgway's rail is not expected to occur in the project area.
Laterallus jamaicensis coturniculus	California black rail	--	ST, SP	--	Breeds in fresh, brackish, and tidal salt marsh.	**Absent.** The California black rail occurs in the South Bay primarily as a scarce winter visitor, although some birds have recently begun over summering and breeding in the Alviso area. Suitable foraging and nesting habitat is not present in the project area. Additionally, potential foraging habitat downstream of the project area (for several hundred yards) is marginal at best. Therefore, the California black rail is not expected to occur in the project area.
Charadrius alexandrinus nivosus	western snowy plover	FT	CSSC	--	Sandy beaches on marine and estuarine shores and salt pans in San Francisco Bay saline-managed ponds.	**Absent.** No suitable nesting or foraging habitat is present on or adjacent to the project area.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	General Habitat	Potential to Occur in the Project Area
Sterna antillarum browni	California least tern	FE	SE, SP	--	Nests along the coast on bare or sparsely vegetated, flat substrates. In the South Bay, nests in salt pans and on an old airport runway. Forages for fish in open waters.	**Absent.** The species does not nest in the project area, and no suitable roosting or foraging habitat is present on or adjacent to the project area.
Agelaius tricolor	tricolored blackbird	--	CSSC	--	Nests near fresh water in dense emergent vegetation.	**Absent as breeder.** The species typically nests in extensive stands of tall emergent herbaceous vegetation in non-tidal freshwater marshes and ponds, which are not present in the project area. Not known to nest in tidal habitats in the South Bay, and it has not been recorded nesting in the project area (Rottenborn 2007a). However, the species is known to forage adjacent to the project area during the nonbreeding season (Cornell Lab of Ornithology 2016) and could occur in the project area during the nonbreeding season.
Corynorhinus townsendii	Townsend's big-eared bat	--	SSC	--	Roosts in caves and mine tunnels, and occasionally in deep crevices in trees such as redwoods or in abandoned buildings, in a variety of habitats.	**Absent.** No known extant populations occur on the Santa Clara Valley floor, and no roosting habitat is present in the project area.
Reithrodontomys raviventris	salt marsh harvest mouse	FE	SE, SP	--	Salt marsh habitat dominated by common pickleweed.	**May Be Present.** Ostensibly suitable habitat for the salt marsh harvest mouse is present in the project area in the form of a small patch of pickleweed and alkali bulrush between North McCarthy Boulevard and I-880, a small patch of coastal brackish marsh between I-880 and Coyote Creek, and adjacent uplands dominated by ruderal grassland habitat. However, the species is unlikely to occur in the project area due to the limited extent of potential suitable habitat within the project boundaries; the low quality of such habitat (with only sparse and limited pickleweed and alkali bulrush); the isolation of potential habitat areas from larger expanses of more suitable habitat because of the presence of roads and unsuitable habitat; the location of the project site at the extreme periphery of the species' range; and the low probability that a viable population can be sustained at and very close to the site for all the reasons listed previously. Nevertheless, the potential for individuals to move occasionally through this portion of the project area cannot be excluded. The species is not expected to occur in any other portion of the project area (i.e., areas east of I-880) due to a lack of suitable habitat.
California Species of Special Concern						
Oncorhynchus tshawytscha	Central Valley fall-run Chinook salmon	--	CSSC	--	Cool rivers and large streams that reach the ocean and that have shallow, partly shaded pools, riffles, and runs.	**Absent as Breeder.** Chinook are not known to spawn in Lower Penitencia Creek, and suitable spawning habitat is absent from the project area. Occasional stray Chinook from Central Valley streams may occur in the project area as foragers, as they do in other South Bay streams. However, these stray individuals are expected to occur irregularly and in extremely low numbers, and do not represent a native run.
Rana boylii	foothill yellow-legged frog	--	~~CSSC~~SC	--	Partially shaded shallow streams and riffles with a rocky substrate. Occurs in a variety of habitats in Coast Ranges.	**Absent.** This species is absent from the valley floor and suitable habitat is not present in the project area. The species occurs in less urbanized areas of Santa Clara County but has disappeared from farmed and urbanized areas, as well as many of the perennial streams below major reservoirs (H. T. Harvey & Associates 1999b).
Actinemys marmorata	western pond turtle	--	CSSC	--	Permanent or nearly permanent water in a variety of habitats	**May Be Present.** Although breeding populations have been extirpated from most urbanized areas in the project region, individuals of this long-lived species still occur in urban streams and ponds in the Santa Clara Valley. It is possible that small numbers of western pond turtles occur in the project area, in which case nesting could potentially occur on the sides of the levees along Lower Penitencia Creek.
Circus cyaneus	northern harrier	--	CSSC (nesting)	--	Nests in marshes and moist fields; forages over open areas.	**Absent as Breeder.** Suitable nesting habitat is not present in the project area, although wintering or migrating individuals may occasionally forage in the project area.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	General Habitat	Potential to Occur in the Project Area
Asio flammeus	short-eared owl	--	CSSC (nesting)	--	Riparian bottomlands with tall, dense willows and cottonwood stands (also dense live oak and California Bay along upland streams); forages primarily in adjacent open areas.	**Absent.** Suitable nesting or foraging habitat for long-eared owls is not present in the project area. This species is a rare resident and occasional winter visitor in Santa Clara County (Noble 2007).
Asio otus	long-eared owl	--	CSSC (nesting)	--	Nests in marshes and moist fields; forages over open areas.	**Absent.** The long-eared owl has been recorded nesting in the project region only in the Palo Alto Flood Control Basin, although it has not been confirmed nesting there since the 1970s. Determined to be absent from the project area.
Athene cunicularia	burrowing owl	--	CSSC	--	Nests and roosts in open grasslands and ruderal habitats with suitable burrows, usually those made by California ground squirrels.	**Absent as Breeder.** Suitable nesting habitat is not present in the project area, and no burrowing owls, California ground squirrels, or their burrows were observed during site visits. However, dispersing or wintering individuals may occur in the project area as foragers, albeit irregularly and in very low numbers.
Lanius ludovicianus	loggerhead shrike	--	CSSC (nesting)	--	Nests in tall shrubs and dense trees; forages in grasslands, marshes, and ruderal habitats.	**Absent as Breeder.** Nests in locations in the region where open grassland, ruderal, or agricultural habitat with scattered brush, chaparral, or trees provide perches and nesting sites (Bousman 2007b), although populations seem to have declined in recent years as suitable habitat has been increasingly developed. No suitable nesting habitat exists in the project area; however, individuals may occasionally occur on the site as migrants or foragers. Because this species is only considered a species of special concern when nesting, it would not be considered a special-status species if it occurs on the project site as a migrant.
Setophaga petechia	yellow warbler	--	CSSC (nesting)	--	Nests in riparian woodlands.	**Absent as Breeder.** Prefers riparian corridors with adjacent open space (rather than in heavily developed areas) and an overstory of mature cottonwoods and sycamores, a mid-story of box elders and willows, and a substantial shrub understory (Bousman 2007c). No suitable nesting habitat exists in the project area, but this species occurs as a migrant during the spring and fall. Because this species is only considered a species of special concern when nesting, it would not be considered a special-status species if it occurs on the project site as a migrant.
Geothlypis trichas sinuosa	San Francisco common yellowthroat	--	CSSC	--	Nests in herbaceous vegetation, usually in wetlands or moist floodplains.	**Present.** During the June 2015 site visit, singing male common yellowthroats were observed in the lowermost reaches of the project area and suitable marsh nesting habitat is present in these areas. Common yellowthroats nesting in the project area are the special-status subspecies *sinuosa* (San Francisco Bay Bird Observatory 2012). The greatest proportion of nesting records in the region occur within brackish and freshwater marshes near the edge of the Bay and in early-successional riparian habitat in broader floodplains (Bousman 2007d). Nests are typically located in extensive stands of bulrushes in brackish marshes and dense cattail beds in freshwater marshes, but the species also nests in forbs in riparian habitats.
Melospiza melodia pusillula	Alameda song sparrow	--	CSSC	--	Nests in salt marsh, primarily in marsh gumplant (*Grindelia stricta*) and cordgrass along channels.	**May Be Present.** During the June 2015 site visit, singing male song sparrows were observed in Reach 1 of the project area and suitable marsh nesting habitat is present in this reach. The *pusillula* subspecies of song sparrow is endemic to the Central and South Bay. In the project area, this subspecies occurs in the taller vegetation found along tidal sloughs. The location of the interface between populations of the Alameda song sparrow (*pusillula*) and the common race that breeds in freshwater riparian habitats in the region (*gouldii*) is not definitive due to difficulties distinguishing these subspecies in the field, and thus it is unknown whether the individuals observed on the site are of the subspecies *pusillula*, represent *gouldii*, or are intergrades between the two.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	General Habitat	Potential to Occur in the Project Area
Passerculus sandwichensis alaudinus	Bryant's savannah sparrow	--	CSSC	--	Nests in pickleweed-dominant salt marsh and adjacent ruderal habitat.	**Absent as Breeder.** This species is not expected to nest in the project area due to a lack of suitable habitat. In the South Bay, the Bryant's savannah sparrow nests primarily in short pickleweed-dominated portions of diked/muted tidal salt marsh habitat and in adjacent ruderal habitats (Rottenborn 2007b). There is only a small contiguous patch of pickleweed in the project area, and no savannah sparrows were observed during the June 2015 site visit. During the nonbreeding season, *alaudinus* and other savannah sparrow subspecies may forage in open areas on or adjacent to the project area.
Sorex vagrans halicoetes	salt marsh wandering shrew	--	CSSC	--	Medium to high marsh with abundant driftwood and common pickleweed.	**Absent.** Formerly more widely distributed in the San Francisco Bay Area, this small insectivorous mammal is now confined to salt marshes of the South Bay (Findley 1955). Salt marsh wandering shrews occur most often in medium to high wet tidal marsh (6 -8 feet above sea level) with abundant driftwood and other debris for cover (Shellhammer 2000). A small patch of pickleweed and alkali bulrush is located between North McCarthy Boulevard and I-880, but the lack of driftwood and other debris in this pickleweed patch makes the habitat unsuitable.
Antrozous pallidus	pallid bat	--	CSSC	--	Forages over many habitats; roosts in caves, rock outcrops, buildings, and hollow trees.	**Absent as Breeder.** This species has been extirpated as a breeder from urban areas close to the Bay, including the project area. Furthermore, there is a low probability that the species occurs in the project vicinity due to urbanization, although individuals from more remote locations could potentially forage within the project area over open habitats on rare occasions. Cliff swallow nests, which can be used as roosting sites by pallid bats, were present on all four bridges, and the North McCarthy Boulevard bridge contains crevices that could also serve as roosting habitat. However, if the species roosts on the site, it is expected to do so only as a nonbreeder and in small numbers.
Lasiurus blossevillii	western red bat	--	CSSC	--	Roosts in foliage in forest or woodlands, especially in or near riparian habitat.	**Absent as Breeder.** Occurs as a migrant and winter resident but does not breed in the project region. Small numbers may occasionally be present in the project area as a migrant and winter resident, roosting in the foliage of trees virtually anywhere in the project area.
Neotoma fuscipes annectens	San Francisco dusky-footed woodrat	--	CSSC	--	Nests in a variety of habitats, including riparian areas, oak woodlands, and scrub.	**Absent.** Currently, with the exception of records along Coyote Creek and along the edges of the Central Valley, San Francisco dusky-footed woodrats are not known to occur in the more urbanized portions of Santa Clara County (H. T. Harvey & Associates 2010). Furthermore, no woodrats or woodrat nests were observed in the project area during the June 2015 focused survey. Thus, this species is determined to be absent from the project area.
California Rare Plant Rank and State Fully Protected Species						
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	--	--	CRPR 1B.1	Occurs in valley and foothill grassland habitat, floodplains, and swales, particularly those with alkaline substrates, and in disturbed areas with non-native grasses. Variable blooming period extends from May through November.	**May Be Present.** Ruderal grasslands in the project area are considered marginal habitat for this species because the site is underlain by soils in the Urbanland series that may be saline, but are not generally considered alkaline.
Elanus leucurus	white-tailed kite	--	SP	--	Nests in tall shrubs and trees; forages in grasslands, marshes, and ruderal habitats.	**Absent as Breeder.** Suitable nesting habitat is not present in the project area or the adjacent urbanized landscape to the east. However, suitable foraging habitat is present and the species is known to nest along the northern edge of Santa Clara County in open areas edging San Francisco Bay (Mammoser 2007). There are also a number of records from wetlands adjacent to the Bay west of the project area (Cornell Lab of Ornithology 2016). Thus, individuals may occur in the project area as foragers.
Aquila chrysaetos	golden eagle	--	SP	--	Breeds on cliffs or in large trees (rarely on electrical towers); forages in open areas.	**Absent as Breeder.** Suitable nesting habitat is not present in the project area. This species is expected to forage in open habitats within and adjacent to the project area only infrequently, based on the limited number of occurrences recorded in this area by birders (Cornell Lab of Ornithology 2016).

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	General Habitat	Potential to Occur in the Project Area
Falco peregrinus anatum	American peregrine falcon	--	SP	--	Forages in many habitats; nests on cliffs and tall bridges and buildings.	**Absent as Breeder.** Peregrine falcons are expected to occur as occasional foragers within the project area, but there is no suitable nesting habitat present. This species is known to nest on Mission Peak and in downtown San Jose.

*** List of Abbreviations for Federal and State Species-Status:**

FE = Federally listed as endangered
FT = Federally listed as threatened
SE = State listed as endangered
ST = State listed as threatened
SC = State candidate for listing
SP = State fully protected
CSSC = State species of special concern; "Nesting" indicates that only nesting birds are protected under this status.
CRPR = California Rare Plant Rank
1B = plants are considered rare, threatened, or endangered in California and elsewhere.
0.1 Seriously threatened in California (more than 80 percent of occurrences threatened/high degree and immediacy of threat)

Sources: *Complete information provided in Appendices E and F. Additional sources used to compile Table 3.4-2 include: SCVWD 2012; H.T. Harvey & Associates 1996a, 1996b, 2011a, 2011b, 2012, and 2016.*

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Sensitive Natural Communities

CDFW determines the level of rarity and imperilment of vegetation types and tracks sensitive communities in the CNDDB (2016). In addition to tracking sensitive natural communities, CDFW also ranks vegetation alliances, defined by repeating patterns of plants across a landscape that reflect climate, soil, water, disturbance, and other environmental factors (Sawyer et al. 2009). Global rankings of natural communities and vegetation alliances reflect the overall condition (rarity and endangerment) of a habitat throughout its range, whereas state rankings are a reflection of conditions within California. The sensitivity of natural communities and vegetation alliances are then defined by NatureServe (2015) based on the number of occurrences and extent of the community.

CDFW Natural Communities of Special Concern and CDFW Sensitive Vegetation Alliances determined to occur in the project area are described below.

CDFW Natural Communities of Special Concern. A query of natural communities of special concern in the CNDDB (2016) identified northern coastal salt marsh as occurring within the nine 7.5-minute USGS quadrangles containing or surrounding the project area. However, northern coastal salt marsh was determined to be absent from the project area. This determination was based on the following evidence. As discussed above, Lower Penitencia Creek is a perennial stream with full tidal influence for the entire project alignment. H. T. Harvey & Associates classified the in-stream wetlands in the project area as coastal brackish marsh because they were a monoculture of California tule (genera *Schoenoplectus*), which is not listed as occurring in northern coastal salt marsh by either Holland (1986) or VegCAMP (CDFG 2010). Although the other wetland habitat type in the project area is underlain by saline soil and supports wetlands dominated by halophytic species, such as Pacific pickleweed and alkali bulrush, the area in which these species occur is cut off from tidal influence by the levee that encloses the southern bank of Lower Penitencia Creek. As such, this habitat type was characterized as non-tidal seasonal saline wetland (Figure 3.4-1). Furthermore, this area occurs outside of the margin of historical sloughs of the San Francisco Bay.

As described above, CDFW also considers streams and riparian habitat as sensitive. Along Lower Penitencia Creek within the project area, the CDFW may consider areas below the top of bank as sensitive. In areas where the tree canopy in willow riparian woodland extends above the top of bank, the landward canopy edge demarcates the lateral limit of CDFW-jurisdictional sensitive riparian habitat. However, a non-tidal, concrete-lined ditch excavated in uplands between North McCarthy Boulevard and I-880 is not considered a sensitive habitat type. Although it has developed some patches of low-quality wetland vegetation near Reach 1 because of artificial hydrology inputs such as collection of road runoff, this artificial feature does not have a connection to groundwater or a regular connection to surface water, does not provide special or high-quality wetland functions or values, and is not likely to be considered jurisdictional (Appendix D).

CDFW Sensitive Vegetation Alliances. Several sensitive vegetation alliances occur in the project area based on the dominant species present in willow riparian woodland and non-tidal seasonal saline wetland habitats. Sensitive vegetation alliances present in the project area are the Red Willow Thickets Alliance, Pickleweed Mats Alliance, Salt Marsh Bulrush Alliance, Alkali Heath Marsh Alliance, and the Creeping Ryegrass Turf Alliance.

Protected Trees

As described above, a substantial number of trees exist in the project area (more than 50 individual trees). About 36 trees within the project area are of sufficient diameter to be protected by the City of Milpitas tree ordinance. However, no trees in the project area have been designated as heritage trees by the City of Milpitas (D. Gordillo, pers. comm.).

3.4.4 Impact Analysis

Methodology

The primary adverse effects on biological resources of the proposed project would occur during project construction and the period immediately following construction. Aside from periodic visual inspections of the newly installed floodwalls and headwalls, maintenance activities would be mostly the same as those that currently take place under the SMP. Because the effects of SMP activities are covered in the SMP EIR (SCVWD 2012), the impact analysis does not address such effects in this section.

Impacts (Figure 3.4-4) on biological resources due to the proposed project were systematically evaluated at the project level. These impacts were first evaluated to qualitatively describe how proposed project activities could impact biological resources, and whether impacts would be temporary (i.e., occurring during project construction activities and the period immediately following these activities) or permanent. The impact analysis accounts for District BMPs, which are identified in Chapter 2, *Project Description*. For project impacts that would be significant, feasible mitigation measures are identified, and the significance of the impacts was evaluated to determine if mitigation measures would reduce impacts to a less-than-significant level.

Biological resources would be affected not only by project-related construction activities but also, in a few cases, by mitigation measures. The net effect of these mitigation measures would be beneficial. However, in a few cases, adverse effects on the physical environment may occur during implementation of these measures. For example, although relocation of western pond turtles from work areas may be necessary to avoid mortality of those individuals, some stress on these individuals may occur during relocation. As a result, the effects of BMPs and mitigation measures were also analyzed, where appropriate.

Criteria for Determining Significance

The proposed project would result in a significant impact on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW and USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW and USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

- 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;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Impact Summary

Table 3.4-3 summarizes biological resources impacts of the proposed project.

Table 3.4-3. Summary of Impacts Biological Resources

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance after Mitigation
BIO-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service	S	Mitigation Measures BIO-1 BIO 13	LM
BIO-1a: Impacts on longfin smelt and steelhead	S	Mitigation Measure BIO-1	LM
BIO-1b: Impacts on essential fish habitat	LS	N/A	LS
BIO-1c: Impacts on western pond turtles	S	BIO-2	LM
BIO-1d: Impacts on burrowing owls	LS	None	LS
BIO-1e: Impacts on the Alameda song sparrow and San Francisco common yellowthroat	S	Mitigation Measures BIO-3 and BIO-4	LM
BIO-1f: Impacts on non-nesting special-status birds	LS	None	LS
BIO-1g: Impacts on salt marsh harvest mouse	S	Mitigation Measures BIO 5 BIO-8	LM
BIO-1h: Impacts on special-status bats	LS	None	LS
BIO-1i: Impacts on Congdon's tarplant	S	Mitigation Measures BIO-9 and BIO-10	LM
BIO-1j: Introduction of invasive species	S	Mitigation Measures BIO-11 and BIO-12	LM
BIO-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by	LS	None	LS

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance after Mitigation
the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service			
BIO-3: 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.), waters of the U.S., and waters of the state through direct removal, filling, hydrological interruption, or other means	S	Mitigation Measure BIO-13	LM
BIO-4: 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	LS	None	LS
BIO-5: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance	NI	None	NI
BIO-6: Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan	NI	None	NI

LM = Less than Significant with Mitigation; LS = Less than Significant; S = Significant; NI = No Impact

Environmental Impacts

Impact BIO-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service (Less than Significant with Mitigation)

The following impact analysis describes the project’s adverse effects on special-status species. The analysis is organized by sub-topics and species type. This impact analysis is based on the information included in Table 3.2-4. Species listed in Table 3.2-4 as absent from the project area are not analyzed in this section as they would not be affected by the proposed project. All species listed in Table 3.2-4 as present, may be present, or absent as breeders could potentially be affected by the project and are analyzed in this section, except three bird species which have special status only when nesting and would not be expected to nest at the project site. Those three bird species are the Northern harrier, loggerhead shrike, and yellow warbler.

Impact BIO-1a: Impacts on longfin smelt and steelhead (Less than Significant with Mitigation)

During project construction, longfin smelt (state listed as threatened) and Central California Coast steelhead (federally listed as threatened) could potentially occur, albeit infrequently and in low numbers, in the reach of Lower Penitencia Creek within the project boundary. Neither of these species is expected to spawn in the project area; however, small numbers of these species may occasionally stray into the project area.

The proposed project would not result in the permanent loss of aquatic habitat for fish. However, levee modification and bench excavation in Reach 1 and construction of the new headwalls for the San Andreas Drive bridge in Reach 4 would require temporary dewatering of the affected portions of the channel. In addition, short sections of the secondary channel in Reach 3 would require dewatering to allow construction vehicles to access Staging Area B by means of existing concrete ramps. Further, depending on the layout of equipment needed to construct floodwalls on the south bank of Reach 2 and both banks of Reach 3, it may be necessary to dewater the entire length of Reaches 2 and 3 during construction of the floodwalls. As shown in **Figure 3.4-4**, up to approximately ~~9.71 acres of aquatic habitat, including~~ 0.87 acre of coastal brackish marsh and 8.84 acres of tidal aquatic habitat~~,~~ would be temporarily affected as a result of dewatering. **Table 3.4-4** summarizes temporary and permanent habitat impacts that would occur in the project area.

Table 3.4-4. Temporary and Permanent Habitat Impacts in the Project Area

Habitat	Impacts (acres)	
	Temporary	**Permanent**
Tidal aquatic (open water)	8.84	0.01
Willow riparian woodland	1.93	<0.01
*Wetlands**		
Coastal brackish marsh	0.87	<0.01
Non-tidal seasonal saline wetland	0.03	0.13
Other		
Ruderal grassland	5.82	0.65
Developed/Landscaped	5.35	0.20
Total	***22.85***	***0.98***

*0.08 acre of the permanent impact on wetlands results from conversion of non-tidal seasonal saline wetland to coastal brackish marsh (i.e., a permanent change in wetland type but not the overall amount of wetlands on the site).

Source: H.T. Harvey 2017

Figure 3.4-4. Habitat Impacts Map

Prepared by:
Horizon WATER and ENVIRONMENT

Lower Penitencia Creek Improvements Project

In-channel construction activities, including channel dewatering, would be limited to the dry season (i.e., June 15 through October 15) to reduce the potential for longfin smelt and steelhead to be present in the project area when these activities are undertaken. Nevertheless, if individuals of either species were to occur in the reaches to be dewatered, dewatering activities could result in injury or mortality of individuals due to degraded water quality, temporary blockage of migration, stranding in isolated pools, and desiccation. Construction activities may also necessitate the operation of heavy equipment within the streambed (after dewatering). Movement of heavy equipment may compact the substrate, potentially killing benthic invertebrates (which may serve as prey for fish), embedding gravel within finer sediments, and otherwise altering habitat for fish and their prey.

The loss of instream cover, such as vegetation, due to dewatering may adversely affect fish as a result of increased predation caused by a decrease in the availability of escape cover and the alteration of local hydraulics (e.g., increasing water velocity) (Stillwater Sciences 2006), and the loss of refugia during high flows. Vegetation removal also would result in the loss of substrate used by various fish for foraging. However, Lower Penitencia Creek provides relatively low-quality habitat for fish species due to its channelized nature, the lack of high-quality habitat complexity, and regular disturbance of habitats due to frequent maintenance. Thus, the loss of instream cover and habitat is expected to have a less substantial impact on fish than would similar activities on a naturally formed stream.

Furthermore, this habitat is expected to reestablish rapidly following the completion of construction activities. The Instream Wetland Vegetation Regrowth Study (Rankin and Hillman 2000) found 65 percent and 98 percent average regrowth within 1 and 2 years, respectively, after 1997 sediment removal at six non-tidal freshwater study sites. Average regrowth on two tidal study sites was less, at 21 percent and 29 percent after 1 and 2 years, respectively. Regrowth study results on four additional 1998 sediment removal sites found that after 1 year, those sites supported more non-tidal wetland than was present before sediment removal and almost 70 percent of the tidal wetland that was present before sediment removal. Thus, project activities, which would occur at the upper end of tidal influence, are not expected to result in a substantial long-term change in the amount or suitability of aquatic habitat available to steelhead and longfin smelt.

During floodwall installation activities, excavating and replacing soil for the footings, stabilizing, and loss of vegetation on channel banks may result in an increase in erosion and sedimentation. Streambank erosion is a natural process that can be beneficial to fish by providing a source of gravel necessary for high-quality habitat. However, when natural levels of erosion are exceeded, increases in turbidity and sediment input may cause stress on fish because of feeding difficulties or displacement. Additionally, minor spills of petrochemicals, hydraulic fluids, and solvents may occur during vehicle and equipment refueling or because of leaks, adversely affecting water quality and potentially killing or injuring fish. Implementation of District BMPs HM-7, and HM-10 would prevent vehicle cleaning from occurring in the creek channel and minimize the potential for impacts to water due to release of pollutants into the creek water. BMPs WQ-1 through WQ-9 and HM-8would be implemented to minimize the amount of in-channel construction activity, use appropriate equipment in the creek bed, ensure proper maintenance and operation of pumps, stage and stockpile materials where they will not contribute pollutants to the creek stabilize vehicles entrances to prevent eroded soil from washing into the creek, isolate concrete from creek water until it is fully cured, isolate work areas from tidal flows, and reseed disturbed areas to prevent soil erosion, maintain clean conditions at the construction area, and prevent discharge of oily, greasy, or turbid water to the creek. BMPS BI-3, WQ-11, WQ-15, and WQ-16 would protect water quality by ensuring temporary fill is removed from the construction area when no longer necessary. Construction areas are maintained in a clean condition, water discharges meet turbidity thresholds, and measures are implemented during construction (e.g. silt fences. Straw bales, erosion control mats) to prevent stormwater from eroding soils and washing it into the creek channel. BMPS BI-8 requires that local ecotypes be planted at disturbed areas after construction is complete to stabilize those areas and prevent soil erosion. These measures will minimize the release or pollutants to creek waters; thereby protecting water quality of the aquatic habitat.

The construction of floodwalls would require the installation of sheet piles. Sounds generated by pile driving have the potential to affect fish in several ways, ranging from the alteration of behavior to physical injury or mortality, depending on the intensity and characteristics of the sound, the distance and location of the fish in the channel relative to the sound source, and the size and species of fish involved (Yelverton et al. 1975 as cited in Hastings and Popper 2005; ICF Jones & Stokes and Illingworth and Rodkin Inc. 2009). However, the proposed project's use of a Giken silent piler would reduce effects of pile driving to levels that are not expected to cause injury or mortality of fish.

Although longfin smelt and steelhead are expected to occur infrequently and in low numbers, if at all, in the project area, the proposed project activities described above could affect the primary constituent elements involving estuarine water quality and juvenile and adult foraging habitat for Central California Coast steelhead within these waters. However, such habitat is expected to contribute little to Central California Coast steelhead survival and recovery, given the infrequency with which these species might occur in the project area.

As described above, implementation of District BI-3, BI-8, HM-7, HM-8, HM-10, WQ-1 through WQ-9, WQ-11, WQ-15, and WQ-16 would minimize changes in water quality by avoiding routine use of vehicles and equipment in Lower Penitencia Creek between January 1 and June 15, when anadromous fish are most likely to be present; reduce erosion; control sediment; and prevent spills. BMP BI-8 requires use of local ecotypes in revegetation to provide erosion protection and promote habitat restoration and enhancement. By implementing these BMPs, impacts on longfin smelt and steelhead would be minimized. Nevertheless, the proposed project could result in residual impacts on these species because complete avoidance of individuals may not be accomplished while still meeting the proposed project goals. As a result, impacts on special-status fish are conservatively considered significant for purpose of this analysis. Mitigation Measure BIO-1 would be applied to address this impact.

Mitigation Measures

Mitigation Measure BIO-1: Exclude Fish Prior to Dewatering Activities

Prior to conducting dewatering activities, ~~the District will hire~~ a qualified biologist ~~who~~ will use nets to exclude fish from the construction area. During a falling tide, a block net will be placed at the upper end of the reach to be dewatered. Subsequently, qualified biologists will walk from the upper to lower end of the reach with a seine stretched across the channel to encourage fish to move out of the construction area. When the lower end of the construction area is reached, a second block net will be installed to isolate the construction reach. This procedure will be repeated a minimum of three times on each dewatered reach to ensure that no longfin smelt or steelhead remain in the construction area. Mesh size will not exceed 9.5 millimeters to ensure that longfin smelt are adequately excluded from this area.

Significance After Mitigation

Implementation of **Mitigation Measure BIO-1** would exclude fish from the project area before dewatering begins, thereby minimizing the loss of individual longfin smelt and steelhead. Note that implementation of Mitigation Measure BIO-1 may result in an increased concentration of fish immediately downstream of the project area. Thus, some potential would exist for changes in densities of predators or competitors to result in increased stress, injury, or mortality of individual longfin smelt or steelhead. However, the benefits of the mitigation measure would far outweigh the loss of individuals that would occur if fish were not excluded from the project area prior to dewatering. Further, the use of nets to exclude fish from the construction area does not result in entrapment or physical handling of fish. Rather, this approach simply encourages fish to move out of the project's dewatering area on their own without allowing them to re-enter. As a result, this mitigation measure is not expected to result in the take of steelhead or longfin smelt. For the reasons described above, Mitigation Measure BIO-1 would reduce this impact to less than significant with mitigation.

Impact BIO-1b: Impacts on essential fish habitat (Less than Significant)

As noted in Section 3.4.2, "Regulatory Setting," the Chinook salmon, which is regulated by the Pacific Fishery Management Council's Pacific Coast Salmon FMP (Pacific Fishery Management Council 1999) and designated as a California species of special concern, may occur irregularly in the project area. Although Chinook salmon in the project area have been recognized as strays from hatchery releases (NMFS 1999; Hedgecock 2002), NMFS still considers habitat used by Chinook salmon in the South Bay as EFH. Thus, the reach of Lower Penitencia Creek within the project boundaries could be considered EFH associated with the Pacific Coast Salmon FMP.

Several fish species regulated by the Pacific Groundfish FMP (Pacific Fishery Management Council 2008), such as the leopard shark, English sole, starry flounder, and big skate, occur in tidal habitats of South San Francisco Bay and occasionally disperse upstream into the reaches of Lower Penitencia Creek. Fish regulated by the Coastal Pelagics FMP (Pacific Fishery Management Council 1998), such as the northern anchovy, Pacific sardine, and jack mackerel, also occur in the South Bay, and they could possibly occur in the project area. Because of the presence of at least some species managed by one of these plans, Lower Penitencia Creek within the project boundaries is considered EFH associated with the Pacific Groundfish and Coastal Pelagics FMPs.

The types of effects that project activities could have on these species and the associated EFH that would support them are the same as those described above in Impact BIO-1a. Accordingly, project activities would have limited effects on potential EFH, but such impacts may occur because of in-channel activities associated with levee relocation and bench excavation, as well as associated dewatering activities. During such activities, turbidity may increase, potentially affecting the health or foraging ability of fish in tidal waters. Due to the location of the proposed project at the extreme upper end of tidal influence, abundance of FMP-managed species is expected to be low, and the project area is expected to contribute relatively little to regional populations of such species.

Implementation of District BMPs HM-7, and HM-10 would prevent vehicle cleaning from occurring in the creek channel and minimize the potential for impacts to water due to release of pollutants into the creek water. BMPs WQ-1 through WQ-9 will be implemented to minimize the amount of in-channel construction activity, use appropriate equipment in the creek bed, ensure proper maintenance and operation of pumps, stage and stockpile materials where they will not contribute pollutants to the creek stabilize vehicles entrances to prevent eroded soil from washing into the creek, isolate concrete from creek water until it is fully cured, isolate work areas from tidal flows, and reseed disturbed areas to prevent soil erosion, maintain clean conditions at the construction area, and prevent discharge of oily, greasy, or turbid water to the creek. These measures will minimize the release or pollutants to creek waters; thereby protecting water quality of the aquatic habitat. District BMPs BI-2, BI-3, and BI-8 would minimize changes in water quality by avoiding routine use of vehicles and equipment in Lower Penitencia Creek between January 1 and June 15, when anadromous fish are most likely to be present; reduce erosion; control sediment; and prevent spills. Measure BI-8 requires use of local ecotypes in revegetation to provide erosion protection and promote habitat restoration and enhancement. Due to the limited extent of impacts on tidal waters that could serve as EFH, the loss of EFH and associated effects on fish species regulated by FMPs would be very low. Implementation of District BMPs would reduce impacts on EFH and associated fish species considerably. With implementation of these District BMPs, the proposed project would affect only a very small proportion of EFH and associated species in South San Francisco Bay, and thus the project would not have a substantial effect on these resources. Therefore, project impacts on EFH are considered less than significant.

Impact BIO-1c: Impacts on western pond turtles (Less than Significant with Mitigation)

Suitable habitat for the western pond turtle, a California species of special concern, consists of ponds or instream pools (i.e., slack water environments) with available basking sites, nearby upland areas with clay or silty soils for nesting, and shallow aquatic habitat with emergent vegetation and invertebrate prey for juveniles (Jennings and Hayes 1994). Individuals of this long-lived species still occur in urban streams and ponds in the Santa Clara Valley, and it is possible that small numbers of western pond turtles occur in the project area. If so, it is possible that they could nest in small numbers on the adjacent levees.

Project construction may affect aquatic habitat used by western pond turtles for foraging or dispersal, upland habitat used for nesting, and/or individuals. For example, individual turtles or their eggs may be harmed or killed during project activities due to crushing by construction personnel or equipment, or as a result of desiccation or burying (e.g., during levee relocation or bench excavation). Nests present in the project area may be inadvertently crushed by construction equipment or personnel, or buried during the movement or placement of materials or fill. In addition, petrochemicals, hydraulic fluids, and solvents that were spilled or leaked from vehicles or equipment may kill individuals at any life stage. Any of these effects would be a significant impact. Implementation of District BMPs BI-3, BI-8, HM-7, HM-8, HM-10, WQ-1 through WQ-9, WQ-11, WQ-15, and WQ-16 would minimize impacts on western pond turtles during project construction by minimizing the potential for water quality degradation that could impact the species. Implementation of District BMPs HM-7, HM-8 and HM-10 would prevent vehicle cleaning from occurring in the creek channel and minimize the potential for impacts to water due to release of pollutants into the creek water. BMPs WQ-1 through WQ-9 will be implemented to minimize the amount of in-channel construction activity, use appropriate equipment in the creek bed, ensure proper maintenance and operation of pumps, stage and stockpile materials where they will not contribute pollutants to the creek stabilize vehicles entrances to prevent eroded soil from washing into the creek, isolate concrete from creek water until it is fully cured, isolate work areas from tidal flows, and reseed disturbed areas to prevent soil erosion, maintain clean conditions at the construction area, and prevent discharge of oily, greasy, or turbid water to the creek.. These measures will minimize the release or pollutants to creek waters; thereby protecting water quality of the aquatic habitat. Measure BI-8 requires use of local ecotypes in revegetation to provide erosion protection and promote habitat restoration and enhancement.

District BMP BI-10 would also reduce the potential for entrapment and predation of turtles in work areas. However, should construction activities occur when turtles are present, injury or mortality of individuals could result. Although western pond turtles are found throughout the project region, the species is not particularly abundant and young turtles are seen in relatively few parts of the project region. This suggests that the population may decline substantially in the near future because turtles are not reproducing at a sufficient rate to replace the adult turtles that are reaching the end of their life span. Therefore, construction-related impacts on individual western pond turtles could have a significant impact on the local population and are considered significant.

The proposed project would not result in the permanent loss of aquatic habitat for turtles. However, up to 9.71 acres of aquatic and brackish marsh habitat that provides potential foraging habitat for turtles would be temporarily affected due to levee relocation, bench excavation, and dewatering activities. Western pond turtles are expected to use this habitat only infrequently and in small numbers because breeding populations have been extirpated from most urbanized areas in the project region. Given the abundance of suitable aquatic habitat in the project vicinity, the temporary loss of aquatic habitat because of the proposed project is not expected to result in a substantial adverse effect on the western pond turtle population in the project area and would be a less than significant impact.

Up to 7.75 acres of ruderal grassland and willow riparian woodland that could potentially be used by small numbers of turtles for dispersal and nesting may be temporarily disturbed by project construction activities. In addition, up to 0.29 acres of ruderal grassland would be permanently converted to coastal brackish marsh and small areas of ruderal grassland would be converted to developed habitat. The coastal brackish marsh would have greater habitat value for WPT than the replaced ruderal grassland. The temporary loss of upland dispersal and nesting habitat for pond turtles is not expected to have a substantial adverse effect, as this habitat is expected to be used only infrequently by small numbers of turtles, and would be a less than significant impact.

Dewatering during construction would temporarily restrict in-channel movement by western pond turtles. However, the area affected is relatively small and limitations to turtle movement would be short-lived, lasting for up to four months at portions of the construction area. This impact would be less than significant.

In addition, floodwall construction could create barriers to dispersal of turtles, increasing their vulnerability to predation as they traverse the floodwalls when moving overland between habitats. Upstream from California Circle (i.e., Reaches 3 and 4), western pond turtles are not currently able to disperse overland between Lower Penitencia Creek and other waterbodies due to the barrier posed by the urban landscape along both sides of the channel. The new floodwall in Reach 2 on the south bank levee would not limit pond turtle overland movement as the adjacent California Circle stormwater pond and pump station are surrounded by chain-link fence, which acts as an existing barrier to the passage of turtles. Thus, newly installed floodwalls in Reach 2 would not adversely affect overland movement of western pond turtles. No floodwalls are proposed within Reach 1 and the proposed project would not affect western pond turtle dispersal between Reach 1 of Lower Penitencia Creek and Coyote Creek. Impacts of, the proposed project on overland movement by western pond turtles would be less than significant.

Mitigation Measures

Mitigation Measure BIO-2: Conduct Preconstruction Surveys for Western Pond Turtles and Relocate if Necessary

~~The District will hire a~~A qualified biologist ~~who~~ will conduct pre-construction surveys for western pond turtles and their nests If an adult or juvenile western pond turtle is found, project activities near the turtle will not commence until the individual has left the area, or is captured and relocated to suitable habitat outside of the activity area by a qualified biologist. If an active western pond turtle nest is detected within the construction area, a 25-foot buffer zone around the nest will be established and maintained during the nesting season (April 1 through August 31). The buffer zone will remain in place until the young have left the nest, as determined by a qualified biologist.

Significance After Mitigation

Implementation of Mitigation Measure BIO-2 would identify and relocate any western pond turtles present in the project area before the start of construction. Individuals that were relocated to suitable habitat outside of the work site may be subjected to physiological stress and face a greater risk of predation, or may undergo increased competition with turtles already present in the area to which they were relocated. However, the benefits of the mitigation measure would far outweigh the loss of individuals that would occur if turtles were not removed from the project area where construction would occur. The relocation of turtles from active construction areas is a commonly included mitigation measure for Bay Area projects and is a BMP in the Stream Maintenance Program Final Subsequent EIR (SCVWD 2011). This measure would minimize the potential for harm to or loss of individual western pond turtles and their nests and would reduce this impact to less than significant.

Impact BIO-1d: Impacts on burrowing owls (Less than Significant)

The burrowing owl, a California species of special concern, occurs year-round in the Santa Clara Valley (Trulio 2007) in open agricultural or grassland areas with active squirrel burrows. Albion Environmental (2009) previously assessed the impact of the District's proposed burrow management under the SMP on burrowing owls and found that District levees do not provide important burrowing owl nesting or roosting habitat (i.e., used regularly or by a sizeable proportion of the South San Francisco Bay population). Furthermore, no suitable breeding habitat (i.e., burrows) for the burrowing owl was detected within the project area during the reconnaissance survey, and previous surveys of the site have failed to find any burrowing owls at this location (EDAW 2008). Therefore, the burrowing owl is not expected to breed in the project area. Additionally, few ground squirrel burrows, which the owls prefer to use as nests, are present in the project are. Burrowing owls would occur in the project area only as foragers that roost elsewhere, if they occur at all. The proposed levee relocation in Reach 1 and the levee raising in Reach 4 would not significantly impact burrowing owls.

Burrowing owls seem to occur more widely in the South San Francisco Bay in winter than they do during the nesting season. For example, burrowing owls occur on Coyote Ridge and in Coyote Valley during winter, but they have not been recorded lingering into spring and summer to nest in those areas in recent years. This suggests that the amount of available wintering habitat for burrowing owls is not limiting the species' South San Francisco Bay populations.

The project would affect 6.63 acres of foraging habitat (i.e., ruderal grassland and non-tidal seasonal saline wetland) potentially used by wintering burrowing owls. Impacts include the conversion of small areas of ruderal grassland to developed habitat, the conversion of ~~0.05~~ 0.08 acre of non-tidal seasonal saline wetlands to tidal marsh, and the conversion of ~~0.45~~ 0.29 acre of ruderal grassland to tidal marsh. About 6 acres of foraging habitat would be disturbed during construction but would return to foraging habitat after the project is completed. These impacts are not expected to affect appreciably the regional populations of this species. In addition, implementation of District BMP BI-11 would further reduce impacts on burrowing owls as a result of project activities by removing trash from work areas and thereby reducing the attraction of burrowing owl predators to the area. For these reasons, this impact is considered less than significant.

Impact BIO-1e: Impacts on the Alameda song sparrow and San Francisco common yellowthroat (Less than Significant with Mitigation)

The Alameda song sparrow and San Francisco common yellowthroat (both California species of special concern) are associated with marsh habitats, and both are known to nest in the project area. These species are assessed together because the impacts of the proposed project on these species would be similar.

Heavy ground disturbance, noise, and vibrations caused by proposed floodwall construction, levee modifications, and bridge modification activities in the project area could disturb foraging or roosting individual Alameda song sparrows and San Francisco common yellowthroats and cause them to move away from work areas. Although adult birds are not expected to be killed or injured, as they could easily fly from the work site prior to such effects occurring, eggs or young in nests could be destroyed. In addition, project activities causing a substantial increase in noise, movement of equipment, or human presence near active nests could result in the abandonment of nests, and possibly the loss of eggs or young as a result, which would be a significant impact.

Increased human activity may affect the behavior of birds, causing them to avoid work sites and possibly exposing them to increased competition with other birds in the areas to which they dispersed and increased levels of predation caused by unfamiliarity with the new area. Increases in human concentration and activity associated with construction near suitable habitat also may result in an increase in native and non-native predators that would be attracted to trash left at the work site and a reduction in the quality of breeding or foraging habitat caused by the introduction of non-native vegetation. In addition, increased sedimentation or hazardous material spills from project activities may result in the temporary or permanent degradation of water quality and, hence, habitat quality in marsh habitats downstream.

The project is expected to result in temporary impacts on 0.87 acre of coastal brackish marsh, the highest quality habitat for the species in the project area. However, as described under Impact BIO-1a, this habitat is expected to rapidly reestablish following the completion of construction activities. Furthermore, a portion of the wetland bench in Reach 1 would be excavated down to an elevation that would experience tidal inundation and would be planted with salt-tolerant wetland vegetation to create tidal habitat. This would result in the creation of an additional 0.29 acre of brackish marsh habitat for the Alameda song sparrow and San Francisco common yellowthroat, a long-term benefit to these species.

Implementation of District BMPs BI-5 and BI-6 would reduce impacts on nests of Alameda song sparrows and San Francisco common yellowthroats due to construction-related disturbances. In addition, implementation of District BMP BI-11 would minimize the attraction of nest predators, which could harm nests of Alameda song sparrows and San Francisco common yellowthroats to the project area. Preconstruction nesting bird surveys implemented under District BMP BI-5 would likely identify active nests of all bird species prior to the start of project activities. In addition, deterrence measures may be used to prevent birds from nesting in the project area. However, District BMP BI-5 does not specify how long before the start of project activities the preconstruction survey for nesting birds must occur. If construction occurs during the nesting season and preconstruction nesting bird surveys are performed too far in advance of the onset of construction activities, active nests may be established in the period between the survey and the initiation of construction activities.

Similarly, if there is an extended break in construction activities at a site, active nests may become established in the project work area and subsequently be disturbed when project activities resume. Furthermore, although District BMP BI-5 states that no birds, nests with eggs, or nests with hatchlings would be disturbed, and it requires pre-construction surveys for active bird nests at the construction are and nearby land, it does not specify details of how the surveys would be performed and what areas would be surveyed. The loss of active nests of Alameda song sparrows or San Francisco common yellowthroats would be a significant impact because a relatively large number of breeding birds could be affected. This could result in a substantial effect on local and regional populations, which would be a significant impact.

Mitigation Measures

Mitigation Measure BIO-3: Conduct Preconstruction Surveys for Nesting Birds

~~The District will hire a~~A qualified biologist ~~who~~ will conduct preconstruction surveys for nesting birds. Surveys will be conducted no more than ~~2 weeks~~7 days prior to the initiation of construction activities during the nesting bird season (January 15 through August 31) in any given area. The survey will cover the portions of the project work area where construction activities will occur as well as a 250-foot buffer for raptors and a 50-foot buffer for non-raptors. During each survey, the biologist will inspect all trees and other potential nesting habitats (e.g., shrubs, ruderal grasslands, wetlands, and buildings) in and immediately adjacent to the impact areas for nests. If a lapse in project-related work of ~~2~~1 week~~s~~ or longer occurs, another focused survey will be conducted before project work can be reinitiated.

Mitigation Measure BIO-4: Implement Buffer Zones for Nesting Birds

If an active nest is found sufficiently close to the project work area (i.e., within 250 feet for raptors or 50 feet for non-raptors), a qualified biologist ~~hired by the District~~ will determine the extent of a disturbance-free buffer zone to be established around the nest (typically 50 feet for non-raptors and 250 feet for raptors). No construction activities will be performed within the buffer until the young have fledged or the nest has been determined to be inactive by a qualified biologist.

If the qualified biologist determines that a reduced buffer size is appropriate given conditions in the vicinity of the nest, type of construction activity that would occur near the nest, and the species of the nesting bird, the biologist will monitor bird behavior in relation to work activities. If the birds do not indicate that they are habituated to project activities during the initial 2 days of attempting work within a reduced buffer, the standard buffer will be implemented. Project activities within the reduced buffers will not resume until the District has consulted with CDFW and both the qualified biologist and CDFW confirm that the birds' behavior has normalized, or until the nest is no longer active.

Significance After Mitigation

With the implementation of **Mitigation Measures BIO-3 and BIO-4**, disturbance of the nests of Alameda song sparrows and San Francisco common yellowthroats would be avoided to the extent feasible, and this impact would be reduced to less than significant with mitigation.

Impact BIO-1f: Impacts on non-nesting special-status birds (Less than Significant)

Several special-status bird species occur in the project area as non-breeding migrants, transients, or foragers, but they are not known or expected to breed or occur in large numbers in the project area; these include Bryant's savannah sparrow, tricolored blackbird, white-tailed kite, golden eagle, and American peregrine falcon.

Bryant's savannah sparrow, a California species of special concern, is not expected to breed in the project area due to a lack of suitable breeding habitat; however, during the non-breeding season, individuals may forage in open areas throughout the project area. The tricolored blackbird, a California species of special concern, is not known to breed in tidal marshes in the South Bay and is not expected to occur in the project area as a breeder due to a lack of suitable habitat, but individuals may occur occasionally in the project area during migration. There are a number of occurrence records of the white-tailed kite, a fully protected species, from South Bay wetlands west of the project area, but suitable nesting habitat is not present in the project area or in the adjacent urbanized landscape to the east. Nevertheless, individuals may occasionally forage in the project area. Similarly, the golden eagle and American peregrine falcon, both fully protected species, are not expected to breed in the project area due to a lack of suitable nesting habitat. Individuals of these species may occasionally occur on the site while foraging, but are not expected to occur regularly.

The proposed project would have some potential to affect foraging habitats and/or individuals of these species. Construction activities associated with the proposed project might result in a temporary direct impact through the alteration of foraging patterns (e.g., avoidance of work sites because of increased noise and activity levels during construction activities) but would not result in the loss of individuals. Furthermore, the project area does not provide important foraging habitat used regularly or by large numbers of individuals of any of these species. Implementation of District BMP BI-11 would further reduce impacts on non-nesting special-status birds by minimizing attraction of predators. This impact would be less than significant.

Impact BIO-1g: Impacts on salt marsh harvest mouse (Less than Significant with Mitigation)

Habitat for salt marsh harvest mouse, a federally listed and state-listed endangered species and a state-designated fully protected species, consists of pickleweed-dominated areas of tidal marshes and diked and muted tidal marshes. Ostensibly suitable habitat for the salt marsh harvest mouse is present in the project area in the form of a small patch of pickleweed and alkali bulrush located between North McCarthy Boulevard and I-880 and a small patch of coastal brackish marsh located between I-880 and Coyote Creek. However, this habitat is located at the margins of the species' known occupied habitat around the Bay, and the species is unlikely to occur in the project area because of the limited extent of potentially suitable habitat within the project boundary, the low quality of such habitat (with only sparse and limited pickleweed and alkali bulrush), and the isolation of potential habitat areas from larger expanses of more suitable habitat due to the intervening presence of roads and unsuitable habitat. The species is not expected to occur in any other portion of the project area (i.e., areas upstream of I-880) due to a lack of suitable habitat.

Due to the size and quality of the habitat present, the project site does not provide sufficient habitat to support a sustained salt marsh harvest mouse population. Nevertheless, the potential for individuals to move occasionally through the portion of the project area west of I-880 cannot be excluded. During levee modification in Reach 1 and use of Staging Area A, if salt marsh harvest mice are present, they may be crushed or injured by personnel or equipment. Individuals that vacate the area because of increased levels of noise and disturbance might be exposed to increased competition from conspecifics already occupying the area to which they are displaced and to increased levels of predation because of unfamiliarity with the new area or lack of sufficient cover. Removal of vegetation might expose individual mice to predation. During construction, implementation of District BMPs BI-10 and BI-11 would reduce impacts on this species by avoiding entrapment of mice and minimizing predation.

In addition, levee relocation, staging area use, and dewatering activities would result in the loss of vegetated marsh, which would affect habitat for the harvest mouse. Construction activities would result in impacts on 0.74 acre of wetland habitat (i.e., coastal brackish marsh and non-tidal seasonal saline wetland within Reach 1 where the salt marsh harvest mouse could potentially occur) for the salt marsh harvest mouse. This 0.74 acre of impacted wetland habitat includes the conversion of 0.05 acre of seasonal saline wetland to ruderal grassland and the disturbance of 0.69 acre of wetland habitat within Reach 1 that would still provide potential salt marsh harvest mouse habitat after the project is completed. In addition, 1.26 acres of ruderal grasslands adjacent to potential salt marsh harvest mouse habitat in Reach 1 would be temporarily disturbed but would still provide habitat after the project is complete.

As described under Impact BIO-1a, instream coastal brackish marsh vegetation is expected to reestablish rapidly following the completion of construction activities, resulting in no long-term loss of habitat for the salt marsh harvest mouse. Further, after construction is complete, the newly created bench is expected to provide approximately 0.29 acre of additional tidal marsh habitat (i.e., conversion of ruderal grassland to tidal marsh) for the species as a result of the project.

Despite implementation of District BMPs BI-10 and BI-11 and the proposed creation of additional habitat through the wetland bench, if a transient mouse evades the exclusion fence and is seriously harmed or injured, or if the wetland bench does not successfully establish suitable salt marsh harvest mouse habitat, the impact would be significant.~~Although the proposed project would create about 0.29 ac of tidal marsh habitat that would be suitable for the salt marsh harvest mouse, the project is in the preliminary design phase and appropriate measures have not yet been developed to ensure the successful establishment of suitable harvest mouse habitat on the created bench. Therefore, temporary habitat loss for the salt marsh harvest mouse is considered a significant impact.~~ Mitigation Measures BIO-5, BIO-6, ~~and~~ BIO-7, and BIO-8 would be implemented to address this significant impact.

Mitigation Measures

Mitigation Measure BIO-5: Develop and Conduct Worker Environmental Awareness Program

Before any construction activities begin, the District will conduct a training session for all construction personnel. At a minimum, the training will include descriptions of the salt marsh harvest mouse, its habitats, the importance of the species, the general measures that are being implemented to conserve this species as they relate to the proposed project, and the boundaries within which project activities may be accomplished.

Mitigation Measure BIO-6: Implement Hand Removal of Vegetation in Reach 1 and Staging Area A

~~The District will remove vegetation at marshes and high-water refugia habitat in Reach 1 (e.g., annual grasses and shrubs immediately adjacent to channels) by hand to the extent feasible. This measure applies to construction work at Reach 1 and Staging Area A.~~

Prior to the start of project activities within Reach 1 and Staging Area A, herbaceous vegetation will be removed from work areas to eliminate cover for salt marsh harvest mice, thereby discouraging them from occurring in work areas. A qualified biologist familiar with salt marsh harvest mouse biology will conduct a preconstruction survey prior to vegetation removal and will monitor the vegetation removal process. Vegetation will be removed using hand-held equipment (e.g., weed-whackers). This will allow any small mammals, including salt marsh harvest mice, to escape the project area under the cover of vegetation, and will encourage movement of such small mammals toward available vegetated habitat outside the project area. All herbaceous vegetation that could potentially conceal a salt marsh harvest mouse within the work area will be removed. All vegetation that is removed will be hauled off site and will not be left on the site, as it could provide potential cover for small mammal species. The area of vegetation removal will extend approximately 2-3 feet beyond (downstream from) the boundary of the work area, to create an open area that discourages salt marsh harvest mice from approaching the exclusion barrier described in the Mitigation Measure BIO-7.

Mitigation Measure BIO-7: Install Exclusion Barrier and Conduct Salt Marsh Harvest Mouse Preconstruction Survey

The District will install a barrier at the downstream-most limits of the work area to exclude salt marsh harvest mice from the work area. The barrier will be installed after vegetation clearing and prior to the start of earth movement. Barriers will be installed, perpendicular to the creek channel under the guidance of a qualified biologist. The barrier will consist of a 3-foot-tall fence of tight cloth, smooth plastic, or sheet-metal (or similar material approved by USFWS) toed into the soil at least 3 inches deep and supported with stakes placed on the inside of the barrier.

A qualified biologist will conduct a preconstruction survey of the area from which vegetation was removed prior to construction access. The biologist will monitor installation of the barrier.

If a salt marsh harvest mouse, or an animal that could be a harvest mouse (e.g., a similar species of mouse), is observed within the exclusion barrier during project activities, all work that could result in the injury or death of the individual will stop immediately and the qualified biologist will be notified immediately. The animal will be allowed to leave the area on its own and will not be handled.

Mitigation Measure BIO-8: Salt Marsh Harvest Mouse Habitat Monitoring Plan

To ensure that habitat created at the wetland bench on the south bank of Reach 1 will be suitable for the salt marsh harvest mouse, the District will hire a restoration ecologist and qualified salt marsh harvest mouse biologist to develop a Salt Marsh Harvest Mouse Habitat Monitoring Plan, which will contain the following components:

- summary of habitat impacts and proposed acres of habitat creation
- location of habitat creation site(s) and description of existing site conditions
- habitat design, including the following:
  - existing and proposed site hydrology
  - grading plan if appropriate, including bank stabilization or other site stabilization features
  - soil amendments and other site preparation elements as appropriate
  - planting plan
  - irrigation and maintenance plan
  - remedial measures/adaptive management, etc.
- monitoring plan (including ~~final and~~ performance criteria, monitoring methods, data analysis, reporting requirements, monitoring schedule, etc.). At a minimum, success criteria will include quantifiable measurements of wetland vegetation type (e.g., dominance by native hydrophytes).

The District will implement the Salt Marsh Harvest Mouse Habitat Monitoring Plan. This mitigation measure will ensure the creation of tidal marsh and non-tidal wetland habitat suitable for the salt marsh harvest mouse, which will compensate for any permanent loss of habitat due to project implementation.

Significance After Mitigation

Implementation of **Mitigation Measures BIO-5, BIO-6, and BIO-7** would reduce impacts associated with loss of salt marsh harvest mouse individuals due to project-related construction activities through worker training, hand removal of vegetation, and exclusion of known individuals, and implementation of **Mitigation Measure BIO-8** would ensure that the project wetland bench results in suitable habitat for the salt marsh harvest mouse. Due to the low quality of salt marsh harvest mouse habitat within the project area, the low potential for (and magnitude of) project impacts to this species, and the predominantly temporary nature of the impacts, the creation of 0.29 acre of additional habitat would adequately compensate for impacts to this species and its habitats. Therefore, with these measures implemented, project-related impacts would be less than significant with mitigation.

Impact BIO-1h: Impacts on special-status bats (Less than Significant)

Only two special-status bats have potential to occur in the project area: the pallid bat and western red bat, both of which are California species of special concern. Pallid bats are not expected to roost in the project area, as this species has been extirpated from urban areas close to the Bay. Pallid bats may occasionally occur in the project area as nonbreeding migrants, transients, or foragers, but they are expected to occur in low numbers, if at all. Western red bats do not breed in the project area, so no maternity roosts would be affected. This species roosts solitarily in foliage. Due to the very limited project impacts on trees, it is unlikely that any red bat roosting sites would be affected; in the event that such an impact does occur, any roosting red bat would be able to flee before the tree is removed. Although individuals may be subjected to increased risk of predation if flushed during the daytime, few, if any, western red bats are expected to be present in areas where they would be disturbed by project activities.

Project activities may result in a temporary impact on foraging individuals through the alteration of foraging patterns (e.g., avoidance of work sites because of increased noise and activity levels during project activities). However, due to the abundance of suitable foraging habitat in the project area and the mobility of these bats, as well as the relatively low proportion of potential foraging habitat that would be disturbed due to the project, habitat impacts on bats would not be substantial. In addition, implementation of District BMP BI-11 would minimize the attraction of predators and bats to construction work areas. Impacts would be less than significant.

Impact BIO-1i: Impacts on Congdon’s tarplant (Less than Significant with Mitigation)

Ruderal grasslands in the project area provide marginally suitable habitat for Congdon’s tarplant, a CRPR 1B.1 species, and two populations of Congdon’s tarplant have been documented by the CNDDB in the project vicinity (CNDDB 2016). If Congdon’s tarplant is present within the project work area, construction activities, such as grading, bench excavation, and floodwall construction could affect the plants through direct or indirect disturbance of populations and disturbance, modification, or destruction of suitable habitat. Damage to this species may occur because of crushing by equipment; trampling; and compaction of soil, which could result in damage to plant roots. These activities could result in death, altered growth, or reduced seed set through physically breaking, crushing, wilting, or uprooting plants.

The nearby occurrences of the species in disturbed grassland habitat indicates that there is potential for the species to occur in the ruderal grassland habitat in the project area. The habitat quality of the ruderal grassland is relatively low due to anthropogenic disturbance, although such types of habitats, especially when seasonally mesic, are known to support this species. Loss of individuals of this species from the project area would be significant because this species' populations are limited locally as well as regionally.

Implementation of District BMPs BI-7, BI-8, and WQ-4 would minimize impacts on Congdon's tarplant from survey work, erosion and non-native competition, and staging and stockpiling. Nevertheless, the proposed project may result in residual impacts on this species because complete avoidance of individuals may not be possible. Since publication of the DEIR, a focused survey for Congdon's tarplant was completed throughout the project site on August 7, 2017, during the species' published blooming period. No individuals of Congdon's tarplant were detected during the survey. Typically, focused plant survey results are valid for three years, meaning that once Congdon's tarplant has been determined to be absent from a project site, it is unlikely for the plant to be established within the next three years. It is likely the proposed project would not result in impacts on Congdon's tarplant if construction would occur before August 2020. However, since construction delays can occur, in the event that construction occurs after August 2020, there is a possibility that Congdon's tarplant could establish within the project site ~~As a result~~, and damage to the species from construction would be ~~this impact is~~ considered significant. If construction commences after August 2020, Mitigation Measures BIO-9 and BIO-10 would be implemented to address this significant impact.

Mitigation Measures

Mitigation Measure BIO-9: Conduct Focused Preconstruction Survey for Congdon's Tarplant

~~Prior to construction~~In the event that project construction starts after August 2020, ~~the District will hire~~ a qualified biologist ~~who~~ will conduct a focused survey for Congdon's tarplant in the ruderal grassland habitat within the project area. The survey will be conducted during the species' blooming period (May-November). If a population of Congdon's tarplant is identified in the project area, the District will implement Mitigation Measure BIO-10 (Compensate for Congdon's Tarplant Impacts).

Mitigation Measure BIO-10: Compensate for Congdon's Tarplant Impacts

If a population of Congdon's tarplant is identified in the project work area during the preconstruction survey (per Mitigation Measure BIO-9), a qualified biologist ~~hired by the District~~ will conduct an impact assessment to determine if project impacts would be expected to cause the loss of the occurrence. The entire occurrence, will be mapped and individuals counted.

Mitigation will be achieved either by preserving an existing, similarly sized occurrence of Congdon's tarplant of similar quality under a conservation easement, or through collection of seed and establishment of a new population on suitable habitat. Congdon's tarplant is a species that tolerates both non-native plant associates and disturbance, and has shown success in transplant activities.

If a new population is to be established, seed from the population to be affected will be collected, cleaned of extraneous plant material, and stratified by storage over the winter in cool temperatures. A qualified plant ecologist will identify a suitable relocation site that is mesic and underlain by alkaline soils, preferably as similar as possible to the soils where the seed was collected. The seed will be applied to the new habitat. A Congdon's Tarplant Management and Monitoring Plan will be prepared and approved by the District. The plan will provide monitoring and include the following information:

- Clear statement of population and management goals for the newly established population and surrounding habitat;
- Population success criteria for interim monitoring years;
- Final success criteria

Significance After Mitigation

Implementation of **Mitigation Measures BIO-9 and BIO-10** would identify and compensate for the loss of any occurrences of Congdon's tarplant present in the project area and would thereby reduce the significant impact on the species to less than significant.

Impact BIO-1j: Introduction of invasive species (Less than Significant with Mitigation)

Invasive plants often have a competitive advantage because they are no longer controlled by their natural predators or other natural control mechanisms, allowing them to spread quickly out of control. In California, approximately 3 percent of plant species growing in the wild are considered invasive, but these species inhabit a much greater proportion of the landscape (Cal-IPC 2007). The scientific community has come to view invasive species as posing serious threats to biological diversity, second only to the threats resulting from habitat loss and fragmentation (Bossard et al. 2000). Invasive species present complex management issues; even when a species is no longer being actively introduced, it continues to spread and invade new areas. Invasive species can have an adverse effect on native species, including special-status plants and animals, and habitats in several ways, including by altering nutrient cycles, fire frequency and/or intensity, and hydrologic cycles; by creating changes in sediment deposition and erosion; by dominating habitats and displacing native species; by hybridizing with native species; and by promoting non-native animal species (Bossard et al. 2000).

The project area contains several invasive plant species, including highly invasive species such as common fennel, English ivy, Himalayan blackberry, and broadleaved pepperweed. Project construction activities, such as grading and soil disturbance, may create conditions suitable for additional spreading of invasive plant species, and weed propagules may be spread on ground-disturbing equipment to the project area or from the project area to other sites. Furthermore, bare upland soils left after construction of temporary access roads and relocation of the levee may encourage growth of weedy species, and mulching or erosion control mixes may include and thus introduce invasive, non-native species.

In addition to the introduction of invasive plant species, without proper procedures, mitten crabs (*Eriocheir sinensis*) and other aquatic invasive invertebrates, such as the New Zealand mud snail (*Potamopyrgus antipodarum*), Quagga mussel (*Dreissena bugensis*), or zebra mussel (*Dreissena polymorpha*), could inadvertently be introduced into or spread within the project area. The spread of these and other non-native invasive species into areas formerly unoccupied could result in a significant impact on special-status species, native habitats, and communities.

Implementation of District BMPs BI-1, BI-8, HM-7, and WQ-9 would reduce the potential for infestation of natural areas by invasive species by protecting local ecotypes and avoiding the spread of non-native species. However, District BMPs may not be sufficient to avoid new invasions or the spread of invasive species. For example, BMP HM-7 restricts the cleaning of equipment to appropriate locations, but does not require equipment to be cleaned prior to being used in the project area or before being used on a different project site after use in the project area. Because of the potential for degradation of a wide variety of natural communities and effects on native populations and special-status species that could occur because of such invasions, this impact would be significant. Mitigation Measures BIO-11 and BIO-12 would be implemented to address this significant impact.

Mitigation Measures

Mitigation Measure BIO-11: Clean Construction Equipment

The District will require that equipment used during project construction be cleaned of any visible sediment or vegetation clumps before being used in the project area, or before being used in a different watershed after use in the project area, to avoid spreading pathogens or exotic/invasive species.

Mitigation Measure BIO-12: Dispose of Invasive Plants

The District will require that any invasive plants found within the project area d be removed and disposed of in a sanitary landfill, incinerated off site, or disposed of in a high-temperature composting facility that can compost using methods known to kill weed seeds.

Significance After Mitigation

Implementation of **Mitigation Measures BIO-11 and BIO-12** would minimize the potential for introduction or spread of non-native species and would thereby reduce this impact to less than significant with mitigation.

Impact BIO-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service (Less than Significant)

Willow riparian woodland was mapped within the project area above the OHWM. The majority of willow riparian woodland occurs on a berm that stretches from California Circle to Milmont Drive between the main channel and the secondary channel (Reach 3). District maintenance activities conducted in October 2015 resulted in removal of most herbaceous vegetation from the berm but had no impacts on the riparian trees in the area, resulting in a completely barren understory with scattered, mature willows. Additional areas of willow riparian woodland in the project area include some disjunct patches mapped along the outer edges of the main stream channel where willow and Fremont cottonwood trees are present.

The proposed project would not result in removal or pruning of woody riparian vegetation, including trees, from the willow riparian woodland habitat in the project area. ~~d~~During the use of Staging Area B~~.~~, ~~E~~equipment and materials would be stored on flat portions of the berm where no willows are present.

Sediment removal activities conducted in late 2015 largely involved removal of herbaceous plants on the berm that comprises Staging Area B. Most of these plants consisted primarily of invasive species. Use of Staging Area B during project construction would result in temporary impacts on any herbaceous riparian vegetation that has regrown prior to the start of construction activities. Impacts would occur on up to approximately 1.93 acres of willow riparian woodland due to trampling of vegetation. However, herbaceous vegetation that is disturbed by proposed project activities is expected to begin to regrow within one growing season. Compared to riparian vegetation dominated by trees and shrubs, herbaceous riparian vegetation provides relatively low functions and values for wildlife. The recent disturbance of the herbaceous vegetation on the berm further reduces its quality as habitat for wildlife, and herbaceous vegetation disturbed by staging activities is expected to regenerate quickly. Implementation of District BMPs WQ-1, WQ-4, WQ-5, WQ-9, and BIO-8 would minimize the project's effects on riparian vegetation by limiting disturbance, preventing erosion and sedimentation, and minimizing the introduction or spread of invasive weeds within the understory. As a result, impacts of project activities on riparian vegetation would not have substantial ecological effects and thus would be less than significant.

Impact BIO-3: 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.), waters of the U.S., and waters of the state through direct removal, filling, hydrological interruption, or other means (Less than Significant with Mitigation)

Construction activities associated with the proposed project would result in both temporary and permanent disturbance of wetland and aquatic communities representing jurisdictional wetlands and other waters of the U.S./state.

Proposed in-channel activities, including levee modification, sediment removal, and creation of an excavated bench in Reach 1, as well as the use of the off-channel area located between North McCarthy Boulevard and I-880 as Staging Area A, would result in the direct modification of wetland and aquatic communities in the project area, as well as indirect impacts on downstream wetlands and aquatic communities (also called "other waters"). Wetland vegetation may be lost due to mechanical or physical clearing (including at access and staging areas and at sediment removal locations), and damage to vegetation may occur due to crushing by equipment; trampling by personnel; and compaction of soil, which could result in damage to plant roots. Removal of wetland vegetation may result in the temporary reduction of clonal propagules for colonization of downstream areas. In addition, materials may fall into the channel (in Reach 4) during construction of the new headwalls at the San Andreas Drive bridge. Subsequent installation of erosion control materials, hydroseeding, and planting may also result in the deposit of materials into the channels.

Levee modifications in Reaches 1 and 4~~,~~; bench excavation in Reach 1~~,~~; installation of sheetpile floodwalls in Reaches 1, 2, 3, and 4~~,~~; sediment removal in Reaches 2, 3, and 4; and construction of the new headwalls for the San Andreas Drive bridge in Reach 4 would require temporary dewatering of the affected channel. These activities may also necessitate the operation of heavy equipment within the streambed (after dewatering). Movement of heavy equipment may compact the substrate and damage vegetation, and the lack of water may result in changes to the extent of wetland communities present in the work site. Furthermore, because barren slopes are more susceptible to erosion from rainfall events, the loss of non-instream vegetation along stream banks following project activities may result in an increase in erosion and sedimentation. This may lead to the filling in of pools and damage to wetland vegetation. The proposed project's potential to cause soil erosion and loss of topsoil is evaluated in Impact GEO-3 in Section 3.6, *Geology, Soils, and Seismicity*.

Floodwall construction may also result in impacts on vegetation communities in the Lower Penitencia Creek channel and downstream aquatic habitats. The excavation and replacement of soil along the outboard sides of levees for floodwall installation and the loosening of compacted soils may result in an increase in erosion and sedimentation due to a loss of vegetation.

As described above, construction activities could result in hydrologic interruption (e.g., dewatering or diversion), vegetation removal, degradation of water quality (e.g., increased sedimentation and turbidity), and other temporary direct impacts on wetlands and other waters. In addition, direct impacts would occur due to the conversion of wetlands and other waters to upland habitat. The project would impact wetlands and other waters. **Table 3.4-5** summarizes the project's estimated temporary and permanent impacts on wetlands, waters of the U.S., and waters of the state. The project would permanently convert 0.05 acre of non-tidal seasonal saline wetland and 0.01 acre of coastal brackish marsh to ruderal grassland due to the relocation of the levee in Reach 1, and would convert 0.08 acre of non-tidal saline wetland to coastal brackish marsh, a permanent change in wetland type but not the overall amount of wetlands on the site. As such, the project's net permanent impacts on wetlands of the U.S. and State would be 0.06 acre.

In addition, about ~~9.7 ac~~8.84 acre of tidal aquatic and 0.87 acre of coastal brackish marsh habitat would be temporarily disturbed during construction (primarily due to dewatering), as well as 0.03 acre of non-tidal seasonal saline wetland, resulting in a short-term loss of functions and values. The project's estimated temporary impacts on wetlands of the U.S. and state would be 0.90 acre. As shown in Table 3.4-5, the project would result in 8.84 acres of temporary impacts on waters of the U.S./waters of the state. However, these temporarily disturbed areas would remain wetlands and other waters habitat after the project is completed so that there would be no long-term loss of jurisdictional area, or functions and values.

Table 3.4-5. Project Impacts on Wetlands and Other Waters of the U.S. and State

Project Reach	**Impacts on Wetlands and Other Waters of the U.S. and State (acres)**			
	Temporary Impacts to Wetlands	**Permanent Impacts to Wetlands**	**Temporary Impacts to Other Waters of U.S. and State**	**Permanent Impacts to Other Waters of U.S. and State**
Reach 1	0.61	0.14	0.72	0.00
Reach 2	0.03	0.00	0.68	0.00
Reach 3	0.03	0.00	6.57	0.00
Reach 4	0.23	0.00	0.87	0.00
TOTAL	**0.90**	**0.14**	**8.84**	**0.00**

***Note**: * The California Water Code Section 13050(e) defines "waters of the state" as any surface water or groundwater within boundaries of the state.*

~~However, a~~After construction is complete, the newly created bench is expected to create approximately 0.~~0.3~~29 acre of tidal marsh habitat. The new tidal and non-tidal wetlands habitat would be below the OHWM and would be considered water of the U.S. and State.

During project construction, implementation of District BMPs BI-3, BI-8, BI-10, BI-11, HM-7, HM-8, HM-10, WQ-1 through WQ-9, WQ-11, WQ-15, and WQ-16 would minimize impacts on wetlands functions during project construction by minimizing the potential for water quality degradation. Implementation of District BMPs HM-7, and HM-10 would prevent vehicle cleaning from occurring in the creek channel and minimize the potential for impacts to water due to release of pollutants into the creek water. BMPs WQ-1 through WQ-9 will be implemented to minimize the amount of in-channel construction activity, use appropriate equipment in the creek bed, ensure proper maintenance and operation of pumps, stage and stockpile materials where they will not contribute pollutants to the creek stabilize vehicles entrances to prevent eroded soil from washing into the creek, isolate concrete from creek water until it is fully cured, isolate work areas from tidal flows, and reseed disturbed areas to prevent soil erosion, maintain clean conditions at the construction area, and prevent discharge of oily, greasy, or turbid water to the creek.. These measures will minimize the release or pollutants to creek waters; thereby protecting water quality of the aquatic habitat. implementation of District BMPs BI-2 and BI-3 would minimize changes in water quality by avoiding routine use of vehicles and equipment in Lower Penitencia Creek between January 1 and June 15, when anadromous fish are most likely to be present; reduce erosion; control sediment; and prevent spills. Measure BI-8 requires use of local ecotypes in revegetation to provide erosion protection and promote habitat restoration and enhancement. Substantial water quality impacts would be avoided and minimized through implementation of these BMPs by minimizing disturbance, controlling erosion and sedimentation, and preventing the input of hazardous chemicals, such as equipment fuel, from entering waterways. Any remaining water quality effects and habitat values in unvegetated aquatic habitats subject to temporary disturbance are expected to quickly return to preconstruction conditions following the completion of project activities. Even in vegetated wetlands, recolonization may occur relatively quickly. For example, according to the *Instream Wetland Vegetation Regrowth Study* (Rankin and Hillman 2000), almost all vegetated wetland areas would restore themselves within 1-2 years following disturbance. Furthermore, implementation of District BMPs would minimize changes in water quality by reducing erosion, controlling sediment, and preventing spills.

Nevertheless, the proposed project would result in temporary loss of habitat functions and values, particularly those provided by vegetated wetlands, such as sediment stabilization, sediment/toxicant retention, nutrient removal/transformation, and aquatic and terrestrial wildlife species habitat. Thus, the project would result in temporary loss of ecologically valuable wetlands ~~and other waters~~.

Impacts to other waters are considered less than significant because there will be no permanent loss of this habitat; the habitat will re-establish similar functions and values to existing immediately after construction; BMPs will prevent deleterious water quality impacts.

The 0.29 acre of habitat to be created by the wetland bench would offset the proposed project's permanent (0.06 acre) and temporary (0.90 acre) removal of wetland habitat as well as the conversion of 0.08 acre due to conversion of non-tidal seasonal saline wetland to coastal brackish marsh. Among the 0.29-acre wetland habitat to be established, 0.12 acre would offset the net permanent removal of 0.06 acre of wetland habitat at a 2:1 ratio (created wetland: permanently removed wetland), which would be appropriate for addressing permanent impacts. In addition, the created wetland would provide higher quality habitat than the permanently removed wetlands. Regarding the project's temporary impact on wetlands, temporarily impacted wetland habitat is expected to return to pre-construction conditions within one to two years; nevertheless, the remaining 0.17 acre of the overall 0.29-acre wetland bench would offset the 0.98-acre temporary impact at a roughly 2:1 ratio (created/restored wetland: temporarily impacted wetland). However, ~~permanent and temporary impacts on wetlands would be considered significant unless mitigated. Although the District proposes to create marsh habitat on the new bench in Reach 1, the project is in the preliminary design phase and measures have not yet been developed to ensure~~ if the wetland bench does not successfully establish~~ment of~~ a vegetated wetland ~~on the created bench~~ as expected~~. Therefore, this~~ the impact on wetlands and other waters of the U.S. and state is considered significant. Mitigation Measure BIO-13 would be implemented to address this impact.

Mitigation Measures

Mitigation Measure BIO-13: Wetlands ~~and Jurisdictional Waters~~ Mitigation and Monitoring Plan ~~and Contingency Actions~~

As described in Section 2.6.1, the proposed project includes the creation of a wetland bench on the south bank of Reach 1. The bench would be planted with native species to vegetated wetland habitat.

To ensure that vegetated wetlands successfully establish on the bench, the District will develop a Wetlands Mitigation and Monitoring Plan, which will contain the following components:

- Summary of habitat impacts and acreage of wetland creation
- Location of wetland creation site(s) and description of existing site conditions
- Mitigation design, including the following:
  - Existing and proposed site hydrology

- Grading plan if appropriate, including bank stabilization or other site stabilization features
- Soil amendments and other site preparation elements as appropriate
- Planting plan to establish the target coastal brackish marsh habitat. Species composition will be determined by hydrology and soils but is anticipated to be similar to adjacent wetlands. Dominant species may include: alkali bulrush, hardstem bulrush, California bulrush, and broadfruit bur reed. Temporarily impacted non-tidal seasonal saline wetlands will be replanted. Dominant species may include: creeping wild-rye, alkali heath, California gray rush, and pickleweed.
- maintenance plan
- Remedial measures/adaptive management, etc.

▪ Monitoring plan (including ~~final and~~ performance criteria, monitoring methods, data analysis, reporting requirements, monitoring schedule, etc.).

The District will implement the Wetlands Mitigation and ~~Jurisdictional Waters~~ Monitoring Plan.

Significance After Mitigation

Implementation of **Mitigation Measure BIO-13** would ensure that the created bench supports vegetated wetlands following the completion of the project. Due to the low quality of the wetlands that would be impacted, the predominately temporary nature of the impacts, and the relative speed at which temporarily impacted wetlands are expected to regenerate, the creation of 0.29 acre of additional wetland habitat on the bench in Reach 1 would adequately compensate for impacts to this habitat. Therefore, project-related impacts would be less than significant with mitigation.

Impact BIO-4: 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 (Less than Significant)

For many species, the landscape is a mosaic of suitable and unsuitable habitat types. Environmental corridors such as stream courses are segments of suitable habitat that provide connectivity between larger areas of suitable habitat, allowing species to disperse through otherwise unsuitable areas. On a broader level, corridors also function as avenues along which wide-ranging animals can travel, plants can propagate, genetic interchange can occur, populations can move in response to environmental changes and natural disasters, and threatened species can be replenished from other areas.

Lower Penitencia Creek is expected to function as a wildlife movement corridor, connecting primarily urban-associated habitats with San Francisco Bay–associated habitats to the north. To fully analyze the impacts of the proposed project on wildlife movement, it is important to examine the impacts on both movement along the corridor (i.e., parallel to the Lower Penitencia Creek channel) and movement across the creek channel.

The quality of habitat provided in channel easements and wetland habitats along Lower Penitencia Creek is generally relatively low. Habitats within the existing corridor have typically been subjected to moderate to high levels of disturbance due to the hardening of streambanks, routine maintenance activities, and other factors associated with the urban surroundings. As a result, where vegetation is present, it is mostly dominated by non-native species. In addition, within Reaches 3 and 4, the channel is surrounded on both sides by heavy urban development. Similarly, within Reach 2, the channel is surrounded by I-880 to the west, Dixon Landing Road to the north, California Circle to the east, and a pump station to the south. Thus, in the areas upstream of I-880, the Lower Penitencia Creek channel likely does not function as a high-quality movement corridor for most species, particularly special-status species. Nevertheless, the ruderal habitats present may represent the most feasible means of dispersal through the surrounding urban matrix for common urban-dwelling species in the project area, such as raccoons and California ground squirrels.

New floodwalls are proposed in Reaches 2, 3, and 4 (i.e., upstream of I-880). Installation of new floodwalls has the potential to impede wildlife movement across the channel. However, as described above, Reaches 2, 3, and 4 are bordered on both sides by urban development. Thus, the frequency of wildlife movement across the channel in these reaches is expected to be low as habitat values on both sides of the channel are similarly low. Furthermore, in this area wildlife use is already limited to common, urban-adapted species, which would continue to be able to access the channel by moving upstream or downstream to locations without floodwalls. Many urban-adapted species (i.e., mice, squirrels, raccoons, and western fence lizards) would also be able to climb the floodwalls to access the channel.

For animals that can swim the channel and thus cross perpendicular to the channel in its current condition, floodwalls could obstruct wildlife dispersing perpendicular to the channels, which would need to travel around the floodwalls. However, some of these animals (such as raccoons) can likely scale the new floodwalls. In addition, many terrestrial species, such as western fence lizards, gray foxes (*Urocyon cinereoargenteus*), and black-tailed jackrabbits (*Lepus californicus*), are unlikely to swim the channel even in its existing condition. Rather, these species are expected to cross the channel at existing crossings, such as the Milmont Drive or California Circle bridges. Not only would these crossings remain in place, they are located where there would be gaps in the proposed floodwalls, so that animals moving over these bridges would be able to travel from one side of the channel to the other as they currently do. In addition, in the area downstream of I-880, no floodwalls are proposed, thus allowing terrestrial animals that currently cross the channel to be able to continue crossing in this location. Therefore, impacts on wildlife movement are considered less than significant.

Impact BIO-5: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (Less than Significant)

The City of Milpitas general plan outlines goals and objectives in preserving and protecting biological resources, including trees that are protected under the City of Milpitas tree ordinance within the District's right-of-way (ROW). The proposed project would maintain the existing open space character of the Lower Penitencia Creek channel and restore tidal wetlands habitat near the confluence with Coyote Creek, thereby furthering the goals of Policy 4.b-G-1c. In keeping with city Policy 4.d-P-5, the project would retain the existing form of Lower Penitencia Creek channel, avoid excessive grading and disturbance of vegetation and soils, and maintain natural drainage patterns. The project would also conform to Policy

4.d-P-4 by preserving to the extent possible the existing riparian corridors and wetlands of the project area. The project would conform with local policies to protect biological resources, which would be a less than significant impact.

About 36 trees within the project area are of sufficient diameter to be protected by the City ordinance. However, no trees in the project area have been designated as heritage trees by the City of Milpitas (D. Gordillo, pers. comm.). Trees present include native species such as the red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), Fremont cottonwood (*Populus fremontii*), and ash (*Fraxinus* sp.), as well as nonnatives such as the blackwood acacia (*Acacia melanoxylon*), London plane (*Platanus hybrida*), and eucalyptus (*Eucalyptus* spp.). Trees are located on the inboard and outboard slopes of existing levees, on a berm that stretches from California Circle to Milmont Drive between the main channel and the secondary channel (Reach 3), and in Staging Area A. In total, ~~about 22~~ an estimated 33 live trees with dbh of 6 inches or more would be removed during project construction. Many of the City-protected trees would be protected in place. The largest concentration of trees is located on the Reach 3 central berm, and those trees would be preserved. Avoiding all trees on the existing levee slopes would be infeasible due to the excavation and earthwork required for levee relocation in Reach 1 and levee raising in Reach 4. In addition, construction activities could damage roots or drip lines of trees adjacent to the construction area. Implementation of District BMP WQ-4 would minimize impacts on trees by siting staging and stockpiling areas in disturbed areas away from vegetation and trees. The District would comply with the City Tree Protection Ordinance, including obtaining a permit from the City to remove protected trees, and planting replacement trees as required by the City permit. Because the District would comply with applicable city tree protection and the project would conform to city policies to protect biological resources, requirements, impacts related to conflicts with local policies or ordinances protecting biological resources would be less than significant.

Impact BIO-6: Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan (No Impact)

The proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Although the Santa Clara Valley Habitat Plan (VHP) pertains to much of Santa Clara County, the project site is not located within the boundaries of the VHP. There would be no impact.

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3.5 Cultural Resources

3.5.1 Overview

This section describes impacts of the proposed project related to cultural and paleontological resources. Cultural resources include prehistoric archaeological sites; historic-era archaeological sites; tribal cultural resources (TCRs); and historic buildings, structures, landscapes, districts, and linear features. Prehistoric archaeological sites are places where Native Americans lived or carried out activities during the prehistoric period, which is generally prior to the late 1700s in the San Francisco Bay region. Historic-era archaeological sites reflect the activities of people after initial exploration and settlement in the region by Europeans since the late 1700s; however, Native American sites can also reflect the historic era. Prehistoric and historic-era archaeological sites may contain artifacts, cultural features, subsistence remains, and human burials.

Paleontological resources are the fossil remains of prehistoric flora and fauna, or traces of evidence of the existence of prehistoric flora and fauna. This chapter addresses the occurrence of paleontological resources within the project area and the impact that construction activities and operation of the proposed project would have on scientifically important fossil remains, as identified in the State CEQA Guidelines. The analysis presented in this section conforms to the Society of Vertebrate Paleontology analysis criteria (Society of Vertebrate Paleontology 2010).

This section describes the regulatory setting associated with cultural and paleontological resources, the affected environment for these resources, project impacts on cultural and paleontological resources, and relevant BMPs that would reduce these impacts.

The following key data sources support this section:

- Records search from the Northwest Information Center of the California Historical Resources Information System at Sonoma State University; and
- Files search from the Native American Heritage Commission (NAHC).

3.5.2 Regulatory Setting

Federal Laws, Regulations, and Policies

USACE permits under Section 404 of the Clean Water Act would be required for construction of the proposed project. As a result, the project constitutes a federal undertaking as defined by Title 54 USC Section 300101 of the National Historic Preservation Act (NHPA), which mandates compliance with 54 USC Section 306108 (commonly known as Section 106 of the NHPA) and its implementing regulations (36 CFR Section 800, as amended in 2001). To comply with Section 106, the project proponent must “take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in “the National Register of Historic Places (NRHP). Resources included in or eligible for inclusion in the NRHP are referred to as historic properties.

The implementing regulations of the NHPA require that cultural resources that would be affected by an undertaking (such as the proposed project) be evaluated for NRHP eligibility if they cannot be avoided. To determine site significance through application of NRHP criteria, several levels of potential significance that reflect different (although not necessarily mutually exclusive) values must be considered. Resources must also be at least 50 years old, except in rare cases. To meet eligibility criteria of the NRHP, a resource must:

(A) Be associated with events that have made a significant contribution to the broad patterns of our history; or

(B) Be associated with the lives of persons significant in our past; or

(C) Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or

(D) Have yielded, or be likely to yield, information important in prehistory or history.

In addition, to be considered significant and historic, a resource must also exhibit the quality of significance in American history, architecture, archaeology, engineering, or culture and must possess integrity of location, design, setting, materials, workmanship, feeling, and association (36 CFR Section 60.4). For archaeological sites evaluated under Criterion D, integrity requires that the site remain sufficiently intact to convey the expected information to address specific important research questions.

Other “criteria considerations” need to be applied to religious properties, properties that are less than 50 years old, a resource no longer situated in its original location, a birthplace or grave of a historical figure, a cemetery, a reconstructed building, and commemorative properties. These types of properties are typically not eligible for NRHP inclusion unless the criteria for evaluation and criteria considerations are met.

Traditional cultural properties (TCPs) are locations of cultural value that are historic properties. A place of cultural value is eligible as a TCP “because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community’s history, and (b) are important in maintaining the continuing cultural identity of the community” (Parker and King 1990, rev. 1998). A TCP must be a tangible property, meaning that it must be a place with a referenced location, and it must have been continually a part of the community’s cultural practices and beliefs for the past 50 years or more.

State Laws, Regulations, and Policies

CEQA and State CEQA Guidelines

Section 15064.5 of the State CEQA Guidelines notes that “a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.” Substantial adverse changes include physical changes to the historical resource or to its immediate surroundings, such that the significance of the historical resource would be materially impaired. Lead agencies are expected to identify potentially feasible measures to mitigate significant adverse changes in the significance of a historical resource before they approve such projects. Historical resources are those that are:

- listed in, or determined to be eligible for listing in, the CRHR (PRC Section 5024.1[k]);
- included in a local register of historic resources (PRC Section 5020.1) or identified as significant in an historic resource survey meeting the requirements of PRC Section 5024.1(g); or
- determined by a lead agency to be historically significant.

State CEQA Guidelines Section 15064.5 also prescribes the processes and procedures found under Health and Safety Code Section 7050.5 and PRC Section 5097.95 for addressing the existence of, or probable likelihood of, Native American human remains, as well as the unexpected discovery of any human remains within the project site. This includes consultation with the appropriate Native American tribes.

State CEQA Guidelines Section 15126.4 provides further guidance about minimizing effects on historical resources through the application of mitigation measures, which must be legally binding and fully enforceable.

Section 21083.2 of CEQA requires that the lead agency determine whether a project may have a significant effect on unique archaeological resources. A unique archaeological resource is defined in CEQA as an archaeological artifact, object, or site about which it can be clearly demonstrated that there is a high probability that it:

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

Although not specifically inclusive of paleontological resources, these criteria may also help to define a unique paleontological resource or site.

Measures to avoid, conserve, preserve, or mitigate significant effects on these resources are also provided in CEQA Section 21083.2.

Assembly Bill (AB) 52, which was approved in September 2014 and went into effect on July 1, 2015, requires that state lead agencies consult with any California Native American tribe that is traditionally and culturally affiliated with the geographic area of a proposed project, if so requested by the tribe and if the agency intends to release a negative declaration, mitigated negative declaration, or environmental impact report for a project. The bill, chaptered as PRC Section 21084.2, also specifies that a project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment. This latter language was added to the State CEQA Guidelines Appendix G environmental checklist as of July 1, 2016, and was approved by the California Office of Administrative Law in September 2016.

As defined in PRC Section 21074(a), TCRs are:

(1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

   a. Included or determined to be eligible for inclusion in the California Register of Historical Resources (CRHR); or

   b. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

(2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

TCRs are further defined in Section 21074(b) and (c) as follows:

(b) A cultural landscape that meets the criteria of subdivision (a) is a TCR to the extent that the landscape is geographically defined in terms of the size and scope of the landscape; and

(c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms to the criteria of subdivision (a).

Mitigation measures for TCRs must be developed in consultation with the affected California Native American tribe under newly chaptered Section 21080.3.2 or Section 21084.3. The latter statute identifies mitigation measures that include avoidance and preservation of TCRs and treating TCRs with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource.

The lead agency having jurisdiction over a project is also responsible to ensure that paleontological resources are protected in compliance with the State CEQA Guidelines and other applicable statutes. Management of paleontological and historical resources is also addressed in PRC Section 5097.5. This statute defines as a misdemeanor any unauthorized disturbance or removal of a fossil site or remains on public land and specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources. This statute applies to any construction-related or other project impacts that would occur on state-owned or state-managed lands.

California Register of Historical Resources

PRC Section 5024.1 establishes the CRHR. The register lists all California properties considered to be significant historical resources. The CRHR includes all properties listed as or determined to be eligible for listing in the NRHP, including properties evaluated under Section 106 of the NHPA. The criteria for listing are similar to those of the NRHP and include resources that:

(1) Are associated with the events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(2) Are associated with the lives of persons important in our past;

(3) Embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values; or

(4) Have yielded, or may be likely to yield, information important in prehistory or history.

The regulations set forth the criteria for eligibility as well as guidelines for assessing historical integrity and resources that have special considerations.

3.5.3 Environmental Setting

Prehistory

The prehistory of the project area reflects information known about the indigenous population from the time the region was first populated with humans until the arrival of the first Europeans who visited and recorded their journeys through the written record. The prehistoric record is derived from more than a century of archaeological research; however, while much has been gleaned from these studies, large gaps in the data record remain. The following prehistoric culture sequence, derived from Milliken et al. (2010:114-118), briefly outlines the prehistory of the San Francisco Bay region.

The *Paleoindian Period* (11,500–8000 B.C.) was characterized by big-game hunters occupying broad geographic areas. Although it is widely believed that the San Francisco Bay was likely inhabited by at least 10,000 B.C., evidence of this occupation has not yet been discovered. Geological forces, including erosion, siltation, and sea level rise, have all likely contributed to the lack of evidence of ancient sites in the region.

The *Early Holocene Period* (or *Lower Archaic Period*; 8000–3500 B.C.) is considered a time when populations continued to be very mobile, as they practiced a foraging subsistence pattern around the region. Artifacts that characterize this period include the milling slab and handstone[1] to process seeds, as well as large wide-stemmed and leaf-shaped projectile points.

The *Early Period (*or *Middle Archaic Period*; 3500–500 B.C.) is marked by the appearance of cut shell beads in the archaeological record, as well as the presence of the mortar and pestle for processing acorns. House floors with postholes indicate substantial living structures, which suggests a move toward establishing a more sedentary lifestyle.

The *Middle Period*, which includes the *Lower Middle Period* (or *Initial Upper Archaic Period*; 500 B.C. to A.D. 430), and *Upper Middle Period* (or *Late Upper Archaic Period*; A.D. 430–1050), appears to be a time when geographic mobility may have continued, although groups began

[1] Handstones, also referred to as manos, are hand-held stone tools used to grind foodstuffs, primarily seeds. These tools were often ground into a loaf shape to fit comfortably in the hand, although unshaped stones could also be used as handstones.

to establish longer term base camps in localities from which a more diverse range of resources could be exploited. The first rich black middens are recorded from this period. The addition of milling tools, obsidian and chert concave-base projectile points, and the occurrence of sites in a wider range of environments suggest that the economic base was more diverse. By the *Upper Middle Period*, mobility was being replaced by the development of numerous small villages. Around A.D. 430 a “dramatic cultural disruption” occurred, as evidenced by the sudden collapse of the *Olivella* saucer bead trade network.

The *Initial Late Period* (or *Lower Emergent Period*; A.D. 1050–1550) reflects a social complexity that had developed toward lifeways of large central villages with resident political leaders and specialized activity sites. Artifacts associated with this period include the bow and arrow, small corner-notched projectile points, and a diversity of beads and ornaments.

The *Terminal Late Period (*or *Upper Emergent Period;* A.D. 1550–circa 1750) generally represents the indigenous cultures that were encountered by the Spanish explorers when they first arrived in San Francisco Bay. This social complexity continued to develop from the previous period, as trade relations appear to have shifted and regional sub-cultures emerged.

Ethnography

The population indigenous to the project area spoke a language referred to as Costanoan, a derivative from a Spanish term for “coast people.” Costanoan, which consisted of six known languages and various dialects within those languages, was spoken over a broad territory that included all of the San Francisco Peninsula, along the east and south of San Francisco Bay, and south to Monterey Bay, Salinas Valley, and the area around Hollister. Those residing in the Santa Clara Valley and the project area spoke the Tamyen (or Tamien) dialect of San Francisco Bay Costonoan (Milliken et al. 2009:33-35).

The Costanoan peoples, also referred to as the Ohlone, Mutsun, or Rumsen, depending on geography, were not a united cultural or political entity (Milliken et al. 2009:2-4). Rather, there were strong differences not only in language, but also in culture, between the San Francisco and Monterey Bay occupants. Political affinity was based on the tribelet, which was comprised of one or more villages within a specific geographic territory (Levy 1978:487).

The tribelet territory was 10–12 miles in diameter and contained a population of 200–400 people living among four or five villages (Milliken et al. 2010:99). Those living in the project area resided in large villages along permanent streams in locations that allowed access to the diverse resources found in the tidal marshlands, the valley floor, and the hills (Milliken et al. 2010:106; Moratto 2004:225).

The Tamyen were among the first of the San Francisco Bay Costanoans to be affected by the arrival of the Spanish. Mission Santa Clara was established in 1777, just 7 months after the founding of Mission Dolores in San Francisco, which was followed by the pueblo at San Jose (El Pueblo San Jose de Guadalupe) shortly thereafter (Kyle et al. 2002:423-424). The mission population of Tamyen grew slowly during the first few years and decades, and was comprised mostly of infants, children, and the very old. The first large wave of adults to be baptized occurred in 1794. According to Milliken et al. (2009:141):

> The huge growth of the Mission Santa Clara adult population in 1794 and 1795 could only have been the result of a social movement. There is no evidence that Spanish soldiers marched the people into the mission, nor that drought drove them in.

Despite the apparent lack of forced baptism, local Tamyen worked at the mission and the San Jose pueblo. Exposure to new diseases and new foods, in addition to restrictions on traditional seasonal movement to gather resources and the diminishment of natural resources by the colonists, all contributed to a steep decline in the native population during the initial decades of colonization and through to the secularization of the missions in the 1820s.

Beginning in the early 1900s, the various Ohlone/Costanoan tribes began to organize and reclaim their ancestral identity by petitioning the U.S. Bureau of Indian Affairs (BIA) for tribal recognition. To date, none of these tribes have been successful at establishing federal recognition. As they continue their efforts with the BIA, individuals and tribal organizations are working to strengthen their culture, both within their communities and by sharing their culture with others. To accomplish this, today's Ohlone/Costanoan tribes have developed numerous programs to revive and enhance traditional language, songs, dances, and basketry, among other aspects of culture (Milliken et al. 2009: 231-236). Although the Mission Santa Clara population had one of the highest numbers of native speakers (i.e., Tamyen), they seem to have disappeared into the general population. According to Milliken et al. (2009:201), "No Mission Santa Clara descendants are known to us to be active in present-day Ohlone/ Costanoan cultural or political activities."

History

The historic era began in the region of Santa Clara County when Spanish explorers arrived in the late 1760s and 1770s. Members of the Portola expedition were the first to arrive in November 1769, reaching San Francisco Bay before returning to Monterey. Pedro Fages followed in 1770 and made a return trip in 1772. The latter visit was chronicled by Father Crespi as the group traveled north along the east side of the Bay and eventually into the Sacramento Valley. Upon their return, they again passed through the Santa Clara Valley, camping one night near present-day Milpitas. A subsequent expedition through the Santa Clara Valley in 1775-1776, led by Juan Bautista de Anza, further helped to establish El Camino Real ("the Royal Road"). This route, which was originally delineated by Fages, was later used by the Spanish to settle the region with pueblos and missions (Kyle et al. 2002:421-422).

Santa Clara County was named after Mission Santa Clara de Assis. The mission was initially founded in 1777 on the banks of the Guadalupe River at a village called *So-co-is-u-ka* by the local Ohlone Indians who were living in the valley. Later that same year, the Pueblo of San Jose de Guadalupe was established along the Guadalupe River, approximately 2.25 miles from the mission, to grow food for the clerics and their neophytes (or converts). The town, now known as San Jose, was the first civilian settlement in Alta California (Kyle et al. 2002:422-424).

The rich lands of the Santa Clara Valley were divided among 50 recipients of land grants by first the Spanish, and then the Mexican, governments. Jose Higuera was the recipient of one of the two earliest land grants, and the last to be made in the valley by a Spanish governor. Granted in 1821, Rancho Los Tularcitos was located just south of the current project area. The rancho extended south along Penitencia Creek from the confluence with Calera Creek and east into the mountains to contain the headwaters of Calera Creek and the Arroyo de los Coches (Kyle et al. 2002:429).

American explorers, traders, and settlers began filtering into California and the Santa Clara Valley during the Mexican Period (1821-1848); some of them became Mexican citizens and received vast grants of land. It was not until the beginning of the American period, after the end of the Mexican-American War and the signing of the Treaty of Guadalupe Hidalgo in 1848, that non-Hispanic settlers began migrating *en masse*. This surge in migration was bolstered by the discovery of gold in the Sierra Nevada foothills and the advent of the Gold Rush in 1849.

The Santa Clara Valley became a prominent agricultural area, aided by the completion of the Western Pacific Railroad in 1867, which helped to transport goods and people between San Jose and Oakland, and beyond. The cultivation of row crops such as spinach, peas, asparagus, beans, and strawberries supported the area throughout the late 1800s and into the mid-1900s (Milpitas History 2015). The region became more urban after World War II, and even more so after the Korean War. A review of historic maps and aerial photographs (described below) indicates that the area immediately surrounding the project site did not fully develop until the late 1980s, when the Santa Clara Valley truly began its transformation into the "Silicon Valley" we know today.

Cultural Resources Studies

Area of Potential Effects

The area of potential effects (APE) encompasses all of Lower Penitencia Creek, from the outside edges of the existing levees between the confluences with Berryessa Creek and Coyote Creek, including bridges at California Circle, Milmont Drive, and San Andreas Drive. The APE also includes a vacant parcel between North McCarthy Boulevard and the south-bound on-ramp to I-880 for use as a staging area. A paved parking lot north of 380 Fairview Way adjacent to and west of Reach 4 has also been proposed as a staging area. Overall, the APE includes approximately 24 acres, most of which are located within the Lower Penitencia Creek channel. The APE corresponds with project boundary delineated in Figure 2-3.

Literature and Record Search

Cultural resources include prehistoric archaeological sites; historic-era archaeological sites; TCRs/TCPs; historic-era buildings, structures; and prehistoric or historic-era landscapes, districts, and linear features.

A record search was conducted in December 2015 by the Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University in Rohnert Park (NWIC File No. 15-0766). The purpose of the record search was to identify the presence of any previously recorded cultural resources within the project's APE and to determine if any portions of the project site had previously been surveyed for cultural resources. The records search encompassed the APE as well as a 0.5-mile study radius around the project area.

The record search indicated that 19 previous cultural resource investigations have been completed entirely or partially within the project area (see **Table 3.5-1**). The earliest of these reports, conducted by Jackson et al. in 1973, included all of lower Penitencia Creek, along with other drainages within the District. The area immediately adjacent to the project area was subsequently surveyed over the ensuing four decades as the area developed. The very northern and southern ends of the project area have been studied several times. The record search also found that another 21 studies had been conducted within the 0.5-mile study radius, and 39 "other" studies had been conducted that included the project area.

Table 3.5-1. Cultural Studies Previously Conducted Entirely or Partially in the Project Area

NWIC Report No.	Author	Date	Title
4772	Thomas L. Jackson, Miley P. Holman, and Stephen A. Dietz	1973	An Archaeological Reconnaissance of the Santa Clara County Flood Control and Water District East Zone Flood Control Project
6072	Donna M. Garaventa, David Bateman, John M. Findlay, R. M. Harmon, W. McCormack, R. L. Anastasio, and J. C. Bard	1983	Archaeological Survey Report, Coyote Creek Flood Control Project Located Between San Francisco Bay to Montague Expressway, City of San Jose, Santa Clara County
6410	Donna M. Garaventa, James C. Bard, Robert M. Harmon, Amy A. Gowan, and R. L. Anastasio	1984	Archaeological Survey Report, Coyote Creek Flood Control Project Located Between San Francisco Bay to Montague Expressway, City of San Jose, Santa Clara County, California
6822	James C. Bard, Donna M. Garaventa, Robert M. Harmon, Rebecca Loveland Anastasio, Annie Cody, Jeff Parsons, and Melody E. Tannam	1984	An Archaeological Survey of the McCarthy Ranch Located Between Coyote Creek, Highway 17, Dixon Landing Road, and Highway 237, Milpitas, California
7087	Miley Paul Holman	1984	Durham Road, Fremont Boulevard, Mission Boulevard and Dixon Landing Interchanges, Archaeological Reconnaissance
8368	Stephen A. Dietz	1980	Milpitas Golf Course Site, Dixon Landing Road at Highway 17
8977	Robert L. Gross	1986	Archaeological Survey Report, 04-SCL/ALA-880 P.M. 6.7/10.5-0.0/2.3 04570-112820
9133	Stephen A. Dietz	1980	An archaeological reconnaissance of additional portions of the Milpitas Golf Course EIR properties in Milpitas, Santa Clara County, California

NWIC Report No.	Author	Date	Title
17993	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	Cultural Resources Inventory Report for the Proposed Mojave Northward Expansion Project
18289	Basin Research Associates, Inc.	1995	Cultural Resources Assessment, Alviso Master Plan Area, City of San Jose, Santa Clara County, California
23382	Basin Research Associates, Inc.	2000	Cultural Resources Assessment, Historic Properties Affected or Potentially Affected by the South Bay Water Recycling Program Phase 2 Facilities, Modifications to Existing Segments SJ-1, SJ-2, SC-2, SC-5, M-1 and New Segments SJ-3, SJ-4, SJ-5, SJ-6, SJ-7, M-2, M-5, Cities of San Jose and Milpitas, Santa Clara County
24981	Stuart Guedon	2000	Cultural Resources Assessment, Coyote Creek Trail Project, Cities of Milpitas and San Jose, Santa Clara County
25031	Basin Research Associates, Inc	2000	Cultural Resources Assessment, Bay Trail Master Plan Project, City of San Jose, Santa Clara County, California
25043	David Chavez	2001	Historic Property Survey Report, Route 262/Warren Avenue/I-880 Interchange Reconstruction and I-880 Widening Project, 04-SCL-880-KP 13.2 (PM 8.2)/KP 16.9 (PM 10.5), 04-ALA-880-KP R0.0 (PM R0.0)/KP 4.7 (PM 2.9), 04-ALA-262-KP R0.0 (PM R0.0)/KP R0.7 (PM R0.5), EA 233220
26216	Archaeological Resource Management	2002	Cultural Resource Evaluation of the Berryessa Creek Levee Project in the City of Milpitas, County of Santa Clara
34215	Colin I. Busby	2000	Cultural Resources Assessment, Bay Trail Master Plan Project, Cities of Milpitas and San Jose, Santa Clara County, California
37743	Heidi Koenig	2010	Lower Berryessa Creek Project, Milpitas, Santa Clara County, California, Cultural Resources Survey Report
39863	Jennifer Thomas	2011	Cultural Resources Inventory of a Hydrostatic Pressure Test Segment on L-131 between Mileposts 50.57 and 54.91, Alameda and Santa Clara Counties, California

NWIC Report No.	Author	Date	Title
46399	Laura Leach-Palm and Chandra Miller	2015	Historic Property Survey Report for the MTC Interstate 880 Express Lane Phase I Project, Alameda and Santa Clara Counties, California; State Route 84 04-ALA-84 PM R3.0-R6.1, State Route 92 04-ALA-92 PM R2.5-R6.5, Interstate 880, 04-SCL-880 PM 7.5-10.5, 04-ALA-880 PM R0.0-26.4, EA 04-3G920

Despite the large number of cultural resources studies conducted within and immediately adjacent to the project APE, no cultural resources have been previously recorded within the APE. Three resources had been recorded within the 0.5-mile study radius. Two of these resources were railroad lines (Western Pacific and Southern Pacific); the third was an isolated handstone, or mano, found approximately 0.3 mile southeast of the APE.

The Office of Historic Preservation Historic Properties Directory for Milpitas, the California Inventory of Historic Resources, historical maps, and rancho plat maps were also reviewed for the NWIC record search. No cultural resources were identified within the project area from these sources.

Additional research included a search of the Caltrans Bridge Survey (Caltrans 2015) to determine whether any of the bridges within the project APE were eligible for listing in the NRHP. Five bridges cross Lower Penitencia Creek within the APE (**Table 3.5-2**). All of these bridges were evaluated by the Caltrans Bridge Survey as Category 5, not eligible for the NRHP.

Table 3.5-2. Bridges within the APE

Bridge No.	Location/Crossing	Year Built/ Modified	Historical Significance
37C0333	California Circle	1983	Cat. 5 Not eligible for NRHP
37C0379	Milmont Drive	1983	Cat. 5 Not eligible for NRHP
37CO433	San Andreas Drive	1978	Cat. 5 Not eligible for NRHP
37 0582	U.S. 880 PM 10.38	2002	Cat. 5 Not eligible for NRHP
37 0582K	U.S. 880 PM 10.38	2002	Cat. 5 Not eligible for NRHP

Sources: Caltrans 2015; SCVWD 2013.

Aerial photographs from 1948 through 2012 (NETR Online 2015) and U.S. Geological Survey (USGS) topographic maps from 1890 through 1980 (USGS 2015) were also examined. A comparison of aerial photographs from 1948 and 1956 indicated that the Lower Penitencia Creek channel had been modified to its current configuration at the north end of the project area and that the channel had been widened during this time. The 1956 photograph also showed the presence of I-880 and its bridge crossings of Penitencia Creek. The construction of the San Andreas Drive bridge (no. 37C0333) is noted in the 1987 aerial photograph, and the Milmont Drive bridge appears in the 1993 image.

The USGS topographic maps corroborate the information provided by the aerial photographs, although the dates of the maps are slightly different. For example, I-880 is depicted on the 1953 USGS topographic map. More importantly, early USGS maps show the APE located at the edge of the tidal marsh, an ecotone (transition area) with resources important to indigenous population of the San Francisco Bay region.

Both the aerial photographs and the USGS topographic maps showed that the area immediately surrounding the project site remained undeveloped until the late 1980s. More specifically, a document prepared by the District to define the flow issues of Lower Penitencia Creek noted that the Dixon Landing Business Park was constructed on the west side of the creek in 1983 and the residential tracts east of the channel were developed in 1988. Levees along both banks of the creek were also constructed between California Circle and Berryessa Creek as part of these two developments, along with significant channel improvements, and the Milmont Drive bridge was built in 1989 (SCVWD 2013:5).

The Santa Clara County Historical Society and the Milpitas Historical Society were contacted by email on December 10 and December 30, 2015, respectively. The societies were asked if they had any historical information specific to the project area that would assist in preparation of this EIR. No information has been provided by either organization to date.

Native American Consultation

The NAHC was contacted by email on November 19, 2015, to request a search of the sacred lands files for the APE and a list of individuals who might have additional knowledge about tribal resources in the project area. The NAHC responded on December 14, 2015, stating that sacred land files failed to identify any Native American cultural resources in the project area and providing a list of knowledgeable Native Americans in the region. The individuals identified were contacted by letters mailed December 17, 2015 (**Table 3.5-3**). The letters were intended to inform the individuals and organizations about the project; to inquire whether they knew of any unrecorded Native American cultural resources or other areas of concern within or adjacent to the project area; and to solicit comments, questions, or concerns with regard to the proposed project. A project location map was included with each letter. Follow-up telephone calls were made on February 2, 2016, to ensure that the letter had been received by all those contacted.

Table 3.5-3. Native American Consultation

Organization/Tribe	Letter Date	Telephone Follow-up Date	Comments
Muwekma Ohlone Indian Tribe of the San Francisco Bay Area	December 17, 2015	February 2, 2016	Chairperson considers the area sensitive for buried cultural resources. She requested that work stop if cultural resources are discovered and the District consult with the tribe on the treatment of the resources.
Ohlone Indian Tribe	December 17, 2015	February 2, 2016	Left message on answering machine

Organization/Tribe	Letter Date	Telephone Follow-up Date	Comments
Trina Marine Ruano Family	December 17, 2015	February 2, 2016	Left message on answering machine
No affiliation	December 17, 2015	February 2, 2016	Left message on answering machine
Amah Mutsun Tribal Band	December 17, 2015	February 2, 2016 via email	Tribal contact responded by email on February 3, 2016. He suggested contacting the Muwekma Tribal Band for information.
Amah Mutsun Tribal Band	December 17, 2015	February 2, 2016	Left message on answering machine. Chairperson returned the call on the same day and said that the project location is outside of his tribal territory.
Amah Mutsun Tribal Band	December 17, 2015	February 2, 2016	Left message on answering machine
No affiliation	December 17, 2015	February 2, 2016	Left message on answering machine
Indian Canyon Mutsun Band of Costanoan	December 17, 2015	February 2, 2016	Chairperson noted that any location near a creek is sensitive for cultural resources; therefore, she recommended having Native American and archaeological monitors present during any earth-moving activities.
No affiliation	December 17, 2015	February 2, 2016	Left message on answering machine
Amah Mutsun Tribal Band	December 17, 2015	February 2, 2016	Left message on answering machine

The chairpersons of the Muwekma Ohlone Indian Tribe of the San Francisco Bay Area Indian Canyon Mutsun Band of Costanoan were reached by telephone. They were unaware of any specific resources in the project APE, but are aware of resources in the vicinity, especially near waterways, and consider the area sensitive for Native American resources. They requested that work stop in the vicinity of any cultural resources discovered during construction and that the District consult with the tribe about the treatment of the resources. They also recommended that Native American and archaeological monitors be present during any ground disturbance and expressed concern about the ultimate disposition of any cultural materials that might be discovered, and where human remains would be reinterred, should they be discovered. They noted that, if found, burials should not be removed or analyzed without the consent of the tribe.

Archaeological Survey

Although the project APE has been completely surveyed in the past, the entire length of Penitencia Creek within the project area has not been studied for more than 40 years. As a result, archaeologists who meet the U.S. Secretary of the Interior's professional standards in archaeology conducted a field survey of the APE on January 8, 2016. A historic architectural study of buildings immediately surrounding the project area was not conducted because all were constructed in the late 1960s and are less than 50 years old. All of the built environment resources east of Penitencia Creek are residences (tract homes, condominiums, or apartments); an office park is located on the west bank near Reach 4. Similarly, the bridges that cross Penitencia Creek were not evaluated due to their relatively recent ages and because most had previously been evaluated.

Archaeological Resources

No archaeological resources were identified during the course of the archaeological field study undertaken for this project by professionals who meet the U.S. Secretary of the Interior's standards in archaeology.

Built Environment Resources

Built environment resources within the project APE are limited to the bridges discussed above and the channelized sections of Penitencia Creek. As previously noted, the bridges are not eligible for listing in the CRHR or the NRHP by virtue of their relatively recent ages (i.e., less than 50 years old).

Tribal Cultural Resources and Traditional Cultural Properties

The NOP for this EIR was issued prior to July 1, 2015. As a result, the lead agency was not required to consult with local tribal administrators under PRC 21080.3.1, and thus, TCRs were not identified through such consultation. Outreach to individuals who have knowledge about the project area also failed to identify any TCRs or TCPs in the APE.

Paleontological Resources

Paleontological resources include fossil remains, as well as fossil localities and rock or soil formations that have produced fossil material. Fossils are the remains or traces of prehistoric animals and plants. Fossils are important scientific and educational resources because of their use in (1) documenting the presence and evolutionary history of particular groups of now-extinct organisms; (2) reconstructing the environments in which these organisms lived; and (3) determining the relative ages of the strata in which they occur, as well as the relative ages of the geologic events that resulted in the deposition of the sediments that formed these strata and their subsequent deformation.

The methods applied to the evaluation of project impacts on paleontological resources involved two elements: first, to evaluate the potential for unique paleontological resources to exist within the project area, and then to evaluate the impacts that construction of the proposed project could have on those resources.

A search of known paleontological sites in California (University of California Museum of Paleontology 2016) did not identify any known sites within the project site or general area. Research also indicated that the soils underlying the project site consist of Holocene-era floodplain sediments classified as Urban Campbell Complex and Campbell silt loam (Natural Resources Conservation Service 2015a, 2015b). Such soils are not generally conducive to the preservation of paleontological remains due to their relatively recent age.

3.5.4 Impact Analysis

Methodology

All aspects of the cultural resources study were conducted in accordance with the U.S. Secretary of the Interior's Standards and Guidelines for Identification of Cultural Resources (48 CFR Parts 44720–44723). Resource documentation also followed the guidance outlined in Instructions for Recording Historical Resources. Methods employed for the proposed project consisted of pre-field research, Native American consultation, reconnaissance-level field surveys, and report preparation. In conjunction with prehistoric and historic overviews, previous investigations and historic maps provided background information for assessing cultural sensitivity and identifying the types of sites likely to be located within the project site.

The impact analysis focuses on the proposed project's construction-related impacts on cultural resources. Operation and maintenance activities would be similar to current practices covered under the District's SMP with the exception of as-needed repair and maintenance of the new floodwalls and headwalls. Because most of those impacts are addressed in the District's SMP Subsequent EIR (SCVWD 2012) and because minor repairs of the floodwalls and headwalls are not expected to involve ground-disturbance, proposed project would result in no operational impacts on cultural resources and such effects are not discussed further.

Criteria for Determining Significance

The proposed project would result in a significant impact on cultural resources if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in State CEQA Guidelines Section 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to State CEQA Guidelines Section 15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geological feature; or
- Disturb any human remains, including those interred outsides of dedicated cemeteries.
- Cause a substantial adverse change in the significance of a tribal cultural resource, as defined in the Public Resources Code Section 21074.

The environmental checklist contained in Appendix G of the State CEQA Guidelines and the standard guidelines for assessment and mitigation of adverse impacts on paleontological resources set forth by the Society of Vertebrate Paleontology (2010) were used to establish three categories of sensitivity: high, low, and undetermined. Areas that consist of rock that is not of sedimentary origin and that have not been known to produce fossils are considered areas of low sensitivity. Additionally, when it can be demonstrated that the conditions of the unconsolidated sediments are such that fossils could not form in these sediments, and that any fossils found in the sediments could not be considered in situ, they would have minimal scientific value and the area would be considered to have low sensitivity. When both of these low-sensitivity conditions were present, it was considered that no significant paleontological resource would be present and, consequently, no impact would occur.

Impact Summary

Table 3.5-4 summarizes cultural resources impacts of the proposed project.

Table 3.5-4. Summary of Impacts Cultural Resources

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance After Mitigation
CR-1: Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5	NI	None	NI
CR-2: Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5	LS	None	LS
CR-3: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature	NI	None	NI
CR-4: Disturb any human remains, including those interred outside of formal cemeteries	LS	None	LS
CR-5: Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074	~~NI~~LS	None	~~NI~~LS

NI = No Impact; LS = Less than Significant

Environmental Impacts

Impact CR-1: Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 (No Impact)

All project-related activities that would disturb the ground surface or remove structures (e.g., bridges) have the potential to affect historical resources, should they be present within the APE. However, no historical resources, as defined in Section 15064.5 of the State CEQA Guidelines, were identified within the project site. As a result, the proposed project would not cause a substantial adverse change to a historical resource and there would be no impact.

Historical resources that are archaeological in nature may be accidentally discovered during project construction; archaeological resources are discussed further in Impact CR-2 below.

Impact CR-2: Cause a Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to Section 15064.5 (Less than Significant)

All ground-disturbing activities associated with the proposed project that might extend below the existing ground surface, and particularly excavations outside of the creek channel (e.g., installation of floodwall footings) have the potential to encounter buried archaeological materials. No archaeological resources were identified within the project site as a result of background research or the field survey. Although an archaeological survey was conducted of the project site, additional archaeological remains may be buried with no surface manifestation. District BMP CU-1 requires that construction activities halt immediately within ~~30~~100 feet of a find and that both the Santa Clara County Coroner and a qualified archaeologist be contacted to evaluate the discovery site and determine whether construction may resume. In addition, the District would comply with the processes outlined in Health and Safety Code Section 7050.5, which requires the Coroner to contact the NAHC within 24 hours of determining whether the remains of a Native American and that the NAHC identify a Most Likely Descendent (MLD). Pursuant to the provisions of Public Resources Code 5097.98, the MLD designated has at least 48 hours to inspect the site and propose treatment and disposition of the remains and any associated grave goods. The District would work with the MLD to ensure that the remains are removed to a protected location and treated with dignity. Implementation of BMP CU-1 and compliance with Health and Safety Code Section 7050.5 and Public Resources Code 5097.98 would ensure that construction-related impacts on archaeological resources are less than significant. ~~Applicable District BMPs, as provided in Chapter 2, include the following:~~

Impact CR-3: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature (No Impact)

Research indicates that the geological matrix of the project site has a low sensitivity for the presence of paleontological resources. As a result, the proposed project would not be anticipated to directly or indirectly destroy a unique paleontological resource or site or unique geological feature. No impacts on paleontological resources or unique geologic features would result from activities and elements of the proposed project, and this issue is not discussed further.

Impact CR-4: Disturb any human remains, including those interred outside of formal cemeteries (Less than Significant)

The project site is located in an area that is sensitive for the presence of Native American village sites, which often contain burials. As a result, disturbance of native ground during project construction has the potential to uncover human remains, although such remains were not identified during the field inventory. District BMP CU-1 requires that construction activities halt immediately within ~~30~~100 feet of any buried human remains and that both the Santa Clara County Coroner and a qualified archaeologist be contacted. As described in Impact CR-2, the District would comply with the processes outlined in Health and Safety Code Section 7050.5, which requires the Coroner to contact the NAHC within 24 hours of determining whether the remains of a Native American and that the NAHC identify a MLD. Per Public Resources Code 5097.98, the MLD designated has at least 48 hours to inspect the site and propose treatment and disposition of the remains and any associated grave goods. The District would work with the MLD to ensure that the remains are removed to a protected location and treated with dignity. Implementation of BMP CU-1 and compliance with Health and Safety Code Section 7050.5 and Public Resources Code 5097.98 would ensure that disturbance to human remains is less than significant.

Impact CR-5: Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074 (~~No Impact~~Less than Significant)

As described in the environmental setting, the NOP for this EIR was issued prior to July 1, 2015, and as a result, the District is not required to formally consult with local tribes under PRC 21080.3.1. Regardless, this topic is addressed since questions relating to TCRs was recently added to the State CEQA Guidelines Appendix G environmental checklist in July 2016. This evaluation is based on the literature and record search and District's Native American consultation process described in the setting section. No TCRs, as defined in PRC

Section 21074, were identified within the project site. In the event of an accidental discovery of a TCR that is also a historical or unique archaeological artifact, BMP CU-1 (see Chapter 2, *Project Description*) would be implemented to ensure that construction activities halt and that a qualified archaeologist is contacted. If a tribal cultural resource cannot be avoided, an Action Plan will include notification of the appropriate Native American tribe, and consultation with the tribe regarding acceptable recovery options. ~~As a result~~ With implementation of BMP CU-1, the proposed project would not cause a substantial adverse change to a TCR and the~~re would~~ impact would be ~~no impact~~less than significant.

3.6 Geology, Soils, and Seismicity

3.6.1 Overview

This section identifies geologic, soils, and seismic conditions in the project area. The section describes the regulatory setting, affected environment, and anticipated impacts of the proposed project based on published geologic reports and maps, a site-specific technical report, and professional expertise. The discussion of impacts considers the consequences of the proposed project with regard to geology, soils, and seismicity. This section also evaluates whether the project would expose people or structures to substantial geologic hazards. Applicable BMPs are identified, and mitigation measures are prescribed to reduce significant impacts of the proposed project.

3.6.2 Regulatory Setting

Federal Laws, Regulations, and Policies

National Earthquake Hazards Reduction Act

The National Earthquake Hazards Reduction Act of 1977 (Public Law 95-124) and creation of the National Earthquake Hazards Reduction Program (NEHRP) established a long-term earthquake risk reduction program to better understand, predict, and mitigate risks associated with seismic events. Four federal agencies are responsible for coordinating activities under NEHRP: U.S. Geological Survey (USGS); National Science Foundation (NSF); FEMA; and National Institute of Standards and Technology. Since its inception, NEHRP has shifted its focus from earthquake prediction to hazard reduction.

State Laws, Regulations, and Policies

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (PRC Section 2621 *et seq*.) was passed in 1972 to reduce the risk to life and property from surface faulting in California. The Alquist-Priolo Act prohibits construction of most types of structures intended for human occupancy on the surface traces of active faults and strictly regulates construction in the corridors along active faults (earthquake fault zones). It also defines criteria for identifying active faults, giving legal weight to terms such as "active," and establishes a process for reviewing building proposals in and adjacent to earthquake fault zones. Under the Alquist-Priolo Act, faults are zoned and construction along or across them is strictly regulated if they are "sufficiently active" and "well defined." The applicability and relevance of the Alquist-Priolo Act on the project area is described below in Section 3.6.3.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (SHMA) (PRC Sections 2690–2699.6) establishes statewide minimum public safety standards for mitigation of earthquake hazards. While the Alquist-Priolo Act addresses surface fault rupture, the SHMA addresses other earthquake-related hazards, including strong ground shaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act. The topics of ground shaking, liquefaction, landslides, and other seismic hazards in relation the project area is described below in Section 3.6.3.

California Building Standards Code

Title 24 of the CCR, also known as the California Building Standards Code (CBC), specifies standards for geologic and seismic hazards other than surface faulting. These codes are administered and updated by the California Building Standards Commission. The CBC specifies criteria for open excavation, seismic design, and load-bearing capacity directly related to construction in California.

3.6.3 Environmental Setting

Regional Geology

The project area is located in the southeastern portion of the San Francisco Bay Area in the Coast Ranges, a naturally defined geomorphic province encompassing the central and northern California coast (CDOC 2002). The distinguishing geologic feature of this province is the northwest-trending mountain ranges and valleys subparallel to the San Andreas Fault. Two local mountain ranges bound San Francisco Bay and the project area: the Santa Cruz Mountains to the west and southwest, and the Diablo Range to the east. These ranges are composed of thick Cenozoic and Mesozoic sedimentary strata (CDOC 2002). At the southern end of San Francisco Bay, the Santa Clara Valley extends approximately 20 miles southeast. The valley formed as tectonic forces between the San Andreas Fault Zone (west) and Hayward Fault Zone (east) created a structural depression between the two mountain ranges.

Local Geology

The proposed project is located along the northern boundary of the Santa Clara Valley, along the alluvial bay margin that flanks the southern San Francisco Bay. The project site is less than a mile east of the tidal baylands and salt ponds that border the Bay, and about 3-4 miles from the open water portion of San Francisco Bay. The nearest prominent fault is the southern section of the Hayward Fault, which is about 1.2 miles to the east of the project site and runs in a southeast-to-northwest alignment along the base of the East Bay Hills. Geologic materials underlying the project area consist of late Quaternary (1,288,000 to 3,600,000 years ago) to Holocene (less than 11,000 years ago) alluvium and intertidal deposits (CDOC 1991). The predominant geologic unit underlying Lower Penitencia Creek is flood-basin deposits (alluvium) consisting of organic-rich clay to very fine silty clay. As the creek approaches the confluence with Coyote Creek and the outfall to the San Francisco Bay, underlying geology is more typical of tidal marshes and swamps, consisting mainly of peat and peaty mud with some fine clay, silts, and sands. Older alluvium underlies the areas to the north and the eastern margins of the project area.

Soils

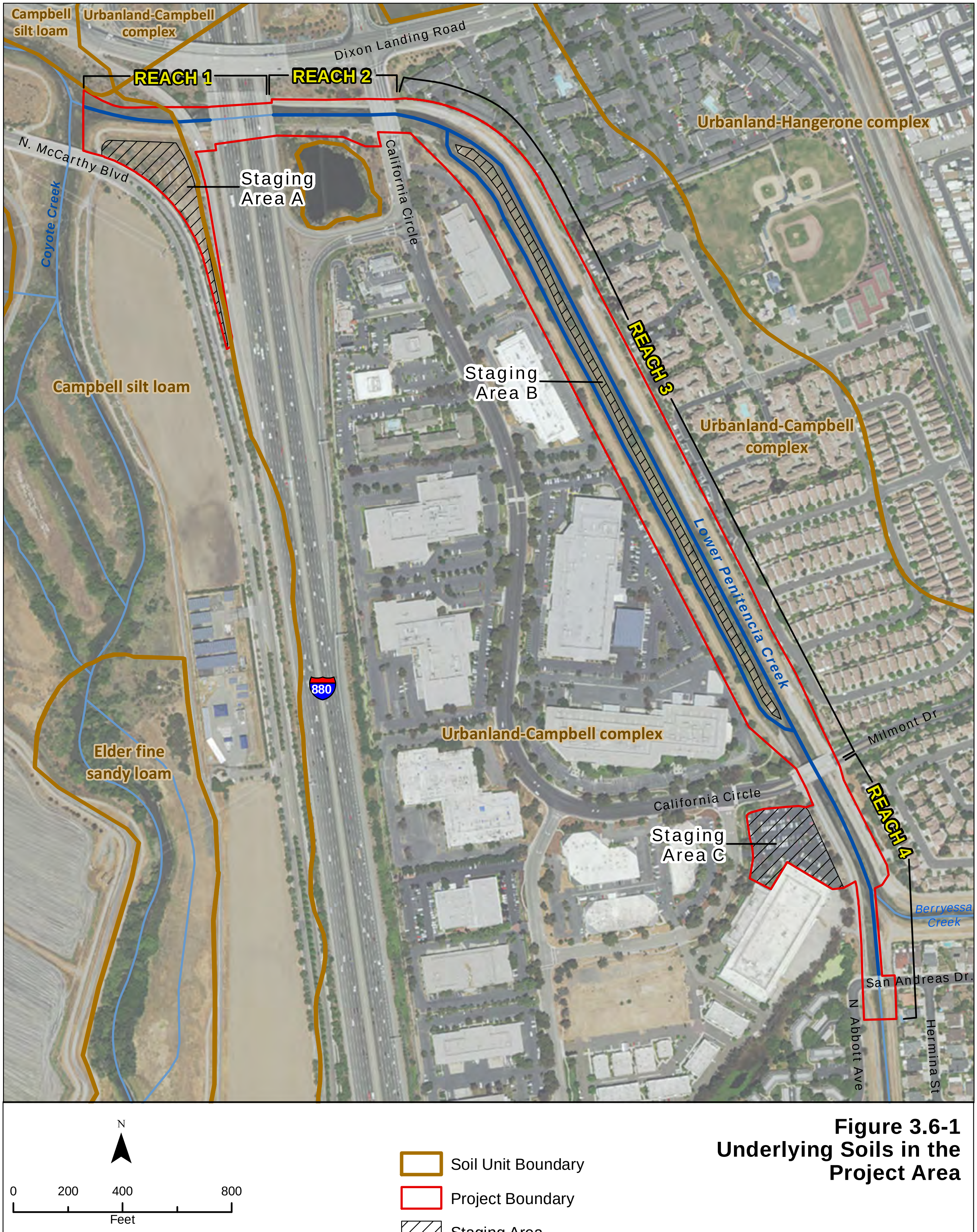
Due to urban development and marshland infill, the soils underlying the project area have likely been removed, replaced, or amended for development. In general, the relatively flat, urbanized bay margin setting is underlain by alluvial soils of poorly sorted gravel, sand, silt, and clay, increasing in thickness from zero at the base of the Diablo Range foothills to 1,000 feet or more at the western side of Milpitas (City of Milpitas 2002). According to NRCS soil mapping, two designated soil associations are present in the project area: Campbell silt loam (0 to 2 percent slopes) and Urbanland-Campbell complex (0 to 2 percent slopes) (see **Figure 3.6-1**) (NRCS 2015). Campbell silt loam is alluvial fan material of eroded metamorphic and sedimentary rock washed down from the Diablo Range. The general soil profile for this soil unit consists of silt loam near the top 24 inches below ground surface (bgs), transitioning to silty clay loam, then to silty clay beyond 51 inches bgs. Campbell silt loam is classified as moderately well drained (NRCS 2015). Urbanland-Campbell complex is physically the same as Campbell silt loam, but with urban development covering 70 percent of the surface area.

The geotechnical conditions of the existing levees along Lower Penitencia Creek were evaluated previously as part of the creek's FEMA levee recertification process. Soils encountered during this investigation consisted of levee fill over clayey alluvium, underlain by sands and gravels. Levee fill material generally consisted of very stiff lean clay and fat clay, with variable amounts of fine to medium sand approximately 3-10 feet thick, depending on the levee location. Directly beneath the levee fill, native foundation soils generally consisted of a clayey alluvial layer ranging from approximately 10 to 25 feet. This layer consisted of generally very stiff to hard lean clay and fat clay with scattered thin (several inches to 1 foot thick) zones of clayey sand. Sand and silty sand varying in thickness from 10 to 18 feet were encountered underlying the clay layer (AMEC Geomatrix, Inc. 2009).

Seismicity

Alquist-Priolo Fault Zones and Ground Failure

Fault areas considered to be of greatest risk are identified as Alquist-Priolo fault zones. No Alquist-Priolo–designated fault zones are present in or near the proposed project area (CDOC 1982). Past evidence of Holocene-aged (last 11,700 years) and older fault displacement can be seen throughout the region. Potentially active and historic faults near the project area are listed in **Table 3.6-1**.



Prepared by: Horizon Water and Environment

Figure 3.6-1
Underlying Soils in the Project Area

Lower Penitencia Creek Improvements Project

Table 3.6-1. Regional Faults near the Project Area

Fault	Approximate Distance from Project Area	Maximum Credible Earthquake (Magnitude)	Last Known Major Displacement	Potential Shaking Scenario (MMI)
Hayward Fault Zone, Southern Hayward Section	1.2 miles northeast	6.9	1868	XIII, Very Strong
Silver Creek	1.2 miles west	N/A	More than 1,200,000 years	N/A
Crosley (an extension of the Hayward Fault Zone)	1.4 miles east	N/A	Within 11,700 years	N/A
Calaveras Fault Zone	5.5 miles east	6.9	Within 11,700 years	XIII, Very Strong
Monte Vista	12 miles west	6.8	Within 11,700 years	N/A
San Andreas	17 miles west	7.9	1989	XII; Strong
Greenville	20 miles east	7.0	Within 11,700 years	XIII, Very Strong
San Gregorio	27 miles west	7.5	Within 11,700 years	XI-XIII, Strong to Very Strong

Sources: ABAG 2015; CDOC 1991, 2010; USGS 1996, 2003.

Ground Shaking

Seismically induced ground shaking can cause substantial damage to roadways, bridges, and other infrastructure. The Modified Mercalli Intensity (MMI) scale (**Table 3.6-2**) is a range of perceived ground-shaking intensity based on observed effects and is the current standard used throughout the U.S. Less intense earthquakes are typically rated on the basis of individual accounts, whereas higher intensity events are rated based on observed structural damage. Many factors influence shaking severity, such as distance from the epicenter, the duration of the seismic event, and underlying soils and geologic units.

Table 3.6-2. Modified Mercalli Intensity Scale

Intensity	Shaking	Description/Damage
I	Not Felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.

Intensity	Shaking	Description/Damage
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very Strong	Damage negligible in buildings of good design and construction; slight to moderate damage in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Sources: USGS 1989, 2003.

As with any location in the San Francisco Bay area, the potential exists for substantial ground shaking in the project area following seismic events from several known faults. Ground shaking is predicted to be most severe following a repeat of the 1906 event of the Northern San Andreas Fault Zone (MMI VIII) or ruptures of the Hayward Fault Zone (MMI VIII), or the Central/Southern Calaveras Fault (MMI VIII) (ABAG 2015). Shaking scenarios associated with earthquakes from regional faults is shown in Table 3.6-1 above.

Subsidence and Liquefaction

Subsidence is a term describing the compression of soils following groundwater withdrawal or oxidation of buried organic material. Areas consisting of fine-grained sediments are more susceptible to ground subsidence. Although mining and extraction activities might also lead to subsidence, excessive groundwater pumping is the predominant cause for this phenomenon.

Soil liquefaction is a phenomenon that occurs when saturated sandy or silty soils lose strength during cyclic loading, or repetitive vibrational stress, such as that caused by earthquakes. During the loss of strength, the soil acquires “mobility” sufficient to permit both horizontal and vertical movements, behaving like a liquid. The factors known to influence liquefaction potential are soil density, soil type and depth, soil grain size, groundwater level, soil moisture and the degree of saturation, and the intensity and duration of ground shaking. The greatest potential for liquefaction occurs in areas where the water table is less than 20 feet bgs and where soils consist of relatively uniform, low-density sands. Clayey soils are generally not subject to liquefaction due to more limited porosity and permeability compared to sandy soils. The probability of liquefaction correlates directly with the intensity and duration of ground shaking (i.e., the stronger and/or longer the earthquake, the greater the chance of liquefaction) and the porosity and moisture content of the soil.

Historic groundwater levels underlying the project area are shallow and are typically encountered 4-20 feet bgs, varying by the time of year and recent precipitation patterns (CDOC 2001; State Water Resources Control Board [SWRCB] 2015). According to a recent geotechnical investigations report conducted for the proposed project, groundwater levels underlying the project site range from 3.8 to 11 feet bgs (Kleinfelder 2016). In addition, deeper groundwater levels in the Santa Clara Valley Groundwater Basin, Santa Clara Subbasin, have been trending upward since the 1960s following a coordinated effort to manage and enhance groundwater supplies within the basin (California Department of Water Resources [DWR] 2004; SCWVD 2012). For a more in-depth discussion of regional and local groundwater conditions, refer to Section 3.9, *Hydrology and Water Quality*.

The younger alluvial material underlying the proposed project area is generally susceptible to the effects of liquefaction. The geotechnical investigation conducted by AMEC Geomatrix in 2009 and Kleinfelder in 2016 identified saturated granular materials beneath the Lower Penitencia Creek levees, which are potentially susceptible to liquefaction from strong ground shaking. Additionally, the shallow water table increases the potential for liquefaction. According to data compiled and interpreted by the Association of Bay Area Governments (ABAG), the project area has a moderate to high susceptibility to liquefaction, with the I-880 alignment very high (ABAG 2015).

Landslide, Slope Failure, and Lateral Spreading

Landslides or slope failure can occur in steeply sloped areas during seismic events. On a smaller scale, horizontal displacement of gently sloping ground (5 percent or less slope) can occur along riverbanks or exposed embankments, a phenomenon known as “lateral spreading.” Saturated, loosely consolidated soils and precipitation events increase the likelihood that an earthquake will trigger landslides, slope failure, or lateral spreading.

The proposed project is not located within or near an area where previous landslides have occurred or local topographic, geological, geotechnical, and subsurface water conditions are present that would increase the potential for ground displacements (CDOC 2004). Earthquake-induced lateral spreading may occur along channel banks composed of sandy soils or soil units lacking cohesion or adequate compaction.

3.6.4 Impact Analysis

Methodology

The methodology used to evaluate the environmental impacts of the proposed project on geology, soils, and seismicity involved a review and assessment of published maps, professional publications, and reports pertaining to the project vicinity. Published information was derived from resources provided by ABAG, CDOC (which encompasses the California Geological Survey and State Mining & Geology Board), DWR, NRCS, the District, SWRCB, and USGS. In addition, the impact evaluation was based on review of the geotechnical investigation report prepared for the Lower Penitencia Creek Levee Recertification (AMEC Geomatrix, Inc. 2009; Kleinfelder 2016).

Criteria for Determining Significance

Based on Appendix G of the State CEQA Guidelines, the proposed project would have a significant effect related to geology, soils, and seismicity if it would:

- Expose people or structures to potential substantial adverse effects, including, the risk of loss, injury, or death involving:
  - 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);
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction; or
  - Landslides;
- Result in substantial soil erosion or the loss of topsoil;
- 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;
- Be located on expansive soil, as defined in Table 19-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; or
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water.

Impact Summary

Table 3.6-3 summarizes geology, soils, and seismicity impacts of the proposed project.

Table 3.6-3. Summary of Impacts Geology, Soils, and Seismicity

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of significance After Mitigation
GEO-1: Expose people or structures to potential substantial adverse effects, including, the risk of loss, injury, or death involving: 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); or strong seismic ground shaking	LS	None	LS
GEO-2: Expose people or structures to potential substantial adverse effects, including, the risk of loss, injury, or death involving: seismic-related ground failure, including liquefaction; or landslides	S	Mitigation Measure GEO-1	LM
GEO-3: Result in substantial soil erosion or the loss of topsoil	LS	None	LS
GEO-4: 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	S	Mitigation Measure GEO-1	LM

GEO-5: 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	LS	None	LS
GEO-6: 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	NI	None	NI

NI = No Impact; LS = Less than Significant; LM = Less than Significant with Mitigation; S = Significant

Environmental Impacts

Impact GEO-1: Expose people or structures to potential substantial adverse effects, including, the risk of loss, injury, or death involving: 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); or strong seismic ground shaking (Less than Significant)

Construction and Operational Impacts

Ground rupture refers to the displacement of the earth's surface along a fault during an earthquake and can cause severe damage to floodwalls and conveyance structures, as well as injuries to workers during construction activities. As described in Section 3.6.3, "Environmental Setting," the proposed project is not located within an Alquist–Priolo zone. The nearest potentially active faults (i.e., faults with observed or inferred seismic activity within the last 11,700 years) to the project area are the Southern Hayward Fault Zone, approximately 1.2 miles northeast; the Crosley Fault, approximately 1.4 miles east of the project area; and the Calaveras Fault Zone, approximately 5.5 miles east. A high potential exists for a significant seismic event to occur along the Southern Hayward or Calaveras Fault Zone; however, the possibility of ground rupture in the project area is considered low because of the distance between the project area and the above-referenced faults; therefore, this impact would be less than significant.

As discussed in Section 3.6.3, "Environmental Setting Ground Shaking," the probability of strong seismic ground shaking in the project area is high. Past seismic events associated with the Hayward, Calaveras, and San Andreas Fault Zones resulted in substantial ground shaking in the southern San Francisco Bay Area. Note that seismic ground shaking is an existing hazard for existing structures, roads, levees, and other related facilities as currently constructed. The proposed project structures (levees, floodwalls, and bridge headwalls) would be designed to withstand expected ground shaking during a major seismic event. The project geotechnical report estimated peak ground acceleration at the project site during major earthquake and modeled the potential for ground motion and post-earthquake slope stability. Based on those analyses, the geotechnical report made recommendations with regard to site preparation, types of materials, structural design, and appropriate factors of safety to withstand the expected ground movement during a major earthquake. The project design plans and specifications incorporate the geotechnical recommendations which will greatly reduce the potential for substantial damage due to strong seismic ground shaking. Therefore, this impact would be less than significant.

Impact GEO-2: Expose people or structures to potential substantial adverse effects, including, the risk of loss, injury, or death involving: seismic-related ground failure, including liquefaction; or landslides (Less than Significant with Mitigation)

Construction and Operational Impacts

The project area is relatively flat and, therefore, is not susceptible to earthquake-induced landslides. During construction activities, there is some potential for open excavation areas to fail, especially if soils are saturated. Excavations would be sloped and/or shored to prevent slope failure during construction. Also, given the project area's generally flat topography, the proposed project would not increase the risk of landslides or slope failure. The potential for landslides to cause substantial adverse effects would be low.

Seismic events and differential settling could result in significant damage to and/or failure of levees or other flood control structures, either during construction or over the expected life of the flood control structures associated with the proposed project. The proposed project is located in an area with historical occurrences of liquefaction and in an area where local geological, geotechnical, and/or groundwater conditions show a potential for future ground displacement (ABAG 2015; CDOC 2004). As described in Section 3.6.3, "Environmental Setting Subsidence and Liquefaction," the project area may be susceptible to liquefaction as a result of soil conditions and the high groundwater table.

A project-specific Geotechnical Design Report analyzed site conditions based on subsurface geotechnical investigations performed at the project area. That report identified subsurface layers of clay and alluvium occurring throughout the project area which could be susceptible to liquefaction (Kleinfelder 2017).Based on historical incidents of ground failure near the project area (ABAG 2015; CDOC 2004) and the findings of the project's Geotechnical Design Report, there is substantial potential for seismically induced liquefaction to occur at the project site. Therefore, this impact is considered significant. Mitigation Measure GEO-1 would be implemented to address this impact.

Mitigation Measures

Mitigation Measure GEO-1: Incorporate 2017 Geotechnical Design Report Recommendations into the Final Design and Construction of the Proposed Project.

~~The District or its design contractor will incorporate recommendations from the final Geotechnical Design Report.~~ Based on the draft Geotechnical Design Report (Kleinfelder 2017), the District will incorporate the following recommendations (or substantially similar recommendations) in the design plans and specifications:

- The sheet pile floodwalls will be designed to resist active lateral pressures based on an equivalent fluid weight of 45 pounds per cubic foot (pcf) above the groundwater table and 25 pcf for submerged conditions. If full drainage is not provided in the floodwalls, the sheet pile design would include hydrostatic pressure.

- The sheet pile floodwalls will be able to tolerate the total and differential seismic settlements, as estimated by reach in the final Geotechnical Design Report.

- Levee fill materials will not contain organic material and meet the gradation and plasticity specifications as defined in the final Geotechnical Design Report.

- Prior to general site grading, existing vegetation, organic topsoil, and any debris will be stripped and disposed of outside the construction limits. Stripping depths w be on the order of 3 to 6 inches (or as approved onsite by the geotechnical engineer). Topsoil or any other organic laden materials will not be incorporated into any levee embankment. Where applicable, the gravelly material of the levee maintenance road w be removed prior to placing levee embankment fill.

- All areas to receive engineered fill will be scarified to a depth of 8 inches, uniformly moisture conditioned to a range between one and four percent above optimum moisture content, and compacted to at least 90 percent of the maximum dry density as determined by ASTM Test Method D1557 (Modified Proctor).

- Existing abandoned utility lines, wells and/or foundations (including backfill material) encountered during project activities will be removed and disposed of offsite.

- New levee embankment fill slopes will be constructed at a slope no steeper than 2:1 (H:V). New embankment fill placed on top of the existing levee may require a key into the existing levee slope, or benched into existing levee material after scarification and recompaction of existing fill occurs.

Significance After Mitigation

To meet or exceed safety standards, the proposed project would be designed and constructed in accordance with **Mitigation Measure GEO-1**. The mitigation measure requires implementation of design and/or construction measures to ensure that new levees and structures minimize the potential risk of structural failure resulting from seismically induced liquefaction or ground failure. Implementation of Mitigation Measure GEO-1 would reduce potential hazards from on-site ground failure, liquefaction, or landslide during construction and operation to a level that is less than significant.

Impact GEO-3: Result in substantial soil erosion or the loss of topsoil (Less than Significant)

Construction Impacts

The proposed project would involve substantial earthwork activities that include ground disturbance (excavation of soils, stockpiling soils, and transport). Soils would be required for reconstructing the levee in Reach 1. Excavation work would be necessary to create the wetland bench and for construction of the floodwalls and headwalls. The initial phases of construction, particularly site grading and soil stockpiling, as well as in-channel dewatering and sediment removal, could result in loose soil being exposed to erosive forces such as rainfall and high winds. Because in-channel construction work would occur during the dry season, the likelihood of intense rain or wind events occurring in the project area during such activities is minimal. Nonetheless, some construction activities (e.g., delivery, storage assembly, and testing of construction equipment and materials at staging areas outside the creek channel, top of bank vegetation clearing) would occur outside of the dry season. If soil stockpiles are left unmanaged, the stockpiled soils could be exposed to erosion and could affect adjacent waterways. As discussed in Section 3.9, *Hydrology and Water Quality*, implementation of the following District BMPs would reduce surface erosion and mitigate any loss of topsoil during construction-related activities: AQ-1, BI-3, HM-7, WQ-1, WQ-2, WQ-4, WQ-5, WQ-7, WQ-9, WQ-10, and WQ-16. These measures are designed to prevent and control erosion and sediment transport and to prevent inadvertent release of pollutants. Specifically, BMP WQ-1 and WQ-2 would reduce exposure and loosening of soil during use of construction equipment. BMP WQ-1 ensures, that where possible, construction work occurs from the top of bank where a gravel surface maintenance road can support construction equipment without causing erosion. BMP WQ-2 would be used to evaluate which in-channel locations can support use of construction vehicles (and what types) in order to minimize erosion or other damage within the channels. Implementation of BMP WQ-4 would direct how sediments are handled, transported, and stored so as to reduce erosion potential, and BMP WQ-5 would use erosion control measures to prevent runoff and erosion at soil stockpile locations. BMP WQ-16 would also ensure that erosion control fabrics and erosion control measures are implemented to address both stormwater pollution and minimize erosion at the project work areas. Furthermore, as part of the proposed project, the District would obtain coverage under the National Pollutant Discharge Elimination System Construction General Permit from the State Water Resources Control Board. This permit requires implementation of a Stormwater Pollution Prevention Plan (SWPPP) to control stormwater runoff from the project area, which would further minimize soil erosion and transport. Implementation of the above-mentioned BMPs and SWPPP would ensure that soil erosion and transport effects would be less than significant during the construction phase.

Operational Impacts

Once construction is complete, maintenance activities would continue similar to those that currently take place in the project area, with the addition of periodic floodwall and headwall inspections and maintenance. None of the maintenance activities associated with the project improvements would be expected to significantly affect geological resources or result in substantial loss of topsoil. Operational impacts would be less than significant.

Impact GEO-4: 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 (Less than Significant with Mitigation)

Construction Impacts

Slope failure typically occurs in areas that have a history of prior failure and in weak geologic units exposed on relatively steep slopes. If these conditions are present, slope failure could damage project facilities or other nearby facilities and properties. Additionally, poorly sorted alluvium and loose sand and saturated soils increase the potential for liquefaction or soil instability. Within the project area, shallow groundwater depths (3.8 to 11 feet bgs) increase the probability of saturated soils (Kleinfelder 2016). Although the Campbell silt loam is generally not prone to differential settling, underlying soils and levee material within the project site have been augmented with fill of mixed composition with alluvium layers below. Given the shallow groundwater table within the project area, some soils may be subject to liquefaction, which could pose a significant impact on the structural stability and strength of the proposed replacement levee in Reach 1.

Given the project area's relatively flat topography, the proposed improvements are not prone to landslides or slope failure. Smaller scale slumps or lateral spreading may occur on more gradually sloped topographic features, such as channel banks, if underlain by liquefiable or inadequately compacted soils. As described above, some soils underlying the project area may be liquefiable; therefore, the effects of lateral spreading are significant.

Although channel dewatering would be necessary for in-channel work and for construction of the replacement levee in Reach 1, dewatering activities would occur during the summer months when groundwater levels are typically lower. As such, project construction would have minimal effects on local groundwater levels and the potential for subsidence occurring in the project area would be low.

During construction, ground-disturbing and excavation activities could alter soil stability. Excavation and trenching for the new floodwalls and wetland bench, and placement of new soils to increase levee elevations would temporarily create potentially unstable slopes. In summary, during the project construction phase, adverse effects regarding liquefaction, lateral spreading and slope instability, would be significant.

Operational Impacts

As described above, none of the proposed project's new maintenance activities (e.g., inspection, repair and maintenance of the floodwalls and headwalls) would involve substantial ground disturbance or result in slope instability issues. Therefore, operation and maintenance of the proposed project would not result in slope instability. In addition, the proposed operation and maintenance activities would not involve groundwater extraction and the potential for local subsidence would be minor. Operational impacts would be less than significant.

Mitigation Measures

> **Mitigation Measure GEO-1: Incorporate 2017 Geotechnical Design Report Recommendations into the Final Design and Construction of the Proposed Project** (see full text of measure in Impact GEO-2 analysis above)

Significance After Mitigation

Any areas at risk of liquefaction and slope instability would be identified and the risk would be abated by implementing design criteria and recommendations provided in the Geotechnical Report, as required by Mitigation Measure GEO-1. The geotechnical report provides detailed recommendations for site preparation, removal of deleterious materials, the degree of compaction and stability for slopes, design loads for floodwalls, physical characteristics of fill material, and methods for placement of fills. Implementation of Mitigation Measure GEO-1 would reduce potential liquefaction and slope instability risks to a level that is less than significant.

Impact GEO-5: Be located on expansive soil, as defined in Table 19-1-B of the Uniform Building Code (1994), creating substantial risks to life or property (Less than Significant)

Construction and Operational Impacts

Expansive soils are soil units whose physical characteristics may result in swelling and shrinking during wetting and drying cycles. This differential ground movement can fracture foundations and footings, resulting in infrastructure damage and potential risks to life or property. Campbell silt loam and Urbanland-Campbell can contain a high percentage of clays and exhibit moderate to moderately high expansion potential. In addition, a site-specific geotechnical investigation identified soils with expansive potential as occurring on site (Kleinfelder 2016). Proposed floodwalls would be composed of sheetpiles extending below the relatively shallow expansive soils and would not be susceptible to damage caused by soil expansion. Levee fill material and other fill placed as part of the project would be low-plasticity material not subject to potentially harmful shrink-swell behavior. In addition, expansive soils would be removed and the ground surface compacted prior to placement of fills, substantially reducing the potential for expansive soils to damage project improvements. This impact is less than significant.

Impact GEO-6: Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water (No Impact)

Construction and Operational Impacts

The project would not involve removal, relocation, or construction of sewer, septic, or wastewater disposal systems. The project would have no impact.

3.7 Greenhouse Gas Emissions and Energy Use

3.7.1 Overview

This section describes the regulatory and environmental setting related to greenhouse gases (GHGs) and energy resources. This section then evaluates impacts related to the proposed project's forecasted GHG emissions and project-related effects on energy resources. The impact evaluation begins by describing the methodology used to evaluate significance and the GHG significance criteria, and then presents the impact evaluation. Applicable District BMPs are identified, and mitigation measures are proposed for impacts that are determined to be significant. For discussion regarding existing electricity and natural gas services provided in the project area, refer to Section 3.14, *Utilities and Service Systems.*

3.7.2 Regulatory Setting

Federal Laws, Regulations, and Policies

On April 1, 2010, USEPA and the National Highway Traffic Safety Administration (NHTSA) established a program to reduce GHG emissions and improve fuel economy standards for new model year 2012-2016 cars and light trucks. On August 28, 2012, USEPA and NHTSA enacted further reductions and issued a joint final rulemaking to establish 2017–2025 GHG emissions and Corporate Average Fuel Economy (CAFE) standards for motor vehicles.

To address larger motor vehicles not covered in the regulations for cars and light trucks, on September 15, 2011, USEPA and NHTSA issued a final rule for Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles (76 Federal Register 57106). This final rule is tailored to each of three regulatory categories of heavy-duty vehicles (combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles), as well as medium-duty vehicles. In June 2015, USEPA and NHTSA proposed standards to reduce GHG emissions and improve fuel efficiency of medium- and heavy-duty vehicles for model year 2018 and beyond (USEPA 2015).

State Laws, Regulations, and Policies

GHG Reduction Goals

In recent years, California has enacted a number of policies and plans to address GHG emissions and climate change. In 2006, the California State Legislature enacted AB 32, the Global Warming Solutions Act, which set the overall goals for reducing California's GHG emissions to 1990 levels by 2020. Executive Order (EO) S-3-05 established a goal of 80 percent below 1990 levels by 2050. EO B-30-15 established an interim target to cut California's GHG emissions to 40 percent below 1990 levels by 2030, and the 2030 target has been codified in Senate Bill (SB) 32, which was signed into law on September 8, 2016. Along with SB 32, AB 197 was also signed into law on September 8, 2016, and requires the state to focus its pollution-reduction efforts on disadvantaged communities and to increase legislative oversight of climate programs.

CARB approved the *First Update to the AB 32 Scoping Plan* on May 22, 2014 (CARB 2014). This update defines climate change priorities for the next 5 years and also sets the groundwork to reach long-term goals set forth in EOs S-3-05 and B-16-2012. The update also highlights California's progress toward meeting the near-term 2020 GHG emission reduction goals and evaluates how to align the state's longer term GHG reduction strategies with other state policy priorities for water, waste, natural resources, clean energy, transportation, and land use. At the time of Draft EIR preparation, CARB was working on updating the Scoping Plan to reflect the 2030 target.

GHG Reduction Regulations

CARB has completed rulemaking to implement several GHG emission reduction regulations and continues to investigate the feasibility of implementing additional regulations. These include the low carbon fuel standard, which reduces GHG emissions associated with fuel usage, and the renewable portfolio standard, which requires electricity suppliers to increase the amount of electricity generated from renewable sources to 33 percent by 2020.

In January 2012, CARB approved the Advanced Clean Cars Program, a vehicle emission control program for model years 2017–2025. To further California's support of the national program to regulate emissions, CARB submitted a proposal that would allow automobile manufacturer compliance with USEPA's requirements to show compliance with California's requirements for the same model years. The final rulemaking package was filed on December 6, 2012, and the final rulemaking became effective on December 31, 2012.

California Integrated Energy Policy

SB 1389, passed in 2002, requires the California Energy Commission (CEC) to prepare an *Integrated Energy Policy Report* for the governor and legislature every 2 years (CEC 2016a). The report analyzes data and provides policy recommendations on trends and issues concerning electricity and natural gas, transportation, energy efficiency, renewable energy, and public interest energy research (CEC 2016a). The 2015 *Draft Integrated Energy Policy Report* includes policy recommendations such as addressing the vulnerability of California's energy infrastructure to extreme events related to climate change, including sea-level rise and coastal flooding (CEC 2016b).

Regional and Local Laws, Regulations, and Policies

BAAQMD Regulations and Plans

In an effort to address GHG emissions from the Bay Area, the BAAQMD has established a 10-point climate action work program and prepared Bay Area GHG production- and consumption-based emissions inventories (BAAQMD 2016a). The climate action work program describes specific actions that the BAAQMD will implement to comply with statewide GHG emission reduction targets (BAAQMD 2014). Some of the 10 identified actions include the following:

- setting a GHG reduction goal (80 percent below 1990 levels by 2050),
- updating GHG emission inventory and forecasting,
- monitoring GHG emissions,
- developing a regional climate action strategy,
- supporting and enhancing local action,

- initiating rule development,
- exploring the Bay Area's energy future, and
- expanding enforcement.

BAAQMD Clean Air Plan and Regional Climate Protection Strategy (RCPS)

The BAAQMD is in the process of preparing a 2017 *Clean Air Plan* and *Regional Climate Protection Strategy* (RCPS) that will serve as an update to the 2010 Bay Area *Clean Air Plan*; provide a roadmap for the BAAQMD's future efforts to reduce air pollution; and identify rules, control measures, and strategies to reduce GHG emissions throughout the Bay Area. As part of this update, 83 draft control measures have been identified and categorized within nine economic sectors, including stationary sources, transportation, waste, water, and energy. Potential measures applicable to the proposed project include (but are not limited to) the reduction of solid waste, reduction of water use, construction material recycling, and use of clean available construction equipment in local projects. The BAAQMD anticipates releasing a final 2016 *Clean Air Plan* and RCPS at the end of 2016 (BAAQMD 2016b, 2016c).

City of Milpitas Climate Action Plan

The City of Milpitas adopted a *Climate Action Plan* in 2013. The plan's objective is to streamline environmental review of future development projects consistent with CEQA and BAAQMD air quality guidelines. The plan includes specific reduction measures, strategies for implementation, and a monitoring program to meet a 15-percent reduction from 2005 emissions of GHG by 2020 (one of three options outlined by the BAAQMD). Goals are established in the areas of energy, water, transportation, solid waste, and off-road equipment. Goal 12 and Measure 12.2 pertain directly to the proposed project:

> **Goal 12:** Support the expansion and use of clean technology off-road equipment.
>
> **Measure 12.2:** The City will encourage new development to comply with applicable BAAQMD best management practices that reduce GHGs, including use of alternative-fueled vehicles and equipment, use of local recycled materials, and recycling of construction or demolition materials. The City's goal is that 40 percent of construction equipment should comply with applicable best management practices.

3.7.3 Environmental Setting

Global GHG Emissions

Climate change results from the accumulation of GHGs in the atmosphere, which are produced primarily by the burning of fossil fuels for energy. Because GHGs (carbon dioxide [CO_2], methane [CH_4], and nitrous oxide [N_2O]) persist and mix in the atmosphere, emissions anywhere in the world can affect the climate everywhere in the world. GHG emissions are typically reported in terms of carbon dioxide equivalents (CO_2e), by converting all GHGs to an equivalent basis that takes into account their global warming potential (GWP) compared to CO_2. **Table 3.7-1** shows the six GHGs and their respective GWPs.

Table 3.7-1. Greenhouse Gas Overview and Global Warming Potential

Greenhouse Gas	Global Warming Potential over 100 years (in IPCC 2013/SAR)[a]	Description
Carbon Dioxide (CO_2)	1/1	Released into the atmosphere through burning of fossil fuels (coal, natural gas, and oil), solid waste, trees, and wood products, and also because of certain chemical reactions; removed from the atmosphere when absorbed by plants and water bodies; remains in the atmosphere for 50,000 to more than 100,000 years.
Methane (CH_4)	28/21	Emitted during the production and transport of coal, natural gas, and oil; emissions also result from livestock and agricultural practices and from the decay of organic waste, notably in municipal solid waste landfills; remains in the atmosphere for about 10 years.
Nitrous Oxide (N_2O)	265/310	Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste; remains in the atmosphere for about 100 years.
Hydrofluoro-carbons (HFCs)	4-12,400/ 650–11,700	Typically used in refrigeration and air conditioning equipment, as well as in solvents; emissions are generated primarily from use in air conditioning systems in buildings and vehicles; remains in the atmosphere from 10 to 270 years.
Perfluoro-carbons (PFCs)	6,630-11,100/ 6,500–9,200	Emitted as byproducts of industrial and manufacturing sources; remains in the atmosphere from 800 to 50,000 years.
Sulfur Hexa-fluoride (SF_6)	23,500/23,900	Used in electrical transmission and distribution; remains in the atmosphere approximately 3,200 years.

Notes:

[a] As scientific understanding of the global warming potential (GWP) of various GHGs improves over time, GWP values are updated in the International Panel on Climate Change (IPCC) scientific assessment reports. For regulatory consistency, however, the United Nations Framework Convention on Climate Change reporting guidelines (and international treaties) for national inventories continue the use of GWP values published in the IPCC's 1996 Second Assessment Report (SAR). The table shows GWP values for 100 years from IPCC 2013 and SAR.

Sources: USEPA 2016; IPCC 2013

These six gases are the major GHGs that were recognized by the Kyoto Accords. Other GHGs were not recognized by the Kyoto Accords, chiefly because of the smaller role that they play in global climate change or the uncertainties surrounding their effects. One GHG not recognized by the Kyoto Accords is atmospheric water vapor (H_2O) because no obvious correlation exists between H_2O and specific human activities. H_2O appears to act in a feedback manner; higher temperatures lead to higher H_2O concentrations, which in turn cause more global warming (International Panel on Climate Change [IPCC] 2003). Nitrogen trifluoride was not recognized in the initial Kyoto Accords but was subsequently included by the United Nations Framework Convention on Climate Change and is recognized in California as a GHG.

The most important GHG in human-induced global warming is CO_2. Although many gases have much higher GWPs than the naturally occurring GHGs, CO_2 is emitted in such vastly higher quantities that it accounts for almost 81 percent of the GWP of all GHGs emitted in the United States (USEPA 2016). Fossil fuel combustion, especially the generation of electricity and powering of motor vehicles, has led to substantial increases in CO_2 emissions over time and, thus, substantial increases in atmospheric CO_2 concentrations. In 2005, atmospheric CO_2 concentrations were about 379 ppm, more than 35 percent higher than the pre-industrial concentrations of about 280 ppm (IPCC 2007). In addition to the sheer increase in the volume of its emissions, CO_2 is a major factor in human-induced global warming because of its long lifespan in the atmosphere (50,000-100,000 years).

GHG Emissions in California

In 2014, total California GHG emissions were 441.54 million metric tons of carbon dioxide equivalents (MT CO_2e) (CARB 2016a). This represents a 2.7 million metric ton decrease in total GHG emissions from 2013 and an overall decrease of approximately 9.4 percent since peak levels in 2004. Overall trends in the inventory demonstrate that the carbon intensity of California's economy is declining (the amount of carbon per million dollars of gross domestic product) representing a 28 percent decline since 2001 (CARB 2016b).

In 2014, the transportation sector of the California economy was the largest source of GHG emissions, accounting for approximately 36 percent of the total emissions (CARB 2016a). On-road vehicles accounted for most of the emissions in the transportation sector. The industrial sector accounted for approximately 21 percent of the total emissions, and emissions from electricity generation were about 20 percent of the total. The rest of the emissions are made up of various sources (CARB 2016a).

GHG Emissions in the Project Area

BAAQMD prepared two GHG emission inventories: Bay Area GHG production- and consumption-based emissions inventories. Together, the two types of GHG emissions inventory provide a complete account of the Bay Area's impact on climate change by accounting for GHG emissions produced within the Bay Area (production-based inventory) and GHG emissions related to goods and service that are consumed within the Bay Area, regardless of where they are produced (consumption-based inventory). The most recent GHG production-based emission inventory indicated that most of the 2011 GHG emissions from the Bay Area were from fossil fuel combustion in the transportation sector (39.7 percent of total GHG emissions). The industrial and commercial sector was the second largest contributor (35.7 percent). Approximately 86.6 million metric tons of carbon dioxide equivalent (MMT CO_2e) were emitted by the Bay Area using the production-based approach. The consumption-based approach estimated that approximately 33 percent of GHG emissions are related to transportation and that the total estimated emissions from Bay Area consumers are 115 MMT CO_2e (BAAQMD 2015).

3.7.4 Impact Analysis

Methodology

Construction emissions were estimated using CalEEMod version 2013.2.2. CalEEMod is an emissions model that estimates air pollutant and GHG emissions for land use development projects. It contains reasonable default assumptions that can be replaced if site-specific information is available. CalEEMod incorporates both CARB's EMFAC emissions model for vehicles and a current off-road in-use engine emissions model for construction equipment. Specific construction phasing information, including assumed equipment quantities, types, and construction activity duration, were input into CalEEMod for each of the proposed project's reaches based on similar projects. The estimates of construction worker and hauling trips are conservative and are based on early project estimates, which consisted of construction activities that would have resulted in a greater number of vehicle trips. Section 3.3, *Air Quality*, and Appendix C describe the specific assumptions for each construction phase. GHG emissions from all project phases were summed to determine annual total GHG emissions for comparison to applicable significance thresholds.

The proposed project's operational emissions were not quantified because the proposed project would include similar maintenance activities to those that are currently being performed under the District's SMP (SCVWD 2011) and would not result in a substantial increase from current levels of activities; the types of maintenance activity may change slightly, however, such as a decrease in sediment removal but an increase in graffiti removal. Thus, the potential for the proposed project to generate GHG emissions during operation and maintenance activities was evaluated qualitatively.

The proposed project was evaluated for consistency with AB 32, the most recent AB 32 Scoping Plan, SB 32, goals established by executive orders, and the City of Milpitas' adopted Climate Action Plan (2013).

Additionally, this evaluation considers the extent to which the proposed project would affect energy resources during construction and operation of the proposed project. Effects on energy resources are evaluated based on the energy demand of the proposed project.

Criteria for Determining Significance

Based on Appendix G of the State CEQA Guidelines, the proposed project would result in a significant impact related to GHG emissions if it would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Appendix F of the State CEQA Guidelines does not contain specific criteria for determining significance related to energy resources but does require that EIRs include discussion of energy impacts. In accordance with PRC Section 21100(b)(3), effects on energy resources would be considered significant if the project would result in wasteful, inefficient, and unnecessary consumption of energy. Appendix F of the CEQA Guidelines also describes the types of energy impacts that may be addressed in an EIR including: the project's energy requirements and its energy use efficiencies by amount and fuel type, the effects of a project on local and regional energy supplies, the effects of a project on peak and base period demands for electricity, the degree to which the project complies with existing energy standards, the effects of the project on energy resources, and a project's projected transportation energy use requirements and its overall use of efficient transportation alternatives. Based on guidance provided in Appendix F of the State CEQA Guidelines and for the purposes of this analysis, the proposed project would result in a significant impact on energy resources if it would:

- Cause wasteful, inefficient, and unnecessary consumption of energy during construction, operation, and/or maintenance; or
- Cause a substantial increase in energy demand and increase the need for additional energy resources.

BAAQMD Significance Thresholds

The BAAQMD proposed significance thresholds for operation-related emissions of GHGs as either compliance with a qualified GHG reduction strategy or use of a “bright line” threshold of 1,100 MT CO_2e (BAAQMD 2010). A bright line threshold for projects is the level below which projects are not anticipated to result in a significant impact on global climate change or impede the goals of AB 32. The BAAQMD did not propose GHG thresholds for construction emissions. ~~At the time of Draft EIR preparation, the BAAQMD was not recommending use of the 2010 CEQA thresholds due to ongoing litigation on unrelated thresholds.~~ In May 2017, the BAAQMD initiated an effort to update its CEQA Guidelines including release of a May 2017 version of the guidelines. The May 2017 Guidelines Update includes revisions made to the 2010 Guidelines to incorporate the California Supreme Court’s opinion in California Building Industry Association v. Bay Area Air Quality Management District, 62 Cal. 4th 369. The BAAQMD is currently working to update outdated references, links, analytical methodologies or other technical information in the May 2017 Guidelines Update. The operation-related thresholds in the May 2017 Guidelines Update remain the same as those shown in the 2010 Guidelines. In view of the Supreme Court’s opinion, local agencies may continue to rely on the BAAQMD thresholds after determining that those thresholds reflect an appropriate measure of a project’s impacts. ~~However, t~~The District considers the 2010 BAAQMD thresholds to be appropriate for use in this analysis because they are based on substantial evidence developed by the BAAQMD.

For the purposes of this analysis, the District considers the past BAAQMD operational significance thresholds as well as other bright line thresholds established by several air districts in California to determine impact significance of the proposed project’s construction and operational emissions. The Sacramento Metropolitan Air Quality Management District (SMAQMD) and the San Luis Obispo County Air Pollution Control District have adopted thresholds of 1,100 MT CO_2e and 1,150 MT CO_2e, respectively (SMAQMD 2015, San Luis Obispo County Air Pollution Control District 2012). The SMAQMD threshold, which applies to both construction and operational emissions, was developed with the goal of complying with AB 32, and was based upon a review of the California Air Pollution Control Officers Association’s (CAPCOA’s) guidance for threshold development and other agency’s significance thresholds. In establishing the bright-line threshold, these air districts evaluated representative projects in their air basins. The emissions from representative projects along with implementation of CAPCOA’s guidance on threshold development would ensure compliance with AB 32 by setting a threshold at a level such that approximately 90 percent of proposed projects would be reviewed to assess the need for additional GHG reduction mitigation measures. The threshold of annual emissions of 1,100 MT CO_2e was determined to require the review of at least 90 percent of proposed land development projects, which complies with CAPCOA’s guidance (90-percent project review) and AB 32’s GHG reduction goals (BAAQMD 2009). Thus, the Santa Clara Valley Water District has determined that a significance threshold of 1,100 MT CO_2e for annual GHG emissions is supported by substantial evidence and appropriate for use in this analysis.

Impact Summary

Table 3.7-2 summarizes GHG impacts of the proposed project.

Table 3.7-2. Summary of Impacts Greenhouse Gas Emissions

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance After Mitigation
GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment	LS	None	LS
GHG-2: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases	NI	None	NI
GHG-3: Cause wasteful, inefficient, and unnecessary consumption of energy or cause a substantial increase in energy demand and increase the need for energy resources	LS	None	LS

NI = No Impact; LS = Less than Significant

Environmental Impacts

Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (Less than Significant)

Construction Impacts

The proposed project would generate GHG emissions during construction of the various project elements. Construction-related GHG emissions would result from the combustion of fossil-fueled construction equipment, material hauling, and worker trips. These emissions were estimated for construction activities in each reach using CalEEMod version 2013.2.2 and using modified construction equipment type and quantity assumptions from similar channel improvement projects (Appendix C). The proposed project's total construction-related GHG emissions (if all reach construction activities occurred within the same year) are estimated at 901 MT CO_2e. In fact, project construction would be spread over two years and annual construction GHG emissions would be less than 901 MT CO_2e.

The District, as lead agency, has determined that the SMAQMD- and BAAQMD-established bright line annual threshold of 1,100 MT CO_2e for GHG emissions is an appropriate significance threshold against which to evaluate the proposed project's construction-related emissions. The "bright line" threshold is the proposed threshold for projects and represents the threshold under which they are not anticipated to result in a significant impact with regard to global climate change. The proposed project's anticipated combined annual emissions of 901 MT CO_2e would be less than the SMAQMD's and BAAQMD's annual threshold of 1,100 MT CO_2e. Implementation of District BMP AQ-1 would further reduce GHG emissions generated by minimizing idling construction equipment, requiring proper maintenance and tuning of vehicles and equipment, and requiring proper inflation of tires. These measures would reduce overall emissions from vehicles and equipment, including emissions of GHGs. This impact would be less than significant.

Operational Impacts

GHG emissions from maintenance-related activities following project construction were not quantified because the proposed maintenance activities would be similar to current practice under the District's SMP (SCVWD 2011). Minor new maintenance activities would involve periodic visual inspections along the floodwalls and San Andreas Drive bridge. As necessary, the floodwalls and headwalls would be repaired. Such activities are relatively minor, and the number of vehicle trips and resulting GHG emissions would be a small fraction of the estimated construction emissions of 901 MT CO_2e. Operational GHG emissions would be less than the operational threshold of 1,100 MT CO_2e for annual GHG emissions and would be less than significant.

Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases (No Impact)

Consistency with Local Plans and City of Milpitas Climate Action Plan

The proposed project would be consistent with the measures outlined in local general plans and climate action plans. Potentially applicable climate action plans include those from the City of Milpitas. In particular, these plans encourage limits to vehicle idling, recycling of construction or demolition materials, and reductions in off-road and on-road equipment fleet emissions through use of newer, more efficient, and/or alternatively fueled equipment. The proposed project would be consistent with these goals by limiting idling times to the extent feasible. As described in Section 3.14, *Utilities and Service Systems,* construction debris would be recycled to the extent feasible. In addition, the proposed project would be consistent with the water conservation recommendations of state and local plans and policies by limiting water use to the minimum necessary and using recycled water for dust control.

Consistency with AB 32

The State of California has implemented AB 32 to reduce GHG emissions. The proposed project does not conflict with the most recent list of CARB's early action strategies. The proposed project would minimize construction waste and implement other energy-reducing measures with consideration of other AB 32 target sectors such as natural resources, transportation, and land use.

As stated in Impact GHG-1, operational and maintenance activities associated with the proposed project would be similar to those that currently take place under the SMP with the exception of occasional maintenance and repair activities for the new floodwalls and headwalls at the San Andreas Drive bridge. These activities would be conducted on an infrequent basis and would not have the potential to substantially increase GHG emissions. Thus, the proposed project's operational activities would not conflict with the goals of AB 32.

Consistency with EO-S-3-05

As described in the "Consistency with AB 32" discussion above, the proposed project would include measures to reduce construction energy use and construction waste. These measures would reduce GHG emissions from the proposed project's construction. The proposed project's construction activities would be complete in 2019 and would have no impact on emissions in 2030 or 2050.

In addition, the proposed project's operational and maintenance activities would not be substantially different than activities occurring under the SMP. Emissions from the project's operational and maintenance activities will decrease in the future due to the existing regulations for vehicles and the low carbon fuel standard. Thus, the proposed project's operational and maintenance activities emissions would decrease in the future. Therefore, construction and operation of the proposed project would not conflict with the goals of EO-S-3-05.

Consistency with SB 32

The proposed project's measures to reduce construction energy use and construction waste would reduce GHG emissions from the proposed project's construction. The project's construction activities would be complete in 2019 and would have no impact on emissions in 2030 or 2050. As described above, the project's operational and maintenance activities would be similar to that of other existing and ongoing activities. Emissions from operational and maintenance activities would decrease in the future due to the existing regulations for vehicles and the low carbon fuel standard. Thus, the project's operational and maintenance activities emissions would decrease in the future. Thus, the proposed project would not conflict with the goals of SB 32. Based on the above consistency discussions, emissions generated by the proposed project would not conflict with applicable plans, policies, or regulations adopted for the purpose of reducing emissions of GHGs. No impact would occur.

Impact GHG-3: Cause wasteful, inefficient, and unnecessary consumption of energy or cause a substantial increase in energy demand and increase the need for energy resources (Less than Significant)

Construction and Operational Impacts

The proposed project's construction activities would require the consumption of energy (fossil fuels) for construction equipment, worker vehicles, and truck trips. However, the consumption of energy for the project's equipment and vehicles would be minimized by the reuse on site of excavated soils, minimization of vehicle idling, and short construction period duration. **Table 3.7-3** shows the estimated fuel use from construction equipment, worker vehicles, and truck trips. The calculations used to develop these estimates are presented in Appendix C. This table also shows estimated fuel use during project operations.

Table 3.7-3. Project Fossil Fuel Use

Source Type	Diesel Fuel Use (gallons)	Gasoline Fuel Use (gallons)
Off-road Construction Equipment[1]	946,001	
Construction Worker Vehicles[2]		27,067
Hauling Vehicles[3]	28,268	
Operational Worker Vehicles[4]		<100

[1] Fuel use for off-road construction equipment was estimated using a fuel use factor from CARB's off-road in-use engine emissions model of 0.347 pound of diesel per horsepower-hour and diesel fuel density of 7.37 pounds per gallon.

[2] Fuel use for construction worker vehicles was estimated using fuel use estimates from EMFAC with an estimated rate of 21.7 gallons per mile.

[3] Fuel use for hauling vehicles was estimated using fuel use estimates from EMFAC with an estimated rate of 5.5 gallons per mile.

[4] During project operational and maintenance activities, workers would use less than 100 gallons, assuming less than 1 round trip per week.

The energy consumption during construction is necessary to improve flood protection for residences and businesses in Milpitas; maintain the structural and functional integrity of Lower Penitencia Creek; and prepare for climate change effects such as changes in frequency and intensity of rain events, sea level rise, and changes in storm surges. Similar to current practice, maintenance activities for the proposed project would include trash and debris removal, vegetation management, fence repair, and maintenance road grading, all of which are covered under the District's SMP. New activities for this section of Lower Penitencia Creek may involve periodic visual inspections and as-needed repair of the new floodwalls and San Andreas Drive bridge headwalls, which would involve a minimal increase in fossil-fuel energy use for transportation of vehicles and would be offset by a decrease in sediment removal maintenance activities. These construction and operational activities would not cause wasteful, inefficient, and unnecessary consumption of energy or cause a substantial increase in energy demand and the need for additional energy resources. Although no District BMPs are necessary to reduce this impact to a less-than-significant level, implementation of District BMP AQ-1 would reduce the project's effect by requiring minimization of idling times and requiring that all equipment be maintained and tuned properly. Similarly, though not required to reduce the impact significance, Mitigation Measure AQ-1 would also reduce the potential fossil fuel use by requiring the implementation of NOx-reducing measures, such as using less-polluting equipment (e.g., Tier 3 engines), low-emission diesel products, or alternative fuels. The proposed project's effects on energy resources would be less than significant.

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3.8 Hazards and Hazardous Materials

3.8.1 Overview

This section describes the regulatory setting and affected environment associated with hazardous materials and wastes, significance criteria and the methodology used to evaluate significance of project impacts related to hazardous materials and wastes. The section identifies applicable District BMPs and, for significant impacts, mitigation measures to reduce those impacts. Hazards related to the proximity to airports, wildland fires, and emergency response are also addressed.

3.8.2 Regulatory Setting

Because regulations relating to hazardous materials have been developed over time, hazardous materials are regulated by numerous agencies whose jurisdictions and responsibilities sometimes overlap. Federal agencies that regulate hazardous materials include the United States Environmental Protection Agency (USEPA) and the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA). At the state level, agencies such as the California Department of Industrial Relations, the California Occupational Safety and Health Administration (Cal/OSHA), and the California Emergency Management Agency (Cal EMA) govern the use of hazardous materials. State and local agencies often have parallel or more stringent rules than federal agencies.

Generation, transportation, and disposal of hazardous wastes can also be regulated by different agencies. The lead federal agency is USEPA. The California Department of Toxic Substances Control (DTSC) has primary state regulatory responsibility but may delegate enforcement authority to local jurisdictions that enter into agreements with the state agency.

Federal Laws, Regulations, and Policies

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act of 1976 (RCRA) (42 USC Section 6901 *et seq*.), as amended by the Hazardous and Solid Waste Amendments of 1984, is the primary federal law regulating solid waste and hazardous waste in the United States. The law provides for the "cradle-to-grave" regulation of hazardous wastes, including generation, transportation, treatment, storage, and disposal. Any business, institution, or other entity that generates hazardous waste is required to identify and track its hazardous waste from the point of generation until it is recycled, reused, or disposed of.

USEPA has primary responsibility for implementing the RCRA, but individual states are encouraged to seek authorization to implement some or all RCRA provisions. In California, DTSC received authority to implement the RCRA program in August 1992.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also called the Superfund Act; 42 USC Section 9601 *et seq*.) is intended to protect the public and the environment from the effects of past hazardous waste disposal activities and new hazardous material spills. Under CERCLA, USEPA has the authority to seek the parties responsible for hazardous materials releases and to ensure their cooperation in site remediation. CERCLA also provides federal funding (through the "Superfund") for the remediation of hazardous materials contamination. The Superfund Amendments and Reauthorization Act of 1986 (Public Law 99-499) amends some provisions of CERCLA and provides for a Community Right-to-Know program.

Energy Policy Act of 2005

Title XV, Subtitle B of the Energy Policy Act of 2005 (the Underground Storage Tank Compliance Act of 2005) contains amendments to Subtitle I of the Solid Waste Disposal Act, the original legislation that created the Underground Storage Tank (UST) Program. As defined by law, a UST is "any one or combination of tanks, including pipes connected thereto, that is used for the storage of hazardous substances and that is substantially or totally beneath the surface of the ground." In cooperation with USEPA, the SWRCB oversees the UST Program. The intent of the program is to protect public health and safety and the environment from releases of petroleum and other hazardous substances from tanks. The four primary program elements are leak prevention (implemented by Certified Unified Program Agencies [CUPAs]), cleanup of leaking tanks, enforcement of UST requirements, and tank integrity testing. CUPAs are described in more detail below.

Spill Prevention, Control, and Countermeasure Rule

USEPA's Spill Prevention, Control, and Countermeasure Rule (40 CFR Part 112) applies to facilities with a single above-ground storage tank with a storage capacity greater than 660 gallons, or multiple tanks with a combined capacity greater than 1,320 gallons. The rule includes requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines. The rule requires specific facilities to prepare, amend, and implement these plans.

Occupational Safety and Health Act

Under the Occupational Safety and Health Act of 1970 (Public Law 91-596), as amended, OSHA is responsible at the federal level for ensuring worker safety. OSHA sets federal standards for implementation of workplace training, exposure limits, and safety procedures for the handling of hazardous substances, as well as other workplace hazards. OSHA also establishes criteria by which each state can implement its own health and safety program.

State Laws, Regulations, and Policies

Safe Drinking Water and Toxic Enforcement Act of 1986 Proposition 65

The Safe Drinking Water and Toxic Enforcement Act of 1986, more commonly known as Proposition 65, protects the state's drinking water sources from contamination with chemicals known to cause cancer, birth defects, or other reproductive harm. Proposition 65 also requires businesses to inform the public about exposure to such chemicals in the products they purchase, in their homes or workplaces, or that are released into the environment. In accordance with Proposition 65, the California Governor's Office of Environmental Health Hazard Assessment (OEHHA) publishes, at least annually, a list of such chemicals. OEHHA, an agency under the California Environmental Protection Agency (CalEPA), is the lead agency for implementation of the Proposition 65 program. Proposition 65 is enforced through the California Attorney General's Office; however, district and city attorneys and any individual acting in the public interest may also file a lawsuit against a business alleged to be in violation of Proposition 65 regulations.

The Unified Program

The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs. Statewide, DTSC has primary regulatory responsibility for management of hazardous materials, and it works with other state agencies and delegates its authority to local jurisdictions that enter into agreements with the state. Local agencies, including Santa Clara County's Hazardous Materials Compliance Division, administer these laws and regulations. DTSC, CalEPA, and other state agencies set the standards for their programs while local governments implement the standards. These local implementing agencies, the CUPAs, regulate/oversee the following for each county:

- Hazardous materials business plans;
- California accidental release prevention plans or federal risk management plans (RMPs);
- The operation of USTs and above-ground storage tanks;
- Universal waste and hazardous waste generators and handlers;
- Onsite hazardous waste treatment;
- Inspections, permitting, and enforcement;
- Proposition 65 reporting; and
- Emergency response.

California Occupational Safety and Health Administration

Cal/OSHA assumes primary responsibility for developing and enforcing workplace safety regulations in California. Cal/OSHA regulations pertaining to the use of hazardous materials in the workplace (CCR Title 8) include requirements for safety training, availability of safety equipment, accident and illness prevention programs, warnings about exposure to hazardous substances, and preparation of emergency action and fire prevention plans. Hazard communication program regulations that are enforced by Cal/OSHA require workplaces to maintain procedures for identifying and labeling hazardous substances, inform workers about the hazards associated with hazardous substances and their handling, and prepare health and safety plans to protect workers at hazardous waste sites. Employers also must make material safety data sheets available to employees and document employee information and training programs.

California Accidental Release Prevention

The purpose of the California Accidental Release Prevention program is to prevent accidental releases of substances that can cause serious harm to the public and the environment, to minimize the damage if releases do occur, and to satisfy Community Right-to-Know laws. In accordance with this program, businesses that handle more than a threshold quantity of regulated substances are required to develop an RMP. This RMP must provide a detailed analysis of risk factors and associated mitigation measures that can be implemented to reduce accident potential. CUPAs implement the California Accidental Release Prevention program through review of RMPs, facility inspections, and public access to information that is not confidential or trade secret.

CAL FIRE Wildland Fire Management

The Office of the State Fire Marshal and the California Department of Forestry and Fire Protection (CAL FIRE) administer state policies regarding wildland fire safety. Construction contractors must comply with the following requirements in the Public Resources Code during construction activities at any sites with forest-, brush-, or grass-covered land:

- Earth-moving and portable equipment with internal combustion engines must be equipped with a spark arrestor to reduce the potential for igniting a wildland fire (PRC Section 4442).
- Appropriate fire-suppression equipment must be maintained from April 1 to December 1, the highest-danger period for fires (PRC Section 4428).
- On days when a burning permit is required, flammable materials must be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the construction contractor must maintain the appropriate fire-suppression equipment (PRC Section 4427).
- On days when a burning permit is required, portable tools powered by gasoline-fueled internal combustion engines must not be used within 25 feet of any flammable materials (PRC Section 4431).

3.8.3 Environmental Setting

Existing Hazards and Hazardous Materials

This section first describes past and current land uses and then describes hazardous materials that are known to exist or may exist within the project area.

Past and Current Land Uses

Prior to the 1950s, much of the land surrounding Lower Penitencia Creek was undeveloped. Since then, the area surrounding Lower Penitencia Creek has been developed with industrial and commercial properties, with most of the development occurring in the 1970s (Locus Technologies 2014). Currently, land uses surrounding the project area include residential, commercial, and industrial uses. Reaches 1 and 2 are surrounded by I-880, Dixon Landing Road and California Circle. Reach 3 is bordered by multi-family and single-family residential uses to the east and industrial uses to the west. Reach 4 is also surrounded by single-family residential homes to the east and industrial/office park development to the west.

In 2014, a Phase I Environmental Site Assessment (Phase I ESA) was prepared for the property on which Staging Area A would be located (Assessor's Parcel Number 022-30-041) (Locus Technologies 2014). According to this report, the parcel was formerly used for agricultural purposes that may have involved herbicide and pesticide usage. In addition, Caltrans may have used the site to store construction fill materials (including possibly asbestos) during construction of the I-880/Dixon Landing Road interchange project. The Locus Technologies report cites a Pre-Phase I/Phase I Hazardous Substance Liability Assessment (HSLA) that was conducted by Kennedy/Jenks in 1995 for the areas north and south of Dixon Landing Road, near the confluence of Lower Penitencia Creek and Coyote Creek (just north of Staging Area A). The Kennedy/Jenks report was conducted based on readily available information and sampling, and concluded that chemicals were detected in the soil that were potentially associated with heavy vehicle traffic on Dixon Landing Road or fill materials used to construct the road. Petroleum hydrocarbons, total xylenes, and metals were also reported in shallow groundwater samples.

Potential Local Hazards

Several hazardous materials incidents have occurred within the vicinity of Lower Penitencia Creek as reported in the SWRCB GeoTracker database and the DTSC Envirostor database. The sites listed in **Table 3.8-1** are reported as involving releases; however, they are listed as "Case Closed" and further information is not warranted.

Table 3.8-1. Hazardous Materials Incidents in the Project Area

Site Name/Address	Approximate Distance from Project Area	Regulatory List	Site Summary	Potential to Affect Project Area
Kingsford Company 1601 W. Dixon Landing Road, Milpitas, CA 95035	Approximately 120 feet west of Reach 1	LUST	Case Closed as of 2/26/1993	Low
California Circle Pump Station 1735 California Circle, Milpitas, CA 95035	665 feet west of Reach 3	LUST	Case Closed as of 11/25/1996	Low
Dourdell Trucking Dixon Landing Road & Interstate 880, Milpitas, CA 95035	450 feet east of Reach 3	Cleanup Program Site Groundwater Contamination	Case Closed as of 11/8/1996	Low
Newby Island Landfill (or Newby Island Resource Recovery Park) 1601 Dixon Landing Road, Milpitas, CA 95035	320 feet northwest of Reach 1	Active Landfill Site, RCRA Site	No information in DTSC database after 1987 and no cleanup action reports in Geotracker database; groundwater quarterly reporting online	Low

Note: LUST = leaking underground storage tank

Sources: *SWRCB 2015 (GeoTracker database), DTSC 2015 (Envirostor database).*

Wildfire Hazards

The project area includes Lower Penitencia Creek in an urban setting. CAL FIRE does not identify any high fire hazard areas in the project area (CAL FIRE 2007, 2008). However, CAL FIRE and the California Fire Alliance identify Milpitas as a "fire-threatened community" at the wildland–urban interface (California Fire Alliance 2001).

Airports

The San Jose International Airport is approximately 5.2 miles from the project area and Moffett Federal Airfield is approximately 7.5 miles from the project area. There are no private airstrips in the project vicinity.

Schools

Within one-quarter mile of the project area, an in-home day care facility, Kiran Childcare and Learning Center, is located at 255 Balboa Drive. The closest school to the project area is Curtner Elementary School (275 Redwood Avenue), which is approximately 0.3 mile south of Reach 4.

Emergency Response

The Santa Clara County Operational Area Emergency Operations Plan (2008) outlines emergency organization, assigns tasks, specific policies and general procedures, and provides for coordination of response in the event of an emergency. The plan does not identify specific emergency response or evacuation routes. In addition, the Milpitas Fire Department of Office of Emergency Services is responsible for coordinating the City's preparedness efforts to mitigate against, plan for, respond to and recover from natural disasters. This City department also coordinates closely with Santa Clara County Office of Emergency Services and the District (City of Milpitas 2017).

3.8.4 Impact Analysis

Methodology

The impact analysis focuses on evaluating impacts related to hazards and hazardous materials in the project area. This assessment was conducted based on information obtained from the Geotracker and EnviroStor databases, characteristics of the proposed project's construction activities, and applicable regulations and guidelines.

For the purpose of this assessment, hazardous materials are defined as any materials that, because of quantity, concentration, or physical or chemical characteristics, would pose a substantial present or potential hazard to human health and safety or to the environment, if released. Hazardous materials include, but are not limited to, hazardous substances, hazardous wastes, and any material that a handler or the administering regulatory agency has a reasonable basis for believing would be injurious to the health and safety of persons or would be harmful if released into the workplace or the environment (California Health and Safety Code Section 25501).

Although often treated separately from hazardous materials, petroleum products, including fuels and lubricants are considered in this analysis because they pose a potential hazard to human health and safety if released into the environment. Potential hazards related to disruption of utility lines such as natural gas lines are addressed in Section 3.14, *Utilities and Service Systems.*

Criteria for Determining Significance

The proposed project would result in a significant effect related to hazards and hazardous materials if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through a the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or wastes within 0.25 mile of an existing or proposed school;
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to California Government Code Section 65962.5 (i.e., "Cortese list"), and as a result, create a significant hazard to the public or the environment;
- 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;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- 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.

Impact Summary

Table 3.8-2 summarizes hazards and hazardous materials impacts associated with the proposed project.

Table 3.8-2. Summary of Impacts Hazards and Hazardous Materials

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance After Mitigation
HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials	S	Mitigation Measure HAZ-1	LM
HAZ-2: 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	LS	None	LS

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance After Mitigation
HAZ-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or wastes within one-quarter mile of an existing or proposed school	LS	None	LS
HAZ-4: 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	NI	None	NI
HAZ-5: 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, such that the project could result in a safety hazard for people residing or working in the project area	NI	None	NI
HAZ-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan	NI	None	NI
HAZ-7: 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	LS	None	LS

NI = No Impact; LS = Less than Significant; LM = Less than Significant with Mitigation; S = Significant

Environmental Impacts

Impact HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials (Less than Significant with Mitigation)

Construction Impacts

As described in Section 3.8.3, “Environmental Setting,” and in Chapter 2, *Project Description,* the proposed project involves installing floodwalls, constructing a wetland bench, relocating and raising a levee, constructing headwalls at a bridge crossing, removing accumulated sediment from Reaches 2 and 4, and revegetation.

Based on the HSLA report prepared by Locus Technologies (2014), the potential exists for encountering contaminated soil during excavation of the levees along Lower Penitencia Creek. There is also the potential to encounter contaminated groundwater during dewatering work. As described in Section 3.8.3, soil and groundwater underlying Staging Area A may have been affected by historical use of herbicides, pesticides, fill placed during construction of the I-880/Dixon Landing interchange, and heavy traffic on adjacent roadways. Similarly, soils underlying other portions of the project area may be affected by some or all of these past uses.

If hazardous materials were present in excavated soil or groundwater, a release to the environment could occur and construction workers and the public could be exposed to hazardous materials in soil and groundwater during construction. ~~Implementation of~~The District would implement District BMP HM-9, which requires all field personnel to follow appropriate procedures regarding containment and storage of chemicals, and references applicable legal requirements relating to discharge of hazardous materials/wastes. This BMP would minimize the potential for release of hazardous materials during construction. ~~hazard of encountering hazardous materials during excavation and sediment removal work; it requires that all field personnel follow appropriate procedures if hazardous materials are encountered. Implementation of BMP WQ-7 would require that coffer dams are installed for dewatering work before in-channel construction activities begin.~~ However, ~~these BMPs do not provide details on the appropriate response~~ in the event that ~~suspected~~ contaminated soils or groundwater are encountered during excavation and sediment removal activities, a release to the environment could still occur and construction workers or the public may still be exposed to hazards and the impact would be considered significant. ~~For these reasons, the potential for mishandling discovered hazardous materials during excavation and sediment removal activities is considered significant.~~ Mitigation ~~m~~Measure HAZ-1 would be implemented to ~~address this impact~~provide more details on appropriate responses to address this impact.

Operational Impacts

Once project construction is complete, maintenance activities described in Chapter 2, *Project Description,* would be similar to those that currently take place under the District's SMP. Maintenance activities would involve vegetation management, trash and debris removal, maintenance road grading, fence repair, graffiti removal, wildlife management, sediment removal and other activities covered in the SMP. Occasional repair and maintenance of the floodwalls and headwalls would also be conducted. Implementation of District BMPs HM-9 would ensure proper handling of hazardous materials used to repair the floodwalls and headwalls. Therefore, operational impacts would be less than significant.

Mitigation Measures

Mitigation Measure HAZ-1: Develop and Implement Soil and Groundwater Management Plan.

Prior to initiating ground-disturbing construction activities, the District will develop a Soil and Groundwater Management Plan, prepared by state registered hazardous waste investigation and remediation professionals. The plan will include a health and safety plan; emergency notification protocols; and handling and sampling procedures for site workers in accordance with OSHA and Santa Clara County Hazardous Materials Compliance Division requirements. The plan will describe protocols for offsite disposal of contaminated soils and disposal and/or treatment of contaminated groundwater. In addition, the plan will include coordination and notification protocols and requirements for any inadvertent releases of hazardous materials within the vicinity of any schools. Once complete and approved by the Santa Clara County Hazardous Materials Compliance Division, the plan will be incorporated in the construction specifications for the proposed project.

Significance After Mitigation

With implementation of **Mitigation Measure HAZ-1,** the District would be required to prepare and implement a soil and groundwater management plan. The plan would include a health and safety plan and protocols for appropriate disposal of contaminated soil or groundwater if encountered. Implementation of Mitigation Measure HAZ-1 would reduce this impact to a less-than-significant level.

Impact HAZ-2: 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 (Less than Significant)

Construction Impacts

Construction of the proposed project would require the use of heavy equipment, including excavators, backhoes, bulldozers, graders, generators, and other equipment. Hazardous materials used by this equipment, such as oils, grease, or fuels, could accidentally spill during project construction. Construction equipment and vehicles would be stored at designated staging areas throughout for the duration of construction activities. However, accidental spills or improper use, storage, transport, or disposal of these hazardous materials could result in a public hazard. The release of hazardous materials, particularly during storm events, could also result in adverse effects on underlying soil and groundwater quality, or could result in adverse health effects to construction workers, the public, and environment.

As discussed in Section 3.8.2, "Regulatory Setting," the handling, storage, and disposal of hazardous materials is subject to numerous regulations. In addition, as described in Section 3.9, *Hydrology and Water Quality,* the proposed project would obtain a NPDES Construction General Permit, which requires preparation and implementation of a stormwater pollution prevention plan (SWPPP). Implementation of SWPPP measures and District BMPs HM-7, HM-8, HM-9, and HM-10 would further reduce this impact. These BMPs provide guidance on vehicle and equipment care and hazardous materials management. In combination, adherence to local, state, and federal hazardous materials regulations and implementation of District BMPs would minimize the potential for impacts related to accidental release of hazardous materials associated with transport, use, or disposal of hazardous materials. This impact would be less than significant.

Operational Impacts

As described in Impact HAZ-1 above, once construction is complete, maintenance activities would be similar to those that currently take place. New maintenance activities would involve occasional maintenance and repair of the floodwalls and headwalls, which may require use of hazardous materials. Similar to the construction phase, implementation of District BMPs HM-7, HM-8, HM-9, and HM-10 would minimize impacts pertinent to accidental release of hazardous materials. The operational impact would be less than significant.

Impact HAZ-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or wastes within one-quarter mile of an existing or proposed school (Less than Significant)

Construction Impacts

The Kirin Childcare and Learning Center, located at 255 Balboa Drive, is within 0.25 mile of the project area. This is a year-round facility that would be in session Monday through Friday while the construction is ongoing. No other schools are located within 0.25 mile of the project location. The Kirin Childcare and Learning Center is located approximately 400 feet east of Reaches 3 and 4 and the Milmont Drive bridge. Construction activities would occur during 2018-2019 and 2019-2020.

Construction activities would be temporary and would involve the use of construction trucks and equipment associated with installing floodwalls, constructing a wetland bench, relocating and raising levees, improving channel crossings, and revegetation. Hazardous materials used during construction would be limited to fuel associated with the equipment and would generally not involve substantial hazardous emissions of toxics that would be considered an acute health hazard. As described in Impact AQ-4 (in Section 3.3, *Air Quality*), health risks associated with construction air pollutant emissions would be less than significant. As described in Impact HAZ-2, the handling, storage, and disposal of hazardous materials would be subject to local, state, and federal regulations pertaining to hazardous materials. Construction activities would also be subject to District BMPs HM-7, HM-8, HM-9, and HM-10. While small quantities of hazardous materials could be released into the environment during project construction, these BMPs would ensure that the potential for exposing individuals at nearby schools to hazardous materials used during construction would be less than significant.

Operational Impacts

As described above, maintenance activities would be similar to those that currently take place with the exception of occasional maintenance and repair of the floodwalls and headwalls at the San Andreas Drive bridge. These maintenance activities could involve use of small quantities of hazardous materials. Similar to the construction phase, implementation of District BMPs HM-7. HM-8, HM-9, and HM-10 would ensure that the potential for exposing individuals at nearby schools to hazardous materials used during project operation would be less than significant.

Impact HAZ-4: Be located on a site which is included on a list of hazardous materials sites compiled pursuant to government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment (No Impact)

Construction and Operational Impacts

There are no hazardous waste sites listed pursuant to California Government Code Section 65962.5 identified during searches of the EnviroStor database within the City of Milpitas, California; therefore, the proposed project is not located on a Cortese list site. Since the project site is not included on the Cortese list of hazardous materials sites compiled by DTSC in accordance with Government Code Section 65962.5, this criterion is not applicable and there would be no impact.

Impact HAZ-5: 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, such that the project could result in a safety hazard for people residing or working in the project area (No Impact)

Construction and Operational Impacts

As described in Section 3.8.3 above, the project area is located more than 2 miles from an airport and would not involve construction of aboveground structures that could interfere with air traffic; therefore, impacts related to safety hazards in the vicinity of an airport are not applicable and there would be no impact.

Impact HAZ-6: Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan (No Impact)

Construction and Operational Impacts

As described in Section 3.8.3, above, the Santa Clara County Operational Area Operations Plan does not include an adopted emergency response plan or emergency evacuation plan that specifies a specific emergency response or evacuation route within the project area. Therefore, this topic is not applicable to the proposed project and there would be no impact. Please refer to Section 3.13, *Transportation and Traffic,* for discussion regarding access for emergency vehicles.

Impact HAZ-7: 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 (Less than Significant)

Construction Impacts

CAL FIRE does not identify any high or very high hazards in the project area (CAL FIRE 2007, 2008). However, CAL FIRE and the California Fire Alliance identify Milpitas as a "fire-threatened community" (California Fire Alliance 2001).

The use of construction equipment and possible fuel storage could pose a potential wildfire risk. This risk is especially high when vegetation is being cleared and workers and machines are operating among vegetative fuels that can be flammable. Any piling of cleared vegetation could also become a fire fuel, which is considered a fire risk. Potential sources of ignition would include combustion engines, gasoline power tools and other equipment that produce a spark.

Implementation of BMP HM-12 would ensure that construction equipment is equipped with spark arrestors and that work crews have appropriate fire suppression equipment available when construction takes place during the high fire danger period. In addition, compliance with regulations within the Public Resources Codes (PRC), as described in Section 3.8.2 above, would also minimize the risk of wildfire hazards during project construction. Therefore, with implementation of BMP HM-12 and by complying with existing fire safety regulations, this impact would be less than significant.

Operational Impacts

With the exception of occasional repair and maintenance of the new floodwalls and headwalls, proposed maintenance activities are currently ongoing within the project area. Similar to the construction phase, use of equipment during maintenance activities could pose a potential wildfire risk especially in the vicinity of vegetative fuels. Implementation of BMP HM-12 would minimize potential fire risks and ensure that operational impacts associated with wildland fire hazards are less than significant.

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3.9 Hydrology and Water Quality

This section describes the proposed project's regulatory setting and affected environment with respect to hydrology and water quality. This section also describes the significance criteria and methodology used to evaluate impacts, and impacts of the proposed project as they relate to hydrology and water quality. Applicable District BMPs are identified and mitigation measures are proposed to reduce significant impacts. Primary data sources used to prepare this section are as follows:

- FEMA flood insurance rate maps;
- San Francisco Bay RWQCB's Water Quality Control Plan for the San Francisco Basin (Basin Plan) (San Francisco Bay RWQCB 2015a);
- DWR's Groundwater Bulletin 118, Santa Clara Valley Groundwater Basin (DWR 2004); and
- USGS Stream Stats interactive geographic information system (GIS) database (USGS 2015b).

3.9.1 Regulatory Setting

Federal Laws, Regulations, and Policies

Clean Water Act

The CWA is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The key references pertaining to water quality regulations for the proposed project are CWA Sections 303(d), 401, and 402.

Section 303(d)

Under CWA Section 303(d), states are required to identify "impaired water bodies" (those that do not meet established water quality standards), identify the pollutants causing the impairment, establish priority rankings for waters on the list, and develop a schedule for adopting control plans to improve water quality. USEPA then approves the state's recommended list of impaired waters or adds and/or removes waterbodies. Although Lower Penitencia Creek is not designated as impaired, water from the project area eventually flows into two impaired water bodies: Coyote Creek and South San Francisco Bay. The SWRCB currently lists diazinon and trash from storm runoff and illegal dumping as impairments to water quality for Coyote Creek (SWRCB 2012). Downstream of Coyote Creek, pesticides, metals, metalloids, organic compounds, and invasive species impair the water quality of South San Francisco Bay.

Section 401

CWA Section 401 requires an evaluation of water quality when a proposed activity could result in a discharge to waters of the U.S. In California, the SWRCB and its nine RWQCBs issue water quality certifications. Each RWQCB is responsible for implementing Section 401 in compliance with the CWA and its water quality control plan (also known as a basin plan), as discussed below under the heading "Porter-Cologne Water Quality Control Act." Activities that might result in discharge to waters of the U.S. must obtain a Section 401 water quality certification to ensure that any such discharge would comply with the applicable provisions of the CWA. Section 401 water quality certifications for discharges in the project area are issued by the San Francisco Bay RWQCB.

Section 402

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the NPDES program, which is administered by USEPA. In California, the USEPA has delegated its authority to the SWRCB; in turn, the SWRCB delegates implementation responsibility to the nine RWQCBs, as discussed below with regard to the Porter–Cologne Water Quality Control Act.

The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual (activity- or project-specific) permits. The SWRCB's Construction General Permit and Municipal Stormwater Permitting Program are described further in "State Laws, Regulations, and Policies" below.

State Laws, Regulations, and Policies

Porter–Cologne Water Quality Act

The 1969 Porter–Cologne Water Quality Control Act (known as the Porter–Cologne Act) dovetails with the CWA (see discussion above). It established the SWRCB and divided the state into nine regions, each overseen by its own RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface water and groundwater supplies; however, much of the SWRCB's daily implementation authority is delegated to the nine RWQCBs, which are responsible for implementing CWA Sections 303(d), 401, and 402. In general, the SWRCB manages water rights and regulates statewide water quality, whereas the RWQCBs focus on water quality within their respective regions.

The Porter–Cologne Act requires that the RWQCBs develop water quality control plans (also known as basin plans) that designate beneficial uses of California's major surface-water bodies and groundwater basins and establish specific narrative and numerical water quality objectives for those waters. Beneficial uses represent the services and qualities of a waterbody (i.e., the reasons that the waterbody is considered valuable). Water quality objectives reflect the standards necessary to protect and support those beneficial uses. Basin Plan standards are primarily implemented by regulating waste discharges so that water quality objectives are met. Under the Porter–Cologne Act, Basin Plans must be updated every 3 years.

The project site traverses several hydrologic units (180500030204, 180500040701, and 180500041001) and is under the San Francisco Bay RWQCB's jurisdiction. The Water Quality Control Plan for the San Francisco Bay Basin (Region 2) (Basin Plan) establishes the following beneficial uses for Lower Penitencia Creek (RWQCB 2015a):

WARM: supports warm freshwater ecosystems;

WILD: supports wildlife habitats;

REC-1: provides recreational activities involving body contact; and

REC-2: provides recreational activities involving proximity to water but not necessarily body contact.

State Authority under CWA Section 402

General Permit for Construction Activities

Most construction projects that disturb 1 acre or more of land are required to obtain coverage under the SWRCB's General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ). The general permit requires that the applicant file a public notice of intent to discharge stormwater and prepare and implement a SWPPP. The SWPPP must include a site map and a description of the proposed construction activities; demonstrate compliance with relevant local ordinances and regulations; and present a list of BMPs that would be implemented to prevent soil erosion and protect against discharge of sediment and other construction-related pollutants to surface waters. Permittees are further required to monitor and report on all construction-related activities to ensure that BMPs are implemented correctly and are effective in controlling the discharge of construction-related pollutants.

Municipal Stormwater Permitting Program

The SWRCB regulates stormwater discharges from municipal separate storm sewer systems (MS4s) through its Municipal Stormwater Permitting Program (San Francisco Bay RWQCB 2015b). Permits are issued under two phases, depending on the size of the urbanized area or municipality. Phase I MS4 permits are issued for medium (population between 100,000 and 250,000) and large (population of 250,000 or more) municipalities, and are often issued to a group of co-permittees within a metropolitan area. Phase I permits have been issued since 1990.

Several municipalities in the project area, including the Cities of Milpitas and San Jose, as well as the District and the County of Santa Clara, joined together to form the Santa Clara Valley Urban Runoff Pollution Prevention Program (Santa Clara Permittees) under Order R2-2015-0049, NPDES Permit No. CAS612008 (San Francisco Bay RWQCB 2015b). The permit allows discharge of stormwater runoff from storm drains and watercourses and was renewed in November 2015 (San Francisco Bay RWQCB 2015b). The MS4 permit requires permittees including the District to implement appropriate BMPs at road repair and/or maintenance sites to minimize debris and waste materials from entering surface waterways during road installation, repaving, or routine repair and maintenance activities of streets and roads. Specifically, the MS4 permit requires proper management of concrete slurry and wastewater, asphalt, pavement cutting, and other street and road maintenance materials and wastewater to avoid discharge to storm drains from these types of work sites. The MS4 permit also requires sweeping and/or vacuuming to remove debris, concrete, or sediment residue from work areas after construction is completed.

The MS4 permit includes provision C.3, which addresses stormwater runoff pollutant discharges and is intended to prevent increases in runoff flows from new development and redevelopment projects. This provision contains goals and requirements including appropriate source control, site design, and stormwater treatment measures for new development and redevelopment projects. According to Provision C.3, redevelopment projects include projects that create and/or replace 10,000 square feet or more of impervious surface throughout a project site including commercial, industrial, residential, mixed use, and public projects.

3.9.2 Environmental Setting

Watershed

The Lower Penitencia Creek Watershed covers an area of 28.5 square miles east and south of the project area and is a sub-watershed within the much larger Coyote Creek Watershed (347 square miles) (USGS 2015b). Much of the upper Lower Penitencia Creek Watershed is undeveloped lands consisting mostly of hillslopes in the western portion of the Diablo Range. Closer to the project area, the lower watershed becomes more urbanized where runoff from impervious areas moves quickly through the storm drain system to the Lower Penitencia Creek channel. Two major tributaries flow into Lower Penitencia Creek: Penitencia East Channel, and Lower Berryessa Creek, which is just north of San Andreas Drive. Berryessa Creek is the larger of the two tributaries and conveys flows originating from the Diablo Range. The Berryessa Creek sub-watershed accounts for nearly 75 percent of the total area of the Lower Penitencia Watershed (USGS 2015b).

Topography and Climate

The Lower Penitencia Creek Watershed extends from the western slopes of the Diablo Range (maximum elevation of 2,593 feet above mean sea level [amsl]) westward to its confluence with Coyote Creek (at sea level) (USGS 2015b). The proposed project encompasses the downstream portion of Lower Penitencia Creek, extending from its confluence with Lower Berryessa Creek to its confluence with Coyote Creek (see Figure 2-3). Lower Penitencia Creek flows through the baylands margin of the northern Santa Clara Valley and the residential and commercial areas of Milpitas. Elevations within the project area range from sea level to roughly 20 feet amsl) at San Andreas Drive (USGS 2015b). In the project vicinity, the topography of lands on either side of the creek is relatively flat, with many areas below the adjacent top-of-levee elevation.

Similar to other areas of the Santa Clara Valley, the City of Milpitas experiences a Mediterranean climate, with warm, dry summers and cool, wet winters. Average temperatures reach highs near 80°F in the summer months and lows near 42°F during the winter months (Western Regional Climate Center [WRCC] 2015a and 2015b). Most precipitation generally occurs from October to April, with the months of May to September remaining fairly dry. Precipitation amounts vary depending on the location within the watershed, with an average annual total of about 20 inches in the higher elevations of the upper watershed and totals of approximately 12.4 inches over the valley floor, including the project area (WRCC 2015).

Surface Water Hydrology and Quality

Lower Penitencia Creek flows underground through the City of Milpitas until daylighting at Montague Expressway, where it then flows northward in a single-stage, engineered trapezoidal channel. The creek flows approximately 4.1 miles before emptying into the lower portion of Coyote Creek just west of the I-880 crossing. Coyote Creek continues westward approximately 0.2 mile before draining into Coyote Slough and South San Francisco Bay (San Francisco Bay RWQCB 2015; USGS 2015b). Lower Penitencia Creek maintains perennial flows, with residential irrigation and urban runoff likely contributing most of the flow within the upstream portions during the dry season. Moving downstream, the lower portions of the creek experience a tidal regime. Lower Penitencia Creek is tidally influenced from Coyote Creek upstream to Marilyn Drive (approximately 9,000 feet upstream from Coyote Creek) the entirety of the project area is tidally influenced.

Water quality within the project area is greatly influenced by a semi-diurnal tidal cycle. As such, suspended fine particles of silts and clays substantially increase the turbidity of the water. The high volume of suspended sediment and low energy environment result in sediment deposition within Lower Penitencia Creek and the project area. To minimize the flood hazard, this portion of the creek undergoes periodic sediment removal when accumulated sediment reduces the channel conveyance capacity. Routine sediment removal activities are covered under the District's SMP Manual (SCVWD 2014), which outlines procedural steps and safeguards to maintain water quality during maintenance activities.

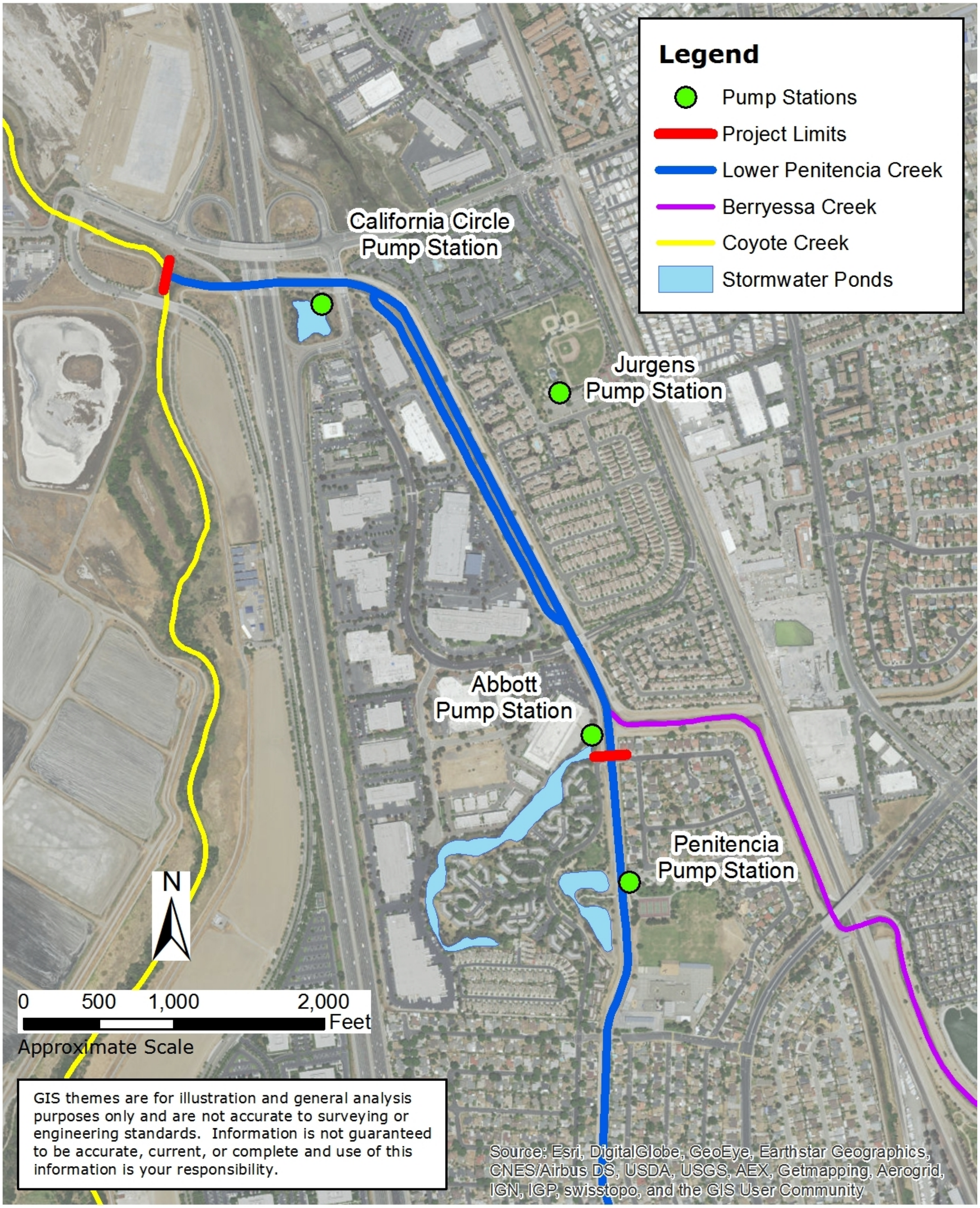
As discussed in Section 3.9.2, "Regulatory Setting," Lower Penitencia Creek is not listed on the CWA 303(d) List of Impaired Water Bodies (SWRCB 2012). However, pollutants can be carried downstream and affect receiving waterbodies. Lower Penitencia Creek flows into the lower portions of Coyote Creek, which is listed for diazinon and trash from stormwater runoff and illegal dumping. Non-point-source pollution and trash from adjacent residential and commercial development may enter waterways during storm events.

Stormwater

The City of Milpitas maintains a dedicated storm drain system that comprises a network of surface street gutters, open drainage channels, and underground pipes. Stormwater is directed generally toward the northwest, where it discharges into South San Francisco Bay. Several pumping facilities are needed to move stormwater near San Francisco Bay. The District manages most of the City of Milpitas' major drainage channels, including Arroyo de los Coches, Berryessa Creek, Calera Creek, Coyote Creek, Piedmont Creek, Tularcitos Creek, and Lower Penitencia Creek (City of Milpitas 2013). All of the City of Milpitas stormwater runoff eventually drains to Coyote Creek. The City of Milpitas also utilizes detention basins (for temporary storage) and retention basins (storage for an indefinite period) to help reduce peak flows and mitigate the potential for flooding of downstream channels.

In the project area, Lower Penitencia Creek receives stormwater flows at three locations: on the left (south) bank in Reach 2 near California Circle; on the right (east) bank in Reach 3 near Terra Mesa Way; and on the left (west) bank near San Andreas Drive in Reach 4. **Figure 3.9-1** shows the locations of pump stations in the project vicinity.

West of the channel, stormwater is collected in two lagoons and pumped into Lower Penitencia Creek. The smaller of the two lagoons is situated between North Abbott Avenue and Fairview Way, with the pump outfall to the channel approximately 200 feet north of the San Andreas Drive bridge (Reach 4). The larger lagoon (2.5 acres) is located at the intersection of Dixon Landing Road and I-880 and collects runoff from I-880 and a 260-acre industrial park. The excess water is pumped into Lower Penitencia Creek near the top of the left (south) levee via three 28-inch-diameter pipes at the downstream side of California Circle (in Reach 2) (City of Milpitas 2013). During flooding events where the creek overtops the left (west) bank, I-880 effectively dams the floodwaters (City of Milpitas 2013).



Source: SCVWD 2016

Figure 3.9-1.
Pump Stations in the Project Vicinity

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Lower Penitencia Creek Improvements Project

East of the project area, stormwater within the northeastern portion of Milpitas (approximately 0.75 square mile) is directed and drained to Dixon Landing Park and Jurgens Pump Station (City of Milpitas 2013). From there, stormwater from Dixon Landing Park is pumped through a force main to an outfall on the right (east) bank of Lower Penitencia Creek near the end of Terra Mesa Way (in Reach 3). The Jurgens Pump Station basin is entirely enclosed, with no hydrologic connection to a natural creek or drainage channel.

Groundwater Quantity and Quality

The project site overlies the Santa Clara Subbasin, which is within the Santa Clara Valley Groundwater Basin (DWR Groundwater Basin Number 2-9.02), near the boundary of the Niles Cone Subbasin (DWR Groundwater Basin Number 2-9.01). The Santa Clara Valley Groundwater Basin, Santa Clara Subbasin, stretches from the northern border of Santa Clara County south to the Town of Morgan Hill, and from the Diablo Range west to the Santa Clara Mountains, for a total surface area of 240 square miles (DWR 2004). Unconsolidated to semi-consolidated Pliocene- to Holocene-age gravel, sand, silt, and clay from converging alluvial fans is the predominant water-bearing unit (DWR 2004). The local geology and soils underlying the project site are described in Section 3.6, *Geology, Soils, and Seismicity*. The Santa Clara Subbasin is largely unconfined except in the northern portion, where a semipermeable clay layer creates a confined zone (SCVWD 2012). The project site lies near the transition from a confined to an unconfined aquifer.

Because groundwater provides nearly half of the water supply for Santa Clara County and the District is responsible for groundwater management of the Santa Clara and Llagas Subbasins, the District maintains an extensive groundwater monitoring program to track aquifer quantity and quality. The District's *Groundwater Management Plan* (2012) outlines basin management objectives, strategies, and programs. Through widespread management of withdrawals, recharge, and deliveries from the State Water Project and Central Valley Project, groundwater levels within the Santa Clara Subbasin have increased since the early 1960s to reach sustainable levels despite a growing service area and population size. In addition, analysis of water samples taken in 2014 from more than 200 domestic water supply wells and more than 250 wells owned by local suppliers confirmed water quality within the Santa Clara Subbasin to be high (SCVWD 2015). Nitrates from fertilizer, leaking septic systems, and livestock waste affected groundwater quality in some samples, especially in rural or agricultural areas. Erosion of naturally occurring metals, such as nickel, aluminum, and chromium-6, were also detected within some samples, but all concentrations were lower than Maximum Contaminant Levels (MCLs) established for drinking water standards (SCVWD 2015).

Within the project area, groundwater levels are expected to be near the surface. According to the SWRCB, groundwater levels may range between 4 and 20 feet bgs (SWRCB 2016) and generally flow west-northwest toward San Francisco Bay. Groundwater levels may fluctuate in response to the tides, variations in rainfall, and the time of year. A review of the SWRCB Geotracker database indicated several past occurrences of groundwater contamination within 1,000 feet the project area, but all of these had minimal potential to affect water quality within the project area (SWRCB 2016). For additional discussion regarding groundwater contamination in the project vicinity, refer to Section 3.8, *Hazards and Hazardous Materials.*

Floodplains

FEMA produces flood insurance rate maps that identify special flood hazard areas. The maps further classify these areas into zones that broadly characterize the potential risk of an area being inundated by a 100- or 500-year flood in any given year. The expressions "100-year flood" and "500-year flood" are shorthand for a flood that has either a 1-in-100 probability (a 1 percent annual chance) or a 1-in-500 probability (a 0.2 percent annual chance) of occurring in any given year. According to the applicable FEMA flood insurance rate maps (06001C0608G and 06085C0058J) and shown in **Figure 3.9-2**, nearly all of the proposed project area is located within the 100-year floodplain (FEMA 2009). The entire system west and downstream of the proposed project is within the Lower Penitencia Creek 100-year floodplain.

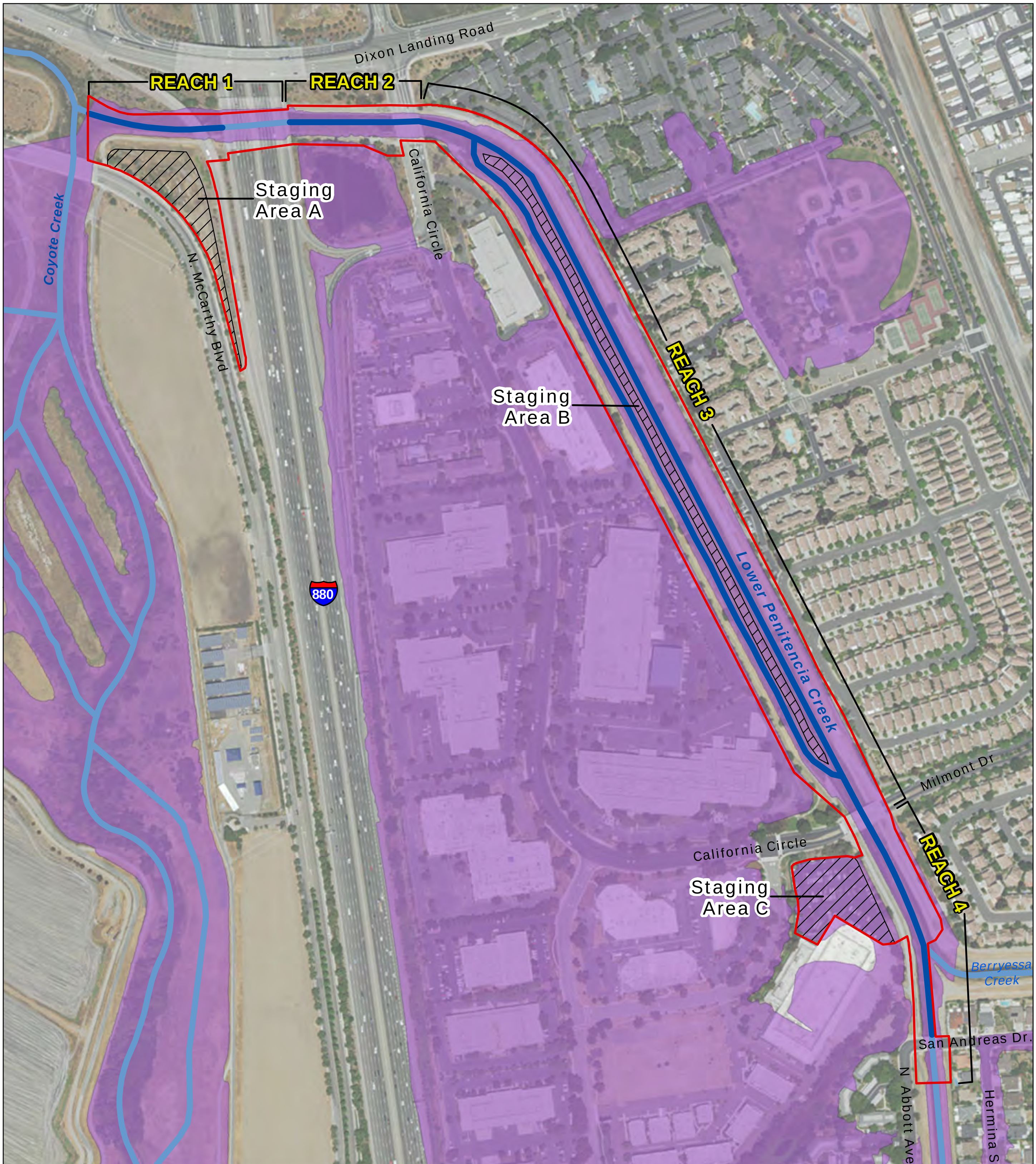
Earthen and concrete levees line much of the downstream portions of Lower Penitencia Creek. The east levee between California Circle and Berryessa Creek (Reaches 3 and 4) is FEMA certified. Within the project area, the existing levees were designed to accommodate flows of up to 4,830 cfs (100-year design discharge). Failure of these levees might result in flooding of a portion of the Milpitas community. As discussed in Chapter 2, *Project Description,* USACE's Upper Berryessa Creek Flood Risk Management Project and the District's Lower Berryessa Creek Flood Protection Project would increase the 1-percent flow in Lower Penitencia Creek to 6,900 cfs. Following completion of these two projects, the capacity of Lower Penitencia Creek would be inadequate to convey the 100-year design discharge. During 100-year flood events, waters would overtop the levees and flood the adjacent neighborhoods.

Anderson and Coyote Reservoirs are located on Coyote Creek about 33 miles and 40 miles upstream from the Lower Penitencia Creek confluence, respectively.. ABAG hazard mapping (1995) predicts that isolated failure of one of two separate dams might temporarily inundate the project area along Lower Penitencia Creek.

Tsunamis, Seiches, and Sea-Level Rise

A tsunami is a series of long waves commonly caused by earthquakes or large landslides beneath the ocean. A tsunami can travel extremely quickly and can be substantially greater in height than normal waves, thereby causing flooding of inland areas. Several historic tsunamis have been recorded in San Francisco Bay, often originating from large earthquakes near Washington, Alaska, Japan, or other Pacific Rim areas. Since local bathymetry greatly influences the size of a tsunami, the effects on the Bay Area would not be uniform. For shoreline areas south of the Dumbarton Bridge/State Route 84, most tsunami impacts would be relatively minor, with flooding occurring only in some low-lying estuaries bordering South San Francisco Bay (NOAA 2010). The project area is located approximately 5.2 miles east of South San Francisco Bay and approximately 2 miles outside of any identified tsunami hazard areas (Cal EMA 2009).

A seiche is a standing wave in an enclosed or partially enclosed body of water, such as a lake, bay, or estuary, which oscillates back and forth from one side of the waterbody to the other. The motion of a seiche is similar to that of water sloshing back and forth between the walls of a swimming pool. Seiches can be caused by earthquakes, tsunamis, very strong winds, and severe storm fronts. Even during a large seismic event, a seiche is not likely to affect the South San Francisco Bay region or the Lower Penitencia Creek channel.



N

0 100 200 400
Feet

FEMA 100-year Flood Zone

Lower Penitencia Creek Project Reaches

Creeks

Project Boundary

Staging Area

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Figure 3.9-2
Local Hydrology and Flood Hazard Areas

Lower Penitencia Creek Improvements Project

During the last century, rising global temperatures caused land ice to melt and ocean waters to expand, increasing the elevation of mean sea level (msl). Along the California coast, measured msl has risen at a rate similar to the global estimates of about 17-20 centimeters (cm) per year (CEC 2009). With rising msl, coastal areas become more vulnerable to extreme high tides, storm surges, coastal erosion, loss of wetlands, and shoreline retreat. Although projected msl increases in California vary depending on model scenario and exact location, estimates of increases in msl south of Cape Mendocino are predicted to be in the range of 12-61 cm per year (CEC 2009; National Academy of Sciences 2012). With extensive urban development along the coastal areas surrounding San Francisco Bay, a substantial rise in msl may dramatically affect much of the existing infrastructure, including transportation (e.g., harbors/ports, roadways, airports), energy facilities, wastewater and stormwater treatment facilities, residential/ commercial/industrial buildings, and recreation corridors. NOAA and the Pacific Institute created a series of maps showing areas that would be vulnerable to projected sea level rise of varying degrees. An estimated sea-level rise scenario of 55 inches (1.4 meters) in 50 years shows overtopping or potential flooding outside of both levees in the project area during 100-year flood events under the existing channel conditions without the proposed project (NOAA 2016; Pacific Institute 2009).

3.9.3 Impact Analysis

Methodology

The methods used to evaluate the environmental impacts of the proposed project on hydrology and water quality involved a review of reports and publications pertaining to hydrology and water quality as provided in the section overview above.

Impacts on hydrologic conditions were evaluated based on how the proposed project could affect hydrologic functions by comparing baseline conditions to anticipated conditions with construction and operation of the proposed project.

Impacts on water quality from the proposed project were assessed qualitatively, based on the degree to which the proposed project could result in violations of water quality standards or impairment of beneficial uses. The beneficial uses established by the San Francisco Bay RWQCB and the requirements set in the applicable NPDES permits were used for the impact analysis.

Flood hazards were assessed by comparing the project site to the identified 100-year floodplain and conducting a qualitative evaluation of the ability of proposed project activities to affect flood hazards by constructing facilities in a floodplain or altering drainage patterns or flow quantities. Tsunami, mudflow, and seiche impacts were evaluated by identifying the project's proximity to defined tsunami hazard areas, reviewing the topography of the project site and the surrounding area, determining the project's proximity to large waterbodies, and qualitatively evaluating the project's likelihood of affecting the probability or occurrence of these hazards or probable risks to human life or property.

Criteria for Determining Significance

Based on Appendix G of the State CEQA Guidelines, the proposed project would result in a significant impact on hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- 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;
- 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;
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- 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;
- Place structures within a 100-year flood hazard area that would impede or redirect flood flows;
- 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; or
- Inundation by seiche, tsunami, or mudflow.

Impact Summary

Table 3.9-1 summarizes hydrology and water quality impacts of the proposed project.

Table 3.9-1. Summary of Impacts Hydrology and Water Quality

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance After Mitigation
HYD-1: Violate any water quality standards or waste discharge requirements; or otherwise substantially degrade water quality	LS	None	LS
HYD-2: 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	LS	None	LS

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance After Mitigation
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)			
HYD-3: 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	LS	None	LS
HYD-4: 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	LS	None	LS
HYD-5: 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	~~NI~~LS	None	~~NI~~LS
HYD-6: 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; or place structures within a 100-year flood hazard area structures which would impede or redirect flood flows	NI	None	NI
HYD-7: 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	B	None	B
HYD-8: Inundation by seiche, tsunami, or mudflow	NI	None	NI

B = Beneficial; NI = No Impact; LS = Less than Significant

Environmental Impacts

Impact HYD-1: Violate any water quality standards or waste discharge requirements; or otherwise substantially degrade water quality (Less than Significant)

Construction Impacts

Construction and earth-moving activities adjacent to and within the Lower Penitencia Creek channel could affect water quality and thereby result in adverse effects on beneficial uses identified by the San Francisco Bay RWQCB. More specifically, construction activities that would disturb channel bank and bed material (e.g., construction of the vegetated bench in

Reach 1 and dewatering) could cause erosion and sediment transport downstream. Increased suspended sediment loads could increase turbidity, water temperature, and dissolved oxygen. Construction activities and use of equipment adjacent to and within the channel (e.g., at Staging Area B) could also lead to the unintentional release of construction debris, fuels, lubricants, solvents, or other pollutants into the channel. Additionally, disturbance of deposited sediments or fill soils may contain contaminants or hazardous materials that may affect water quality of Lower Penitencia Creek or receiving waterbodies (i.e., Coyote Creek and San Francisco Bay). The following proposed project elements would have potential to affect water quality: construction of the new headwalls at the San Andreas Drive bridge; construction of the new replacement levee and wetland bench in Reach 1; construction of sheet pile floodwalls in Reaches 1, 2, 3, and 4; and dewatering activities that would occur throughout Reaches 1, 2, and 4, and potentially in Reach 3 (if Staging Area B is used). Additional discussion about construction activities that could result in water quality impacts is provided below.

Water Discharges

In-channel construction work for the proposed project would likely occur between mid-June and mid-October when channel flow is lowest. However, the semi-diurnal tidal cycle would necessitate dewatering of the creek channel including approximately 800 feet in Reach 1, 500 feet in Reach 2, and 800 feet in Reach 4. If Staging Area B is utilized, short sections of the secondary channel in Reach 3 would also require dewatering near the northern and southern concrete ramps that provide access to the central berm. Additionally, depending on the layout of equipment needed to construct floodwalls on the south bank of Reach 2 and both banks of Reach 3, it may be necessary to dewater the entire length of Reaches 2 and 3 during construction of the floodwalls. In total, between 2,100 feet and 5,100 linear feet of channel would be dewatered. As discussed in Chapter 2, construction activities would be phased and only a portion of the channel would be dewatered at a given time within a four-month period. All water in the dewatered areas would be removed and creek flows and runoff would be diverted around the work areas using water-tight coffer dams located at the upstream and downstream ends of the construction areas. Diversion of creek and runoff water would only occur during the summer dry season (June 15 through October 15). Discharge of sediment-laden water (water that contains high concentrations of suspended solids or high turbidity) could affect water quality in the channels and downstream receiving waters. The District would implement BMP WQ-7 to isolate construction areas from tides and water flows that could entrain pollutants and BMP WQ-15 to ensure that the diverted water would meet water quality standards and not degrade water quality or substantially increase turbidity of the downstream receiving waters. In addition, BMP WQ-6 would be implemented to prevent contact between creek water and freshly poured concrete, which can adversely affect water quality. BMPs HM-7 and HM-8 would prohibit vehicle and equipment cleaning, servicing, or maintenance within the creek channel and HM-9 would ensure proper handling of hazardous materials to protect water quality. Impacts to water quality would be less than significant.

Soil Discharges

Even though construction would take place during the dry season, an intense wind or rain event or tidal ebb and flow could result in substantial soil erosion. Pollutants from operating equipment could also accidentally be released into the channel.

The proposed project would be required to comply with applicable water quality permits such as the NPDES Construction General Permit. As part of compliance with the Construction

General Permit, a SWPPP would be prepared to prevent polluted dewatered surface water or groundwater from being discharged into other waterbodies. The SWPPP would include appropriate erosion control, spill prevention, and other construction BMPs. The District's Best Management Practices Handbook includes many BMPs that are intended to prevent and control erosion and sediment transport as well as accidental release of pollutants. District BMPs AQ-1, BI-3, WQ-4, WQ-5, WQ-9, WQ-10, and WQ-16 would be implemented to minimize the potential for soil erosion at construction areas, and promote stabilization and revegetation of disturbed areas after construction is complete. These BMPs would be incorporated into the proposed project's SWPPP. By limiting in-water construction activities to the dry season, complying with the project's Construction General Permit, and implementing the above-listed BMPs, adverse effects of soil discharges on water quality would be less than significant.

Operational Impacts

During project operation and similar to current practice, maintenance activities would involve vegetation management, trash and debris removal, maintenance road grading, fence repair, graffiti removal, wildlife conflict management, bank stabilization, sediment removal, and other activities that are covered under the SMP and programmatic permits issued for SMP activities extending through 2023 (SCVWD 2014a). In accordance with the MS4 permit, the District would implement appropriate BMPs at the District's maintenance road repair sites to minimize debris and waste materials from entering surface waterways during routine maintenance road repair activities. New maintenance activities would entail periodic maintenance and repair of the floodwalls and headwalls, which may involve some in-channel work. Similar to the construction phase, implementation of BMPs AQ-1, BI-3, HM-7, HM-8, HM-9, HM-10, WQ-1, WQ-4, WQ-6, WQ-11, WQ-15, and WQ-16 would minimize adverse water quality effects. As such, operational effects on water quality would be less than significant.

Impact HYD-2: Substantially deplete groundwater supplies or interfere 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) (Less than Significant)

Construction Impacts

As discussed in Section 3.9.2, "Environmental Setting" above, due to the close proximity to San Francisco Bay and the perennial nature of Lower Penitencia Creek within the project area, groundwater is shallow, (i.e., between 4 and 20 feet bgs [SWRCB 2016]). Construction activities that involve excavation would likely encounter groundwater resources, and dewatering would be required.

Given that dewatering activities would be temporary in nature, occur in a phased manner by channel reach, and would occur only during dry-season months (mid-June to mid-October), adverse effects on groundwater levels would be less than significant.

Operational Impacts

Proposed maintenance activities described in Chapter 2, *Project Description,* would be similar to ongoing activities that are conducted through the District's SMP. New maintenance activities, which include periodic maintenance and repair of the floodwalls and headwalls, would occur on an infrequent, as-needed basis. Such activities are not anticipated to require groundwater dewatering. Therefore, there would be no new operational impacts on groundwater recharge.

Impact HYD-3: 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 (Less than Significant)

Construction Impacts

Project construction activities are not expected to substantially alter existing drainage patterns. During the construction phase, on-site drainage would continue to flow towards Lower Penitencia Creek. As discussed in Impact HYD-1, during construction activities, instream dewatering would occur in portions of the project area. This work would be temporary and all temporary diversions would be removed following project completion. Furthermore, District BMPs, such as BMP BI-3, BMP WQ-4, BMP WQ-5, BMP WQ-6, and BMP WQ-8, would limit temporary changes to existing drainage patterns and surface runoff. These BMPs would minimize effects on drainage patterns by ensuring proper removal of temporary diversion structures or cofferdams after work is complete, staging equipment and construction materials away from the channel, stabilizing construction entrances and exits with geotextile mats, isolating concrete near waterways, and minimizing use of hardscape in bank protection designs.

Operational Impacts

Lower Penitencia Creek tends to be highly depositional from the confluence of Lower Berryessa Creek downstream to the confluence with Coyote Creek. Under existing conditions, the project area requires routine sediment removal to maintain channel capacity. Sediment was most recently removed from the project area in 2015 (SCVWD 2016). In 2015, approximately 33,300 cy of sediment was removed from Reaches 2, 3, and 4. The depositional nature of this portion of Lower Penitencia Creek is to be expected based on its position within the lower watershed, low elevation gradient, and tidal influence.

Following completion of the Lower and Upper Berryessa Creek projects, the estimated 1-percent (100-year) design discharge for Lower Penitencia Creek at its confluence with Coyote Creek would increase from the current 4,830 cfs to an estimated 6,900 cfs (SCVWD 2016). The proposed project would contain the 100-year event within the channel without overtopping of banks, thereby increasing the amount of water conveyed within the channel. This increased volume of water may increase sediment transport during large stormflows. Despite an increase of suspended and bed sediment carried downstream during infrequent high flow events, overall sedimentation would be controlled by the more common lower flows and daily tidal ebb and flood. The low channel gradient and tidal influence in Lower Penitencia Creek would continue to result in a depositional environment within the project area. However, the proposed project would restore the in-channel floodplain and increase the cross-sectional area of the channel within Reach 1; thereby increasing sediment storage capacity. In addition, as described in Chapter 2, the proposed project, by increasing flow conveyance capacity in the channel, would reduce the degree and frequency of routine sediment removal in the channel. For these reasons, the project would not substantially alter drainage patterns such that substantial changes in on- or off-site erosion and siltation would occur. This impact would be less than significant.

Impact HYD-4: 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 (Less than Significant)

Construction Impacts

As discussed in Impact HYD-3, construction of the proposed project would not result in substantial alteration of drainage patterns or increased runoff. During construction activities, instream dewatering would occur in portions of the project area, as discussed in Impact HYD-1. Dewatering would temporarily divert creek and tidal waters from portions of the creek channel under active construction during the summer dry season (June 15 through October 15). This work would be temporary and all temporary diversions would be removed following project completion. Furthermore, District BMPs, such as BMP BI-3, BMP WQ-4, and BMP WQ-5, would limit temporary changes to existing drainage patterns and surface runoff. These BMPs would minimize effects on drainage patterns by ensuring proper removal of temporary diversion structures or cofferdams after work is complete, and staging equipment and construction materials away from the channels. As such, impacts on existing drainage patterns during project construction would be less than significant.

Operational Impacts

The purpose of the proposed project is to accommodate other channel capacity projects upstream of the project area. Under current conditions, the estimated 100-year design discharge for Lower Penitencia Creek at its confluence with Coyote Creek is 4,830 cfs. As described in Chapter 2, *Project Description,* after completion of the Lower and Upper Berryessa Creek projects, the estimated 100-year discharge will increase to 6,900 cfs.

As described in Impact HYD-3, the proposed project would relocate and raise the levee in Reach 1, raise the levee in Reach 4, construct sheet pile floodwalls, and construct new headwalls on the San Andreas Drive bridge. Collectively, these improvements would adequately convey the increased flows from the upstream channel improvement projects. All other project elements would be designed to accommodate a 100-year design discharge of 6,900 cfs. The new floodwalls would be designed to accommodate the ultimate 8,700 cfs flow. This would avoid flooding of developed areas adjacent to the project area during 100-year flood discharge and would extend flood protection benefits downstream to the Coyote Creek/Lower Penitencia Creek confluence. The proposed project would maintain the FEMA certification of the Lower Penitencia Creek east levee, located between California Circle and the Lower Berryessa Creek confluence. The Lower Penitencia Creek channel passing under the two Caltrans bridges across Lower Penitencia Creek (I-880 and I-880 southbound ramps) has existing flow conveyance capacity to convey the 100-year flow. After construction of the proposed project, the creek would continue to have capacity to convey the 100-year flow without overtopping of the creek banks at the two Caltrans bridges. The project would not increase flood hazards to the Caltrans bridges. Based on a hydraulic analysis completed for the proposed project, hydrologic modeling was performed to determine the peak flow rates on Coyote and Lower Penitencia Creek during a 100-year event. According to the analysis used for determining the 1-percent water surface profile on which the project design is based, flow capacity of Coyote Creek (downstream of the project area) was found to be adequate to convey the combined flows during the 100-year event while maintaining freeboard (Zedler, pers. comm., 2017). The project would not increase flood hazards to areas downstream of the Lower Penitencia Creek/Coyote Creek confluence.

The proposed project would be beneficial by providing flood protection for Milpitas residents and businesses adjacent to the creek. Therefore, this impact would be less than significant.

Impact HYD-5: Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff (Less than Significant)

Construction and Operation Impacts

The proposed project would not introduce substantial new impervious surfaces that would result in or contribute to increased runoff such that the capacity of the City's existing stormwater drainage system would be exceeded. Although project construction would modify more than 10,000 sf of maintenance roads, changes in the amount of impervious surface area would be minor. After project construction is complete, the top-of-bank maintenance roads in Reaches 2, 3, and 4 of the Lower Penitencia Creek channel would be similar to existing maintenance roads in length, and surfacing materials. Because the Reach 2 floodwall would displace the existing paved access driveway to the City of Milpitas pump station located south of Reach 2, a new driveway connecting to California Circle would be built. The new drive would be surfaced with permeable aggregate base.

In portions of Reaches 3 and 4, some sections of the existing maintenance roads/trails on the levee crests would be widened by ~~two~~ up to four feet to extend to the base of the newly installed floodwalls, which would result in a minor increase in road surface area. Road/trail widths would increase from the current width of 10 feet to 14 feet. The road, including the widened areas, would be surfaced with permeable aggregate, which would be similar to the existing road surface. In Reach 4, existing roads/trails paved with concrete on the east levee would be replaced with roads/trails surfaced with permeable aggregate base rock. In Reaches 1 through 3, a total of 7,742 square feet of impervious surfaces would be created through widening of maintenance roads/trails paved with asphaltic concrete. In Reach 4, a total of 1,112 square feet of existing roads/trails paved with asphaltic concrete would be replaced with aggregate base. As a result, the project would result in a net increase of 6,630 square feet of new impervious surfaces.

~~The existing depressed maintenance road in Reach 3 would not be modified. the existing levee crest maintenance road would be removed when the levee is demolished and replaced by a new maintenance road on the crest of the newly constructed setback levee. The new levee crest road would be surfaced with compacted aggregate, similar to the road it would replace. Overall, post-construction maintenance roads would similar in area and surface materials as the existing channel maintenance roads.~~

~~The proposed headwalls on the San Andreas Drive Bridge would be located on the bridge deck, an existing impervious surface. The headwalls would not result in increased impervious surface area and would not affect runoff rates.~~

~~The project floodwalls would be composed of coated steel and would be impervious. The proposed project would include about 7,000 linear ft. of floodwalls, topped by a 1 ft. wide coated steel cap. The total impervious surface area would be about 7,000 sf (0.16 ac), which would represent less than one percent of the total project area of 25.47 acres. That change would not substantially affect storm runoff rates. The floodwalls would be located at or near the cress of existing levees, which serve as existing local runoff divides; thus, they would not change runoff flow directions from existing conditions.~~

~~The proposed project would not substantially increase the number of impervious surfaces at the project site or otherwise substantially affect stormwater runoff rates or volumes. After construction, storm runoff from the project area would not exceed the capacity of existing stormwater drainage systems. The proposed project would not generate new sources of polluted runoff. After project construction is complete, the top-of-bank maintenance roads in Reaches 2, 3, and 4 of the Lower Penitencia Creek channel would be similar to existing maintenance roads in length, and surfacing materials. In portions of Reaches 3 and 4, some section of the existing maintenance roads on the levee crests would be widened by two to four feet to extend to the base of the newly installed floodwalls, which would result in a minor increase in road surface area.~~

~~The proposed project would include resurfacing or widening of over 10,000 square feet of the District's existing maintenance roads and the District would be required to comply with Provision C.3. of the Municipal Regional Permit, which encourages source control measures that limit pollutant generation, discharge and runoff (e.g., bioswales, bioretention units, and other low impact development options).~~ Although this project is not subject to the source control, site design, and stormwater requirements pursuant to the Municipal Regional Stormwater Permit (NPDES No. CAS612008), the design of the proposed project would be consistent with the policies contained in the Municipal Regional Permit by minimizing runoff generation, promoting infiltration of storm water, and using vegetated areas to filter pollutants from the storm water before it enters the creek. The project would minimize generation of stormwater by surfacing new and existing roads with permeable material wherever possible and removing existing impervious pavement where possible. The maintenance roads in Reaches 1 and 3 would have cross-slopes directing stormwater runoff from the roads to vegetated areas on the banks of the creek, including the wetlands bench and transitional vegetated areas in Reach 1. This would promote infiltration of stormwater into the soil. The vegetated areas receiving stormwater would filter sediment and other pollutants from the stormwater, reducing the amount of pollutants reaching the creek channel. Additionally, the project design would include landscaping consistent with the guidelines referenced in section C.3.a.i(8) of the Municipal Regional Permit. Revegetation at the project area would use native plants that are adopted to the local climate. No irrigation systems would be installed and artificial watering would be limited to the minimum necessary to establish the plants. After the establishment period is complete, no irrigation or artificial watering would be required. ~~Compliance with applicable provisions in the~~The project would be furthering stormwater policies in the Municipal Regional Permit and prevent stormwater pollution; therefore~~would ensure that~~ this impact would be less than significant.

Impact HYD-6: 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; or place within a 100-year flood hazard area structures which would impede or redirect flood flows (No Impact)

Construction and Operation Impacts

The proposed project would not include the construction or modification of any homes in a flood hazard area; therefore, the criterion regarding placement of housing within the flood hazard area does not apply to the proposed project and is not discussed further.

During construction, coffer dams would be temporarily installed within the channel to divert flows around the construction work areas. If Staging Area B is utilized, the staging of equipment and materials would also occur within the 100-year flood hazard area. However, because construction activities would take place during the summer months when flood hazards are low, temporary use of cofferdams and staging of equipment and materials in Staging Area B are not anticipated to impede or redirect flood flows. In the long-term, the project would involve placement of new structures within the 100-year flood hazard area (e.g., new levee, wetland bench, and floodwalls). However, because the purpose of the proposed project is to improve flood protection and because the new structures would be designed to accommodate 100-year flood flows, the proposed project would not be expected to impede or redirect those flows.

Impact HYD-7: 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 (Beneficial)

Construction and Operation Impacts

Anderson and Coyote Reservoirs are located on Coyote Creek about 33 and 40 miles upstream of the Lower Penitencia Creek confluence. Failure of either or both of these dams could result in severe short-term flooding of Coyote Creek (ABAG 1995). However, due to the distance from the project area, any flooding would greatly dissipate before it reached the project area. The proposed project would not increase the flood risks due to failure of either dam.

Additionally, failure of levees adjacent to Coyote Creek protecting the south baylands area may result in flooding to the lower (downstream) portions of Lower Penitencia Creek (ABAG 1995). After construction of the proposed project, Coyote Creek would continue to have capacity to convey the combined flows of Lower Penitencia Creek and Coyote Creek during the 100-year event. The proposed project would not increase the risk of Coyote Creek levee failure. The proposed project would increase the conveyance and floodwater storage capacity of Lower Penitencia Creek, thereby reducing potential flood damage resulting from failure of the Coyote Creek levees. The proposed project would not increase flood risks due to levee failure.

The proposed project addresses issues of inadequate flood protection provided by the existing levees during a 100-year flood event. As part of the hydrologic determination of flood elevations and freeboard height, the potential effects of sea-level rise were taken into consideration as the proposed project was designed to accommodate an expected increase of

55 inches (2.59 feet) in sea level over the proposed project's 50-year design life. As such, the impact would be beneficial.

Impact HYD-8: Inundation by seiche, tsunami, or mudflow (No Impact)

Construction and Operation Impacts

The project site is not near the ocean coastline and is not located within a tsunami hazard area (Cal EMA 2009). In addition, the project site is not located adjacent to any large waterbodies and, therefore, would not be at risk of a seiche. The project site is not adjacent to any steep slopes and would not be at risk for damage by mudflows. For these reasons, inundation by seiche, tsunami, or mudflow would not occur. There would be no impact.

3.10 Land Use and Planning

3.10.1 Overview

This section describes the setting and impacts of the proposed project related to land use and planning. The "Regulatory Setting" section describes applicable laws, regulations, and policies related to land use and planning, while the "Environmental Setting" section describes the existing land use designations and characteristics at the project site and vicinity. The "Impact Analysis" section then evaluates impacts on land use and planning that could result from the proposed project.

3.10.2 Regulatory Setting

No federal or state laws, regulations, or policies related to land use and planning are applicable to the proposed project. Local plans relevant to the proposed project include the *City of Milpitas General Plan*, *Milpitas Trails Master Plan*, and *Bikeway Master Plan Update*.

Specific land use goals and The *City of Milpitas General Plan* (2012) provides the framework for land use planning in the City and identifies land use designations that inform the City's zoning ordinance. The General Plan land use map (City of Milpitas 2012) designates the project site (i.e., bed and banks of Lower Penitencia Creek) as Parks and Open Space (POS). The land use designations for surrounding areas include Industrial Park (IP); Multi-family Residential, Very High Density (MFH); General Commercial (GC); Manufacturing and Warehousing (MW); and Multi-Family Residential, Medium Density (MFM).

The Lower Penitencia Creek Trail is identified as a planned trail in the *Milpitas Trails Master Plan* (City of Milpitas 1997). The *Bikeway Master Plan Update* identifies the path on the west side of Reach 4 as an existing Class I bikeway. The *Bikeway Master Plan Update* also identifies the levee-maintenance roads along the west side of Lower Penitencia Creek (Reaches 1, 2, and 3 of the proposed project) as a location for a proposed Class I bike path (City of Milpitas 2009).

Appendix B summarizes policies contained in the above-described plans that are relevant to the proposed project.

3.10.3 Environmental Setting

Land uses in the project area include residential, commercial, and office/industrial park uses. The project site itself is currently used for flood protection and stormwater conveyance, as well as recreational and transportation purposes (i.e. bridge crossings). Reaches 1 and 2 are surrounded by highway and street systems (i.e., I-880, Dixon Landing Road, and California Circle), with no adjacent residential or commercial development. Reach 3 is bordered by multifamily and single-family residential development to the east and office/industrial park development to the west. Apartment complexes and three-story town homes are located along the northern portion of Reach 3 to the east. Moving south toward Milmont Drive and the confluence with Lower Berryessa Creek, there are more single-family homes to the east of Reach 3. New single-family homes and townhomes are currently being constructed immediately west of Reach 3. Reach 4 is surrounded by single-family homes to the east and industrial/office park development to the west.

The project site is designated as Parks and Open Space in the *City of Milpitas General Plan* and is characterized by the engineered, mostly earthen flood control channel and the District's maintenance roads on both sides of the channel in Reaches 2, 3, and 4. Along the east bank of Reach 3, the northern portion of the maintenance road is paved and is part of the City's Penitencia Creek Trail. Approximately 800 feet south of California Circle Drive, the paved trail continues slightly east and then south, paralleling the District's maintenance road and channel. Within Reach 4, the maintenance road on the west side of the channel is paved and is considered a designated City of Milpitas trail. Other segments of the District's maintenance access roads are used for recreation even though such roads are not designated for this purpose.

3.10.4 Impact Analysis

This discussion describes and evaluates impacts related to land use and planning from the proposed project. This evaluation is based in part on the existing regulations and land uses/environmental resources in the project area, as described above.

Methodology

The analysis of impacts related to land use and planning compares aspects of the proposed project to applicable land use plans and policies. The *City of Milpitas General Plan*, *Milpitas Trail Master Plan*, and *Bikeway Master Plan Update*, which are described in Appendix B, were reviewed to characterize existing land uses within the project vicinity. Any identified inconsistencies between applicable land use plans and elements of the proposed project were evaluated in consideration of the specific significance criteria described below.

Criteria for Determining Significance

Based on Appendix G of the State CEQA Guidelines, the proposed project would result in a significant impact related to land use and planning if it would:

- Physically divide an established community;
- 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; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

Impact Summary

Table 3.10-1 summarizes land use impacts of the proposed project.

Table 3.10-1. Summary of Impacts Land Use

Impact	Impact Determination Before Mitigation	Applicable Mitigation Measures	Impact Determination After Mitigation
LU-1: Physically divide an established community	LS	None	LS
LU-2: 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	LS	None	LS
LU-3: Conflict with any applicable habitat conservation plan or natural community conservation plan	NI	None	NI

LS = Less than Significant; NI = No Impact

Environmental Impacts

Impact LU-1: Physically divide an established community (Less than Significant)

Construction Impacts

As described in Chapter 2, *Project Description*, the proposed project would include construction of floodwalls in Reaches 1, 2, 3 and 4; a wetland bench and replacement levee in Reach 1; and headwalls at the San Andreas Drive bridge in Reach 4. Project construction would generally occur within existing District ROW and easements along the channel, which includes the District's maintenance roads on the south side of the channel in Reach 1 and both sides of the channel in Reaches 2, 3, and 4. The staging of equipment and materials may occur at three locations: Staging Area A, a vacant area south of Reach 1; Staging Area B, on the central berm in Reach 3; and Staging Area C, adjacent to Reach 4 southwest of the Milmont Drive bridge. Staging Area A is currently owned by the City of Milpitas, Staging Area B is within the District's ROW, and Staging Area C is privately owned. The District would obtain a temporary construction easements or fee title from the City of Milpitas to use Staging Area A and a temporary easement from the property owner of Staging Area C. Construction activities would require temporary closure of the Penitencia Creek Trail, which coincides with the District's maintenance road on the east side of the channel in Reach 3. The effects of temporary trail closure are described in Section 3.12, *Recreation.*

Because project construction would primarily be limited to the District's ROW and easements would be obtained from the City for areas where construction would occur outside of the District's ROW (within Reaches 1, 2 and 3), project construction would not result in adverse effects related to physical division of an established community. Construction-related effects would be less than significant.

Operational Impacts

The proposed project would not introduce any new land uses or result in any land use changes. Following project construction, use of the trails and maintenance roads along both sides of the creek would be similar to existing conditions. Where the Penitencia Creek Trail crosses the outboard side of the eastern levee along Reach 3, pedestrian accessibility would be maintained. The District would construct earthen pedestrian ramps on both sides of the Reach 3 floodwall to ensure continued access to the trail. The proposed floodwalls and other project elements would not preclude use or future development of trails along the project reaches. In addition, District maintenance activities (e.g., periodic vegetation trimming, graffiti removal, and trash and debris removal) would be similar to existing maintenance activities that occur under the District's SMP. The floodwalls and headwalls would be repaired and maintained on an infrequent and as-needed basis. As such, the proposed project would not physically divide the community during project operation. This impact would be less than significant.

Impact LU-2: 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 (Less than Significant)

Construction Impacts

Consistency with policies relevant to various other resource topics are addressed in other sections of Chapter 3. Numerous land use plans and policies govern the project's impacts on the environment during construction (e.g., noise standards contained in the *City of Milpitas General Plan*, air quality standards and regulations, goals and policies related to wetlands and biological resources). Due to the nature of these policies and regulations, impacts during project construction are addressed in other resource sections of this EIR and are not addressed here. Given that land use plans such as the general plan and *Milpitas Trails Master Plan* identify long-range planning goals and policies, temporary conflicts with such plans during construction (e.g., temporary closure of creek-side trails and restriction of access to the creek during construction activities) are considered less than significant.

Operational Impacts

Potential conflicts with land use plans during project operation or due to proposed project components would primarily be related to future use and development of the trails along the project reaches and continued opportunities for recreational use of the creek. As described in the regulatory setting section above, the project site is designated as Parks and Open Space in the *City of Milpitas General Plan*, and several goals and policies in the general plan relate to provision of trail systems and recreational opportunities along creeks in the City. The proposed project would not permanently alter existing land uses or introduce new land uses into the area

As described in Appendix B and in Impact LU-1, the *Milpitas Trails Master Plan* and *Bikeways Master Plan Update* identify a proposed trail and Class I bikeway along the project reaches. The general plan also contains goals and policies for linking facilities through streamside trail systems and for coordination between the District and the City regarding recreational access and trail development along District-managed streams. As described in Impact LU-1, the proposed project would not preclude future use and development of trails along Lower

Penitencia Creek or prevent or substantially inhibit recreational use of the creek. The City's Penitencia Creek Trail would be allowed to cross over the proposed floodwalls via ramps.

In addition, the proposed project has been designed to retain existing recreational trails within the project site. Throughout the project's planning process, the District has taken into consideration community benefits beyond flood protection, including the quality of the recreation experience provided (SCVWD 2016). Consistent with *City of Milpitas General Plan* Guiding Principle 4.d-A-8, which is provided in Appendix B and requires coordination between the City and District on creek projects, early project planning was conducted in coordination with the City.

Overall, given that existing and proposed recreational trails would be retained, there would be no conflicts with existing land use plans or policies. The proposed project would not conflict with the general plan land use designation for the project site of Parks and Open Space and would allow for future development of trails and bikeways proposed in the *Milpitas Trails Master Plan* and *Bikeways Master Plan Update*. As such, this impact would be less than significant.

Impact LU-3: Conflict with any applicable habitat conservation plan or natural community conservation plan (No Impact)

Construction and Operational Impacts

As described in Section 3.4, *Biological Resources,* the Santa Clara Valley Habitat Plan covers much of Santa Clara County but does not include the areas within the City of Milpitas. No other habitat conservation plans or natural community conservation plans apply in the project area. Therefore, no impact related to conflicts with habitat conservation plans or natural community conservation plans would occur.

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3.11 Noise and Vibration

3.11.1 Overview

This section describes the existing noise environment in the vicinity of the project area, presents relevant noise and vibration regulations, identifies sensitive receptors that could be affected by the proposed project, and evaluates the noise and vibration impacts of the proposed project. Mitigation measures to avoid or reduce impacts are proposed, as appropriate.

3.11.2 Overview of Noise and Vibration Concepts and Terminology

Noise

In the CEQA context, noise can be defined as unwanted sound. Sound is characterized by various parameters, including the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient sound level, or sound intensity. The decibel (dB) scale is used to quantify sound intensity. Because sound pressure can vary enormously within the range of human hearing, a logarithmic scale is used to keep sound intensity numbers at a convenient and manageable level. The human ear is not equally sensitive to all frequencies in the spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive, creating the A-weighted decibel (dBA) scale.

Different types of measurements are used to characterize the time-varying nature of sound. Below are brief definitions of these measurements and other terminology used in this section.

- **Decibel (dB)** is a measure of sound on a logarithmic scale that indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude.
- **A-weighted decibel (dBA)** is an overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Maximum sound level (L_{max})** is the maximum sound level measured during a given measurement period.
- **Minimum sound level (L_{min})** is the minimum sound level measured during a given measurement period.
- **Equivalent sound level (L_{eq})** is the equivalent steady-state sound level that, in a given period, would contain the same acoustical energy as a time-varying sound level during that same period.
- **Day-night average sound level (L_{dn} or dBL)** is the energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels during the period from 10:00 p.m. to 7:00 a.m. (typical sleeping hours). This weighting adjustment reflects the elevated sensitivity of individuals to ambient sound during nighttime hours.
- **Community noise equivalent level (CNEL)** is the energy average of the A-weighted sound levels during a 24-hour period, with 5 dB added to the A-weighted sound levels

between 7:00 p.m. and 10:00 p.m. and 10 dB added to the A-weighted sound levels between 10:00 p.m. and 7:00 a.m.

In general, human sound perception is such that a change in sound level of 3 dB is barely noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving the sound level. **Table 3.11-1** presents approximate noise levels for common noise sources, measured adjacent to the source.

Table 3.11-1. Examples of Common Noise Levels

Common Outdoor Activities	Noise Level (dBA)
Jet flyover at 1,000 feet	110
Gas lawnmower at 3 feet	100
Diesel truck at 50 feet traveling 50 miles per hour	90
Noisy urban area, daytime	80
Gas lawnmower at 100 feet, commercial area	70
Heavy traffic at 300 feet	60
Quiet urban area, daytime	50
Quiet urban area, nighttime	40
Quiet suburban area, nighttime	30
Quiet rural area, nighttime	20

Source: Caltrans 2009

Vibration

Groundborne vibration propagates from the source through the ground to adjacent buildings by surface waves. Vibration may be composed of a single pulse, a series of pulses, or a continuous oscillatory motion. The frequency of a vibrating object describes how rapidly it is oscillating, measured in Hertz (Hz). Most environmental vibrations consist of a composite, or "spectrum," of many frequencies. The normal frequency range of most ground-borne vibrations that can be felt generally starts from a low frequency of less than 1 Hz and extends to a high of about 200 Hz. Vibration information for this analysis has been described in terms of the peak particle velocity (PPV), measured in inches per second (in/sec), or of the vibration level measured with respect to root-mean-square vibration velocity in decibels (VdB), with a reference quantity of 1 micro-inch per second (μin/sec).

Vibration energy dissipates as it travels through the ground, causing the vibration amplitude to decrease with distance away from the source. High-frequency vibrations attenuate much more rapidly than do those characterized by low frequencies, so that in a far-field zone distant from a source, the vibrations with lower frequency amplitudes tend to dominate. Soil properties also affect the propagation of vibration. When groundborne vibration interacts with a building, a ground-to-foundation coupling loss usually results, but the vibration also can be amplified by the structural resonances of the walls and floors. Vibration in buildings is typically perceived as rattling of windows, shaking of loose items, or the motion of building surfaces. In some cases, the vibration of building surfaces can also be radiated as sound and heard as a low-frequency rumbling noise, known as ground-borne noise.

Ground-borne vibration is generally limited to areas within a few hundred feet of certain types of industrial operations and construction/demolition activities, such as pile driving. Road vehicles rarely create enough ground-borne vibration amplitude to be perceptible to humans unless the receiver is in immediate proximity to the source or the road surface is poorly maintained and has potholes or bumps. Human sensitivity to vibration varies by frequency and by receiver. Generally, people are more sensitive to low-frequency vibration. Human annoyance also is related to the number and duration of events; the more events or the greater the duration, the more annoying the vibration becomes.

3.11.3 Regulatory Setting

Federal Laws, Regulations, and Policies

No federal laws, regulations, or policies for construction-related noise and vibration apply to the proposed project. However, the Federal Transit Administration (FTA) *Guidelines for Construction Vibration in Transit Noise and Vibration Impact Assessment* states that for evaluating daytime construction noise impacts in outdoor areas, a noise threshold of 90 dBA L_{eq} should be used for residential areas (FTA 2006).

The FTA's recommended thresholds for human annoyance vary by the frequency of the vibration source and the type of sensitive receptor. The most conservative (lowest) ground-borne vibration annoyance level thresholds are for frequent events (more than 70 vibration events of the same source per day), and are as follows: 65 VdB for buildings where vibration would interfere with interior operations, 72 VdB for residences, 75 VdB for institutional land uses with primarily daytime uses.

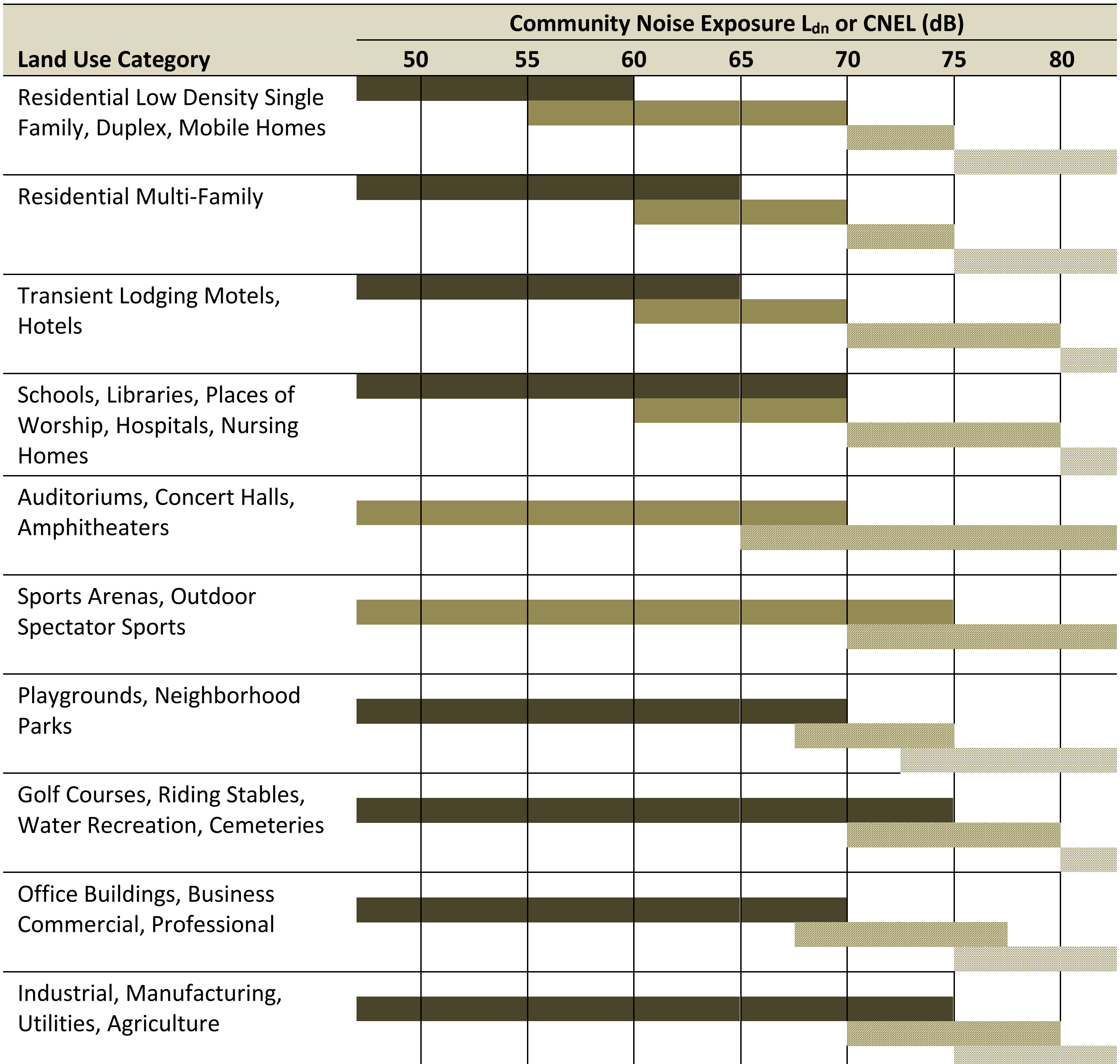
State Laws, Regulations, and Policies

Caltrans has recommended threshold criteria to determine vibration-related structural damage potential and vibration-related annoyance potential (Caltrans 2013). The guideline thresholds developed by Caltrans vary based on the building type and age, the level of human annoyance response (i.e. barely perceptible up to severe), and/or whether the vibration source is transient or continuous/frequent intermittent[1]. The closest potentially sensitive vibration receptors are new residential units located on parcels adjoining Reach 3 of the project area. For new residential structures, Caltrans lists a maximum PPV of 1.0 in/sec for transient vibration sources (Caltrans 2013). For continuous/frequent sources potentially affecting new residential structures, the recommended maximum PPV is 0.5 in/sec (Caltrans 2013).

California requires each local government entity to implement a noise element as part of its general plan. California Administrative Code Title 4 presents guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. The state land use compatibility guidelines are listed in **Table 3.11-2**.

[1] Transient sources include a single isolated vibration event such as blasting. Continuous/frequent intermittent sources include impact pile drivers, vibratory pile drivers, and vibratory compaction equipment. (Caltrans 2013).

Table 3.11-2. State Land Use Compatibility Standards for Community Noise Environment



Normally Acceptable	Specified land use is satisfactory, based on the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.
Normally Unacceptable	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Clearly Unacceptable	New construction or development generally should not be undertaken.

Source: California Administrative Code Title 4

Local Laws, Regulations, and Policies

City of Milpitas General Plan

The City of Milpitas General Plan contains several policies that relate to noise levels (See Appendix B). The Noise Element of the General Plan includes land use compatibility standards that are derived from the state standards shown in Table 3.11-2 and are nearly identical to the state standards. Community noise levels are based on 24-hour noise exposure; therefore "all individual noise readings must be averaged over 24-hour period to give an equivalent noise level" (City of Milpitas, 2002). General Plan Policy 6-I-1 calls for avoiding community noise level increases of 3 decibels (db) dBL or more at residential property lines, and community noise exposure above 65 dB dBL at residential property lines.

Policy 6-I-9 calls for enforcement of established truck routes. Policy 6-I-3 calls for restricting the hours of operation, technique, and equipment in construction activities to minimize noise impacts.

City of Milpitas Noise Abatement Ordinance

Chapter 213 of the City of Milpitas Municipal Code contains regulations to abate noise. Section V-213-3 of the Code states that all construction activities and construction-related operations, including delivery of construction materials, supplies, or improvements on or to a construction site, shall be restricted to the hours between 7:00 a.m. and 7:00 p.m. on weekdays and weekends. No construction work should be conducted or performed on holidays (including New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day). However, there are some limited exemptions from the time restrictions, which are provided in Section V-213-3, Part 3.06. These exemptions apply to furnishing utility-type services, including construction and maintenance of utility facilities and operation to construct and maintain facilities within the public ROW, and are subject to approval by the City's Public Works Director.

3.11.4 Environmental Setting

Existing Noise Sources

The project site is located in the northwest corner of Milpitas and is divided into four reaches (see Figure 2-3). Reaches 1 and 2 are largely surrounded by I-880 and highway infrastructure, while Reaches 3 and 4 are bordered by commercial and residential uses to the west and residential areas to the east. The Union Pacific Railroad tracks are approximately 0.2 mile east of Reaches 3 and 4. The Noise Element of the *City of Milpitas General Plan* shows community noise levels of 80 dB and 70 dB along I-880 and the railroad, respectively, and community noise levels at the project site are 60+ to 65+ dBL (City of Milpitas 2002). In addition to transportation infrastructure, ambient noise in the project vicinity is also influenced by nearby commercial, office, and residential uses (e.g., landscape maintenance, delivery vehicles, people talking, parking lot vehicle movements, and car doors closing). Periodic vegetation management and sediment removal activities associated with the District's SMP (2014) also contribute to ambient noise in the project area.

Existing Vibration Sources

In addition to noise, major transportation infrastructure, such as I-880 and the Union Pacific Railroad, can also be a source of vibration in the project vicinity.

Sensitive Receptors

The nearest existing sensitive receptors are the apartments and homes located along Summerwind Drive, Terra Mesa Way, Dixon Landing Road, and California Circle, some of which are 90-120 feet from the project site. In addition to these residential sensitive receptors, Kiran Childcare is located approximately 251 feet east of Reach 4. A religious facility, the BAPS Shri Swaminarayan Mandir, and the Residence Inn Milpitas are located approximately 140 feet and ~~480~~550 feet west of Reach 3, respectively.

In addition to the existing sensitive receptors, new residential receptors will be located in the future iStar and Waterstone developments located along California Circle. The closest residential receptors at the iStar and Waterstone developments are located approximately 10 feet away from the project footprint. **Figure 3.11-1** shows these existing and future sensitive receptors in the area surrounding the project site.

Figure 3.11-1
Sensitive Receptors

Lower Penitencia Creek Improvements Project

3.11.5 Impact Analysis

Criteria for Determining Significance

The proposed project would have a significant effect related to noise if it would result in any of the following conditions:

- 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;
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- 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; or
- 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.

Table 3.11-3 summarizes noise and vibration thresholds used for the purposes of this analysis.

Table 3.11-3. Applicable Noise Thresholds

Thresholds	Source
Noise Thresholds	
Ambient noise levels greater than 65 dB Ldn or +3 dB Ldn increase at a residential property line	City of Milpitas General Plan (City of Milpitas 2002)
Construction noise generated on holidays or unapproved work outside of 7:00 a.m.–7:00 p.m.	City of Milpitas Noise Abatement Ordinance
Onsite construction noise in excess of 90 dBA L_{eq} at residential and noise-sensitive land uses	FTA Guidelines (FTA 2006)
Vibration Thresholds	
Annoyance thresholds for: Buildings with sensitive interior operations 65 VdB Residences 72 VdB Institutional land uses 75 VdB	FTA Guidelines for Construction Vibration (FTA 2006)

Thresholds	Source
Damage threshold	
Vibration in excess of 0.5 in/sec PPV	Caltrans Guidelines for Construction Vibration (Caltrans 2013)

Methodology

Impacts were assessed for project construction activities by applying FTA's *Transit Noise and Vibration Impact Assessment* methodology (FTA 2006). This methodology assumes that the two loudest pieces of construction equipment (using the construction equipment list from CalEEMod) would operate simultaneously at the same location under full power, assuming the following:

- full power operation for a full 1-hour period;
- no obstructions to the noise travel paths;
- typical noise levels from construction equipment; and
- both pieces of equipment operating at the center of the project site.

Using these assumptions, the noise levels at specific distances can be obtained using the following equation:

$$L_{eq}(equip) = EL_{50ft} - 20log_{10}(D/50)$$

Where:

L_{eq} (equip) = the noise emission level at the receiver at distance D over 1 hour

EL_{50ft} = noise emission level of a particular piece of equipment at a reference distance of 50 feet

D = the distance from the receiver to the piece of equipment in feet

To add the two loudest pieces of equipment together, the following equation applies:

$$L_{total} = 10\ log_{10}(10^{\frac{L1}{10}} + 10^{\frac{L2}{10}})$$

Where:

L_{total} = the noise emission level of two pieces of equipment combined

L_1 = the noise emission level of equipment type 1

L_2 = the noise emission level of equipment type 2

For the vibration analysis, the two pieces of equipment anticipated to be the largest sources of vibration were used, along with VdB and PPV values from the FTA guide (FTA 2006). The formulas below were used in calculations relating to vibration-related threshold distances:

$$PPV = PPV_{ref} \times (\frac{25}{D})^{1.5}$$

$$L_v(D) = L_v(25ft.) - 30\log(\frac{D}{25})$$

Where:

PPV = peak particle velocity in in/sec of the equipment adjusted for distance

PPV_{ref} = the reference vibration level in in/sec at 25 feet

L_v = vibration level

D = the distance from the equipment to the receiver

Noise and vibration levels generated by equipment used during project construction at the proposed project's nearest sensitive receptors that could be affected were estimated by using the FTA reference guide (FTA 2006). For the purposes of this analysis, the noise and vibration analysis takes into consideration potential effects on the closest sensitive receptors expected to be located at the iStar and Waterstone residential developments. Construction of these developments will be complete before construction of the proposed project begins and given the high housing demands in the Milpitas area, it is likely that these developments will be occupied by the time construction of the proposed project begins. The iStar and Waterstone residential developments are proposed to include 148 and 84 residential units, respectively (City of Milpitas 2014 and 2017). For these reasons and due to their close proximity to the project site, this section evaluates noise and vibration effects on these residential receptors. This section also indicates the distance from the project site to the relevant noise and vibration thresholds as an indication of the extent of noise and vibration impacts.

This analysis was performed conservatively. It takes into account worst-case construction equipment assumptions and uses the closest sensitive receptors of a given category to the project site.

Impact Summary

Table 3.11-4 summarizes noise and vibration impacts of the proposed project.

Table 3.11-4. Summary of Impacts Noise and Vibration

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance After Mitigation
NOI-1: 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	S	Mitigation Measure NOI-1	SU
NOI-2: Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels	S	Mitigation Measure NOI-1	SU
NOI-3: A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project	LS	None	LS
NOI-4: A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project	S	Mitigation Measure NOI-1	SU
NOI-5: 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	NI	None	NI
NOI-6: 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	NI	None	NI

LS = Less than Significant, NI = No Impact, S = Significant, SU = Significant and Unavoidable

Environmental Impacts

Impact NOI-1: Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or, in the applicable standards of other agencies (Significant and Unavoidable)

Construction Impacts

During project construction, heavy equipment including scrapers, trucks, excavators, a Giken silent piler, and bulldozers, would be operating in the project area and could generate noise levels affecting residences and other sensitive receptors near the construction work areas. The noises associated with construction activities would be temporary and would cease once construction is complete. If scrapers and trucks were operated together in close proximity, this equipment would generate combined noise levels of 106 dBA at the nearest sensitive receptor location (residences) at a distance of 10 feet from Reach 3 of the project site. If scrapers and trucks were operated simultaneously along the western portion of Reach 3, residences located within 50 feet could experience noise levels at 91.5 dBA. Calculations used to determine the proposed project's construction-related noise levels are presented in

Appendix G of this EIR. These noise levels would be greater than the FTA significance threshold of 90 dBA at residential and noise-sensitive land uses. Construction activities temporarily exposing nearby residences to noise levels exceeding the FTA standards would be a significant impact.

As described in Chapter 2, *Project Description,* construction activities would occur on weekdays and weekends during the daytime hours, 7:00 a.m. to 7:00 p.m., with the potential for construction to infrequently occur during extended hours (i.e. before 7 a.m. or after 7 p.m.). Work performed during extended hours could cause increased noise exposure to nearby sensitive receptors, particularly occupants of nearby residences. Nighttime construction noise would be more annoying and disruptive to sensitive receptors than daytime noise. Construction hours would generally be consistent with the City of Milpitas noise ordinance. In the unlikely event that construction would be required before 7 a.m. or after 7 p.m., the District would obtain prior approval from the City of Milpitas Public Works Director as provided in Section V-213-3, Part 3.06 of the Municipal Code. The proposed project would conform with City policies on construction timing contained in the City of Milpitas Noise Abatement Ordinance.

~~Existing designated truck routes provide access to the project site, and most project construction traffic would be confined to those routes in conformance with General Plan Policy 6-I-9. However, construction of headwalls on the San Andreas Drive bridge would require trucks to travel on San Andreas Drive, which is not a designated truck route, during a portion of the construction period This would be a significant impact.~~The proposed project would conform with City Policy 6-I-3 by installing sheet piles with a silent piler to construct foundations for floodwalls, which is a construction technique that minimizes noise generation compared to alternative construction techniques, such as driven or cast-in-place piles.

City Policy 6-I-1 calls for avoiding noise level increases of 3 dB or more L_{dn} or levels more than 65 dB dBL at residential property lines. Estimated year 2010 community noise levels in the project vicinity range from 65+ to 70+ dBL, which exceeds the city policies for residential community noise exposure (City of Milpitas 2002). Project construction would add to the existing noise levels. Individual daytime construction noise events would generate noise levels up to 91.5 dbA at 50 feet from the source. Those noise events would be intermittent and sporadic, most of the time construction noise levels would be much lower. When averaged over 24 hours, construction noise would likely result in a 3 dB increase in community noise levels. Because the existing community noise levels in the project vicinity already exceed the residential community noise threshold in General Plan Policy G-I-1, additional noise generated by project construction would be inconsistent with Policy G-I-1. Although this impact would be temporary, occurring only during the two four-month construction periods, it would be significant.

~~Note that the proposed project would conform with City Policy 6-I-3 by installing sheet piles with a silent piler to construct foundations for floodwalls, which is a construction technique that minimizes noise generation compared to alternative construction techniques, such as~~

~~driven or cast-in-place piles.~~Mitigation Measure NOI-1 would be implemented to reduce this significant impact.

Operational Impacts

Once project construction is complete, maintenance activities of project elements would be similar to current activities (e.g., trash and debris removal, vegetation management, maintenance road grading), which are covered by the District's SMP (2014). Periodic maintenance and repair of the new headwalls and floodwalls would be conducted. Vehicle trips generated by this maintenance work would be minimal, and the maintenance work would not generate substantial noise that would exceed the City of Milpitas noise ordinance or conflict with city noise policies. This impact would be less than significant.

Mitigation Measures

Mitigation Measure NOI-1: Implement Noise- and Vibration-reducing Measures

The District and construction contractor will implement the following noise- and vibration-reducing measures during all construction activities, unless as specified below, to minimize impacts on nearby sensitive receptors:

- All noise-producing project equipment and vehicles using internal combustion engines will be equipped with mufflers; air-inlet silencers, where appropriate; and any other shrouds, shields, or noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed "package" equipment (e.g., arc-welders, air compressors) will be equipped with shrouds and noise control features that are readily available for those types of equipment.

- Mobile noise-generating equipment and machinery will be shut off when not in use.

- Ensure proper tuning of vibration-causing equipment.

- Vibration damping devices will be used to the extent feasible.

- Use of vibratory equipment will be limited to the extent feasible.

- Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction will be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust will be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves will be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures will be used, such as drills rather than impact equipment, whenever feasible.

- Electric stationary equipment (e.g., generators) will be used where feasible.

- Noise and/or vibration shields, such as sound aprons or temporary enclosures with sound-absorbing material, will be used on or around construction equipment, particularly if construction activities are conducted after 7:00 pm. For all construction activities occurring within 60 feet of residences at any time of day temporary noise and vibration barrier will be installed between the project site and the nearest sensitive receptors. Following the completion of construction activities within that distance, the barrier will be removed.

- The District will notify all residences and other sensitive receptors within 500 feet of the project site prior to the initiation of the proposed construction activities. The notification will provide the name and contact information, including a phone number, of a District representative for use before and during construction activities to address any questions or concerns regarding the project's construction activities or anticipated noise and vibration levels. If any occupants or other sensitive receptors report sensitive operations that could be affected, construction activities will be modified to minimize vibration near those buildings. Potential modifications include limiting the hours of operation for pieces of equipment that are major vibration sources and maximizing the distance between these pieces of equipment and sensitive buildings.

Significance After Mitigation

Mitigation Measure NOI-1 requires the District and its construction contractor to implement several strategies aimed at minimizing the noise and vibration levels experienced by nearby sensitive receptors. This mitigation measure also requires installation of temporary noise barriers, which would be anticipated to attenuate noise levels at the receptor by 5 to 15 dB (FTA 2006). Despite implementation of these strategies, there would still be a potential for construction activities near sensitive receptors to result in noise levels that exceed the 90 dBA FTA threshold. Residences located within 50 feet of construction activities may experience noise levels that exceed the FTA threshold even after implementation of Mitigation Measure NOI-1. In addition, even with implementation of Mitigation Measure NOI-1, construction noise could temporarily cause a 3 dB L_{dn} or more increase in ambient noise levels at the property lines of nearby residential parcels. Based on this information, this noise impact would be significant and unavoidable during the construction phase.

Impact NOI-2: Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels (Significant and Unavoidable)

Construction Impacts

During construction, heavy machinery operating in the project area would generate ground-borne vibration. For this project, large bulldozers and loaded trucks would be the most substantial sources of ground-borne vibration. **Table 3.11-5** presents distances from the two sources at which vibration levels would reach damage thresholds (based on Caltrans guideline) and annoyance levels (based on FTA guidelines). Vibration-producing equipment would have to operate within 7.9 feet of a building to exceed the state threshold for damage to new residential structures. There are no buildings located within 7.9 feet of proposed construction work areas. Therefore, construction-period vibration would not damage nearby buildings.

The thresholds for residential human perception of noise vibration and for annoyance are 65 VdB and 72 VdB, respectively. The closest residences to the project site are the Waterstone and iStar developments, located about 10 ft. from the project area. As shown in Table 3.11-5, these residences would be sufficiently close to the project site that residents would perceive vibrations caused by project construction and would be annoyed by those vibrations. The annoyance thresholds would be temporarily exceeded for the short period of time when heavy construction equipment operates within 73 to 79 feet of the buildings and residents (see Appendix G).

Based on its distance from the project area, the BAPS Shri Swaminarayan Mandir religious institution would experience vibration levels of 69 VdB, which is above the perception threshold, but below the annoyance level threshold of 75 VdB for institutional uses. Some commercial buildings located on California Circle or Fairview Way may experience vibrations above the 65 VdB level threshold, which could affect sensitive equipment such as electron microscopes, lithographic equipment, and optical microscopes (if present). Vibrations-produced by construction equipment operating within 125 to 135 feet of buildings containing equipment sensitive to vibrations could temporarily interfere with operation of the sensitive equipment (see Appendix G). Based on this information, construction-related vibration impacts would have a significant impact.

Table 3.11-5. Construction Equipment and Vibration Distance

Equipment	Distance to PPV of 0.5 in/sec	Distance to Noise Vibration of 65 VdB[1]	Distance to Noise Vibration of 72 VdB[1]	Distance to Noise Vibration of 75 VdB[1]
Large Bulldozer	7.9 ft.	135 ft.	79 ft.	63 ft.
Loaded Trucks	7.1 ft.	125 ft.	73 ft.	58 ft.

Notes: ft. = feet; PPV = peak particle velocity; in/sec = inches per second; VdB = vibration velocity in decibels

[1] This is the human perception threshold. 65 VdB is the ground-borne vibration annoyance level for buildings with sensitive interior operations (e.g. laboratory equipment), 72 VdB is the ground-borne vibration annoyance level for residents; 75 VdB is the ground-borne vibration annoyance level for institutional uses.

Source: FTA 2006

Operational Impacts

Operation and maintenance activities would be similar to current activities performed by the District. None of these activities currently generate, or are anticipated to generate, substantial ground-borne vibration. Therefore, long-term vibration effects would be less than significant.

Mitigation Measures

Mitigation Measure NOI-1: Implement Noise- and Vibration-reducing Measures (see full text of measure in Impact NOI-1 analysis above)**.**

Significance After Mitigation

Implementation of Mitigation Measure NOI-1 would ensure that occupants of nearby residences and buildings are contacted prior to the initiation of construction activities. This measure also contains several measures that would reduce the amount of ground-borne vibration that occurs. However, due to the proximity of nearby institutional uses and the limits on how much vibration dampening can be achieved, Mitigation Measure NOI-1 would not reduce all construction-related vibration to below the annoyance level for institutional uses or below levels that could temporarily interfere with operation of sensitive equipment in nearby buildings. Even after implementation of these measures, vibration impacts may still exceed the vibration annoyance thresholds for sensitive receptors or interference thresholds for sensitive equipment. Even with implementation of Mitigation Measure NOI-1, this vibration impact would be significant and unavoidable during project's construction.

Impact NOI-3: Substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project (Less than Significant)

Once constructed, the proposed project would eliminate or greatly reduce the need for periodic sediment removal, while other maintenance activities in the project area would be similar to current activities. I-880 would continue to be the dominant source of noise in the area and, given their placement, the floodwalls along Reaches 3 and 4 may help reduce highway-related noise levels for residences east of the project area. Thus, there would be no permanent increase in ambient noise levels. This impact would be less than significant.

Impact NOI-4: Substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (Significant and Unavoidable)

Construction Impacts

As discussed in Section 3.11.3, there are multiple existing residences within 10-120 feet of the project area and other sensitive receptors, including a daycare, hotel, and religious institution, within 550 feet. Residences at the Waterstone and iStar developments would be located within 10 feet of the project area. According to noise contours in the *City of Milpitas General Plan* Noise Element, the project area currently experiences ambient noise levels of 65+ to 70+ dB, mainly due to the proximity of transportation infrastructure, including I-880 and an active railroad corridor. Construction activities would temporarily and intermittently generate noise levels above 70 dB, the ambient noise level in the vicinity of I-880 and the maximum noise level considered conditionally acceptable (Table 3.11-2), for sensitive receptors near the project area and above 100 dB for the nearest residences. Because project construction would temporarily generate noise levels up to 100+ dBA, which would be substantially above existing ambient noise levels in the vicinity, this impact would be significant.

Mitigation Measures

> **Mitigation Measure NOI-1: Implement Noise- and Vibration-reducing Measures** (see full text of measure in Impact NOI-1 analysis above).

Significance After Mitigation

Implementation of Mitigation Measure NOI-1 would ensure that several noise-reduction measures are implemented. Although construction noise would be temporary and would be limited to daytime hours, it would still represent a substantial increase over ambient noise levels. Mitigation Measure NOI-1 would reduce the level of construction-generated noise by 5 to 15 dB (FTA 2006). However, construction activities would still result in temporary construction-period noise up to 85+ dB, which is substantially above existing ambient noise levels of 70+ dB. Despite implementation of these strategies, construction activities would still result in substantial temporary increase in ambient noise levels experienced by nearby residences. This noise impact would be significant and unavoidable during the construction phase.

Impact NOI-5: Within 2 miles of a public or public-use airport such that the project would expose people to excessive noise levels (No Impact)

The Mineta San Jose International Airport is the closest public airport to the project site. It is 5 miles from the project site, and the noise contours from its master plan do not overlap the project area (City of San Jose 2010). Therefore, there would be no impact.

Impact NOI-6: Within the vicinity of a private airstrip such that people would be exposed to excessive noise levels (No Impact)

No private airports are located within 19 miles of the project site. Thus, the proposed project would not affect people residing or working within the vicinity of a private airstrip and there would be no impact.

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3.12 Recreation

3.12.1 Overview

This section presents an overview of recreational activities in and adjacent to the project site, summarizes the regulatory framework related to recreation, and evaluates impacts of the proposed project on recreational resources.

3.12.2 Regulatory Setting

No federal or state regulations are applicable to recreation in relation to the proposed project. Local plans and policies applicable to the proposed project are summarized in Appendix B.

3.12.3 Environmental Setting

The project site is situated in an area predominantly surrounded by residential, office/industrial park, and commercial uses. More specifically, surrounding land uses include a combination of low- and medium-density single-family and high-density multi-family housing, commercial uses, and office parks. There are several park and recreational facilities, including neighborhood parks, creek levee trails and bike paths, in the project area.

Parks and Community Facilities

Milpitas has more than 25 parks with various amenities such as softball fields, tennis courts, basketball courts, handball courts, bocce ball courts, volleyball nets, horseshoe units, par courses, and barbecue facilities. The City's parks and recreational facilities are operated and maintained by the City of Milpitas Parks Maintenance Services Division (City of Milpitas 2015a). As summarized in **Table 3.12-1**, Dixon Landing Park is the nearest community park in the project vicinity.

Bikeways and Trails

The project vicinity has several bike paths or multi-use paths, bicycle routes, and trails used by nearby residents for casual recreation or transportation (see Table 3.12-1). Bikeways have three different classifications:

- Class I bikeways are considered bike paths or shared paths that provide bicycle travel on a paved right-of-way completely separate from a street or highway.
- Class II bikeways are often referred to as bike lanes. These are typically designated by a striped or stenciled lane for one-way travel on a street or highway.
- Class III bikeways are generally referred to as bike routes. Signage is typically installed along Class III bikeways signifying shared use with pedestrian or motor vehicle traffic, typically on low-volume roads.

According to the City's *Bikeway Master Plan*, the District's maintenance road located west of Reach 4 is also a Class I bike path. California Circle, Milmont Drive, and North McCarthy Boulevard are Class II bikeways. The maintenance roads on the west side of Reach 3 and the south side of Reaches 1 and 2 are shown as proposed Class I bike paths in the *Bikeway Master Plan* (2009).

The Penitencia Creek Trail is a paved path located east of Reach 3 and is accessible from Palisades Drive. This trail parallels this reach and eventually connects with the District's maintenance road mid-way of Reach 3. This trail also continues south of Milmont Drive and consists of the District maintenance road west of Reach 4. As shown in Table 3.12-1, the Coyote Creek Trail is located southwest of Reach 1 and generally parallels North McCarthy Boulevard. No specific data are available on level of use of these trails but during a reconnaissance site visit conducted in June 2015, the trail was moderately used by nearby residents.

While some District maintenance roads are also designated City trails, other District maintenance roads that parallel Lower Penitencia Creek in the project area are undesignated but are used informally by nearby residents for walking and jogging. Based on the site visit conducted in June 2015, the maintenance roads adjacent to Reaches 3 and 4 seem to be used primarily by nearby residents and are moderately used. The level of use of the District maintenance road adjacent to Reach 1 is likely low, given the presence of security gates and fencing. The level of use of the District maintenance road adjacent to Reach 2 is also likely low as the road is short and dead ends at the I-880 crossing.

Table 3.12-1. Parks and Recreational Facilities in the Vicinity of the Proposed Project

Recreational Facility	Jurisdiction	Distance from Project Site	Features
Parks			
Dixon Landing Park	City of Milpitas	Approximately 0.1 mile east of Reach 2.	11-acre park with 3 tennis courts, 6 barbeque pits, 10 picnic tables, basketball hoop, play equipment, restrooms, and parking lot
Trails and Bikeways			
Penitencia Creek Trail	City of Milpitas	The existing trail is located on District ROW in Reach 3 (east side) and the west side of Reach 4. A planned trail includes the remaining length of the proposed project.	The trail provides access to the industrial area of Milpitas and the Coyote Creek Trail.
Coyote Creek Trail	City of Milpitas	Approximately 100 feet southwest of Reach 1.	The paved trail runs north-south for approximately 2 miles along the City of Milpitas' western limits.
Class I Bikeway	City of Milpitas	Within District ROW on west bank of Reach 4.	Paved path

Recreational Facility	Jurisdiction	Distance from Project Site	Features
Proposed Class I Bikeway	City of Milpitas	A paved path is proposed along Lower Penitencia Creek. With endpoints at North McCarthy Boulevard and Milmont Drive, the path would parallel the south side of Reaches 1 and 2 and extend along the west side of Reach 3.	Paved path
Class II Bikeways	City of Milpitas	North McCarthy Boulevard (adjacent to Reach 1), California Circle (adjacent to Reaches 2 and 3), and Milmont Drive (adjacent to Reaches 3 and 4).	Bike lanes
Class III Bikeways	City of Milpitas	Dixon Landing Road (approximately 200 feet north of Reach 2).	Bike route

Sources: City of Milpitas 2015b, City of Milpitas 2009.

3.12.4 Impact Analysis

Methodology

This impact analysis describes the impacts on recreation associated with construction and operation of the proposed project. Impacts were evaluated qualitatively, based on the potential for the proposed project to disrupt existing recreational facilities and use.

Generally, construction activities may result in a short-term loss of recreational opportunities by disrupting use of or access to recreation areas or facilities. Potential effects regarding temporary loss of access to recreational facilities (e.g., Penitencia Creek Trail) is addressed in Section 3.13, *Transportation and Traffic.* A long-term effect could occur if a recreational opportunity is eliminated as a result of construction and/or operation of the proposed project.

Criteria for Determining Significance

The proposed project would result in a significant impact on recreation if it would:

- 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; or
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Impact Summary

Table 3.12-2 summarizes recreation impacts of the proposed project.

Table 3.12-2. Summary of Impacts Recreation

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance After Mitigation
REC-1: 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	LS	None	LS
REC-2: Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment	LS	None	LS

LS = Less than Significant

Environmental Impacts

Impact REC-1: 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 (Less than Significant)

Construction Impacts

As described in the environmental setting above and in Chapter 2, *Project Description,* the proposed project would involve installing floodwalls, constructing a wetland bench and relocating and raising a levee, installing headwalls at the San Andreas Drive bridge, and revegetation. Such activities would require temporary closure of the Penitencia Creek Trail and may temporarily increase use of other nearby recreational facilities. As described in Section 3.13, *Transportation and Traffic*, implementation of Mitigation Measure TRA-1 would result in signage being installed to detour recreationists away from the construction work areas.

Given the number of other nearby recreational facilities in Milpitas (e.g., the Berryessa Creek Trail, Coyote Creek Trail, sidewalks on California Circle and Milmont Drive) and the fact that the Penitencia Creek Trail is moderately used, impacts related to increased use of other nearby recreational facilities would not be substantial and would not result in physical deterioration of these other recreational facilities. Therefore, the impact would be less than significant.

Operational Impacts

Once project construction is complete, the Penitencia Creek Trail would be re-open for public use. As described in Chapter 2, the east levee floodwall in Reach 3 would include a pedestrian crossing to prevent the new floodwall from becoming a barrier across this trail. Project-related maintenance activities would be similar to current practices, including trash and debris removal, vegetation management, maintenance road grading, management of wildlife conflicts, graffiti removal, and fence repair. New maintenance activities would involve periodic inspections of the floodwalls and the headwalls and, if repairs are necessary, temporarily trail closure may be necessary. Since such repairs would be infrequent and any trail closures would be short-term, long-term effects on recreational facilities would be less than significant and substantial deterioration of the facilities would not result.

Impact REC-2: Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment (Less than Significant)

Construction and Operational Impacts

As described in Chapter 2, the proposed project involves construction of a pedestrian crossing over the Reach 3 floodwall to ensure connectivity with the Penitencia Creek Trail. The ~~proposed project~~ pedestrian crossing would include earthen ramps on top of the east levee crossing over the floodwall. The slope of the trail would be increased to meet the ramp, and would not be sloped greater than 1:12 to ensure compliance with the American with Disabilities Act. ~~As this element is part of the proposed project, the environmental impacts and mitigation measures associated with the proposed pedestrian crossing are described throughout this EIR.~~ In most resource sections, the environmental effects of the pedestrian crossing ~~project~~ are described collectively with other project components. Based on that approach, the proposed project was found to result in significant impacts in the area of pertaining to air quality, biological resources, geology and soils, hydrology and water quality, noise and vibration, transportation/traffic, utilities, and hazardous materials (see ~~Please refer to~~ Sections 3.2 through 3.11 and Section 3.13 through 3.14). ~~for a description of impacts and mitigation measures associated with construction and operation of the proposed pedestrian crossing and Reach 3 floodwalls. Implementation of Mitigation Measures AQ-1, AQ-2, BIO-1 through BIO-14, GEO-1, HYD-1, NOI-1, TRA-1, HAZ-1, and UTL-1 through UTL-5 would minimize adverse effects of the proposed project, including those associated with the pedestrian crossing at the Reach 3 floodwall.~~ Construction and operation of the pedestrian crossing would not result in a significant impact to these resources due to its small size and the limited scale of the potential effects. There are no sensitive resources at the pedestrian crossing work area and construction associated with this facility would be short in duration and thus generate minimal air pollutant emissions, greenhouse gas emissions, and noise and vibration. As discussed in Section 3.9, *Hydrology and Water Quality*, implementation of District BMPs AQ-1, BI-3, WQ-4, WQ-5, WQ-9, WQ-10, and WQ-16 would minimize the potential for soil erosion at construction areas, and promote stabilization and revegetation of disturbed areas after construction is complete. ~~With the exception of construction-related noise and vibration effects on nearby sensitive receptors, these mitigation measures would collectively reduce environmental effects of the proposed project to less-than-significant levels.~~ Construction of the proposed crossing ~~ramps~~ would not result in significant adverse physical effects to the environment.

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3.13 Transportation and Traffic

3.13.1 Overview

This section first summarizes transportation and traffic terminology used throughout this section and then describes the regulatory and environmental settings related to traffic and transportation. This section also presents the methodology used to conduct the impact analysis, and evaluates the traffic impacts associated with the proposed project. Applicable District BMPs are identified and mitigation measures are proposed to reduce significant impacts of the proposed project.

Transportation and Traffic Terminology

The following are definitions of key transportation and traffic terms used in this section. These are based on the *Highway Capacity Manual* (HCM) published by the Transportation Research Board (2000) and the City of Milpitas General Plan Update (2002).

Level of Service. Traffic conditions at the study intersections were evaluated using level of service (LOS). *Level of service* is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays.

The City of Milpitas utilizes TRAFFIX software and the HCM methodology to evaluate intersection operations. The HCM method evaluates signalized intersection operations on the basis of average control delay time for all vehicles at the intersection. Control delay is the amount of delay that is attributed to the particular traffic control device at the intersection, and includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The correlation between average control delay and LOS is shown in **Table 3.13-1**.

Delay. Delay refers to the additional travel time experienced by a vehicle or traveler that results from (1) the inability to travel at optimal speed and (2) stops due to congestion or traffic control.

The following roadway classification definitions are taken from Table 3-3 of the City of Milpitas General Plan Update 2002 Circulation Element.

- **Freeways.** The function of a freeway is to provide for inter-regional and intra-regional mobility. Access to freeways is restricted to primary arterials and expressways via interchanges.
- **Expressways.** The function of an expressway is to provide for movement of through traffic. It offers limited access to abutting properties and access varies according to situation.
- **Arterials.** Arterials collect and distribute traffic from freeways and expressways to collector streets, and vice versa. Access to arterials varies according to situation.

- **Collectors.** Collectors serve as connectors between local and arterial streets and provide direct access to parcels.
- **Local roads.** Local roads provide unrestricted access to parcels.

Table 3.13-1. Level of Service Definitions for Signalized Intersections

Level of Service	Description	Average Control Delay Per Vehicle (sec.)
A	Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay.	10.0 or less
B	Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay.	10.1 to 20.0
C	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though may still pass through the intersection without stopping.	20.1 to 35.0
D	The influence of the congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	This is considered to be the limit of acceptable delay. These high delay volumes generally indicate poor signal progression, long cycle lengths, and high V/C ratios. Individual failures occur frequently.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes of such delay levels.	> 80.0

Source: Transportation Research Board 2000: p. 10-16

3.13.2 Regulatory Setting

State Laws, Regulations, and Policies

Caltrans manages the state highway system and ramp interchange intersections. The state agency is also responsible for highway, bridge, and rail transportation planning, construction, and maintenance. Work within the state ROW requires an encroachment permit from Caltrans.

Caltrans' *Guide for the Preparation of Traffic Impact Studies* (2002) contains requirements for preparation of a traffic impact analysis for various types of facilities. The Santa Clara Valley Transportation Authority (VTA), however, is designated as Santa Clara Valley's Congestion

Management Agency, and has more recently updated guidelines (VTA 2014a) VTA's guidelines are described below.

Caltrans also provides *Transportation Management Plan Guidelines* (Caltrans 2015) that address work activities on the state highway system. The proposed project would not affect any portion of I-880 such that traffic restrictions or detours would be needed. Therefore, this analysis is not subject to TMP guidelines.

As described in Chapter 2, *Project Description,* construction of the replacement levee in Reach 1 and the floodwall in Reach 2 would take place within Caltrans ROW. An encroachment permit from Caltrans would need to be obtained prior to construction in these areas.

Regional Laws, Regulations, and Policies

Santa Clara Valley Transportation Authority Congestion Management Program

The Santa Clara Valley Transportation Authority (VTA) is designated as Santa Clara Valley's Congestion Management Agency (VTA 2014a). The Congestion Management Program (CMP) statute requires that uniform methods be used for evaluating transportation impacts of land use decisions on the CMP system. The VTA's CMP requires that agencies use the VTA *Transportation Impact Analysis (TIA) Guidelines* to evaluate the transportation impacts of all land use decisions within the agency's jurisdiction that are projected to generate 100 or more net new week day (AM or PM peak hour) or weekend peak hour trips. For projects requiring TIAs, a copy of the TIA report shall be submitted to VTA at least 20 calendar days prior to the date the development decision or recommendation is scheduled to be made by the lead agency.

The CMP statute states that "in no case shall the LOS standards established be below level of service E or the current level, whichever is farthest from level of service A." If the baseline LOS for a roadway is LOS F, then the LOS must be maintained as LOS F, and mitigation measures must be implemented when project-specific impacts could result in an LOS exceeding the threshold.

3.13.3 Environmental Setting

Vehicle Access

Direct vehicular access to the project site is provided primarily via I-880, Dixon Landing Road, California Circle, Milmont Drive, North McCarthy Boulevard, and North Milpitas Boulevard. San Andreas Drive provides access to the west bank of the Lower Penitencia Creek channel in Reach 4, but does not connect to the other roads listed above.

I-880 is a north-south freeway facility that extends from San Jose in the south (where it becomes State Route 17) to Oakland in the north. Within the project vicinity, I-880 primarily has four northbound and four southbound mixed-flow lanes as well as a high-occupancy-vehicle (or carpool) lane in each direction.

Dixon Landing Road is a five- to six-lane, east-west, divided major arterial road that begins at its intersection with North McCarthy Boulevard west of I-880 and ends at North Milpitas Boulevard. It provides access to I-880 and has a sidewalk on the south side of the road in the project vicinity. The roadway is a designated truck route. It is also a designated bike route between California Circle and Conway Street.

California Circle is a five-lane, north-south, undivided collector road that begins in the north at its intersection with Dixon Landing Road and becomes Milmont Drive at its southeastern end. It has a two-way-left-turn-lane and sidewalks on both sides between the northbound I-880 ramps and Milmont Drive. At the bridge over Lower Penitencia Creek (referred to as “California Circle bridge”), a sidewalk exists on the east side of the bridge. California Circle provides access to several adjacent office buildings. The roadway (up to Fairview Way) is a designated truck route. Parking is prohibited on both sides of the road.

Milmont Drive is a two-lane, north-south, undivided residential local street that begins north of Kato Road and ends at the Milmont Drive bridge where it becomes California Circle. It provides local access to the adjacent residential neighborhoods. It has bike lanes on both sides and a sidewalk on the west side of the road. Parking is prohibited on both sides of the road.

North McCarthy Boulevard is a four-lane, north-south, divided arterial road that runs parallel to the west side of I-880. It begins in the north at its intersection with Dixon Landing Road and ends at Montague Expressway on the south. It has bike lanes and sidewalks on both sides of the road and provides access to the Coyote Creek Trail. In the project vicinity, parking is prohibited on both sides of the road.

North Milpitas Boulevard is a four-lane, north-south, major arterial road that begins in the north at Dixon Landing Road, where it connects with Warm Springs Boulevard in Fremont, and ends at East Calaveras Boulevard, where it becomes South Milpitas Boulevard. It has bike lanes and sidewalks on both sides of the road. Parking is prohibited on both sides of the road.

San Andreas Drive is a two-lane, east-west local street that begins at the north end of North Abbott Avenue and ends at the north end of Pescadero Street. It has sidewalks on both sides of the street and an approximate curb-to-curb width of 40 feet. Approximately 65 feet east of the north end of North Abbott Avenue, San Andreas Drive crosses over Lower Penitencia Creek. This crossing is referred to as the San Andreas Drive bridge. Parking is allowed on both sides of the street.

Existing Transit Service

Transit service in the project vicinity is provided by the Alameda–Contra Costa Transit District (AC Transit) and Santa Clara Valley Transportation Authority (VTA). AC Transit operates Bus Routes 217 and 239. Route 217 operates along Warm Springs Boulevard and North Milpitas Boulevard between the Milpitas Great Mall and Fremont BART station on 30-minute headways during peak hours. Route 239 operates between Dixon Landing Road at Warm Springs Boulevard and the Fremont BART station via Mission Boulevard and Grimmer Boulevard on 60-minute headways on weekdays. VTA runs Route 66 between Dixon Road at North Milpitas Boulevard and Kaiser San Jose on 15-minute headways during peak hours. The closest bus stops are located at the intersection of Dixon Landing Road and North Milpitas Boulevard, which is approximately 0.6 mile from the project site.

Existing Bicycle and Pedestrian Facilities

Sidewalks are present on both sides of North Milpitas Boulevard. Dixon Landing Road has sidewalks on both sides of the road between California Circle and North Milpitas Boulevard. A continuous sidewalk is present on the west side of Milmont Drive between Dixon Landing Road and California Circle. California Circle has sidewalks on both sides of the road, except between Dixon Landing Road and the I-880 northbound ramps (over the California Circle bridge). At the Dixon Landing Road/California Circle intersection, a sidewalk is provided only on the east side of California Circle. San Andreas Drive has sidewalks on both sides of the street.

Existing bicycle facilities in the project vicinity are provided via a network of Class II bike lanes and bike routes, which are shared with vehicular traffic. Existing bike lanes are provided on California Circle, Milmont Drive, North McCarthy Boulevard, and North Milpitas Boulevard. No existing bike lanes are provided on Dixon Landing Road, except a very short section between North McCarthy Boulevard and the southbound I-880 off-ramp. The *City of Milpitas Bikeway Master Plan* (2009) shows future bike lanes on both sides of Dixon Landing Road along the entire length between North McCarthy Boulevard and North Milpitas Boulevard. The recently completed Fremont Boulevard extension from Lakeview Boulevard in Fremont to Dixon Landing Road in Milpitas also has bike lanes on both sides of the road.

In addition to bikeways and sidewalks on nearby public streets, an existing pedestrian path runs along the east side of Lower Penitencia Creek (Reach 3), starting on the east side of the California Circle bridge and ending on the north side of the Milmont Drive bridge. It currently provides a direct link between Dixon Landing Road near California Circle and the residential neighborhood between Lower Penitencia Creek and Milmont Drive.

Existing Traffic Volumes

For the purposes of this analysis, traffic volumes under existing conditions were determined based on traffic counts conducted in July and September 2015. Traffic counts were collected at the following key study intersections around proposed construction staging areas:

1. Dixon Landing Road and North McCarthy Boulevard/Fremont Boulevard
2. Dixon Landing Road and southbound I-880 ramps
3. Dixon Landing Road and northbound I-880 ramps/California Circle
4. California Circle and northbound I-880 ramps
5. Dixon Landing Road and Milmont Drive
6. Dixon Landing Road and North Milpitas Boulevard

For the intersection of Dixon Landing Road and Milmont Drive, traffic counts collected in June 2012 (prior to the start of BART Silicon Valley project construction) were used because the existing lane configuration on Dixon Landing Road (one lane in each direction) is only temporary and will be restored back to 2012 conditions by the time construction commences for the proposed project (VTA 2017). **Figure 3.13-1** shows existing traffic volumes for the above-referenced intersections.

3.13.4 Impact Analysis

Methodology

The impacts of the proposed project were evaluated in accordance with LOS policies and methodologies applicable in the City of Milpitas and in accordance with the requirements of the VTA, the administering agency for the Congestion Management Program (CMP) of Santa Clara County. This analysis was also conducted in consideration of the State CEQA Guidelines thresholds related to transportation and traffic.

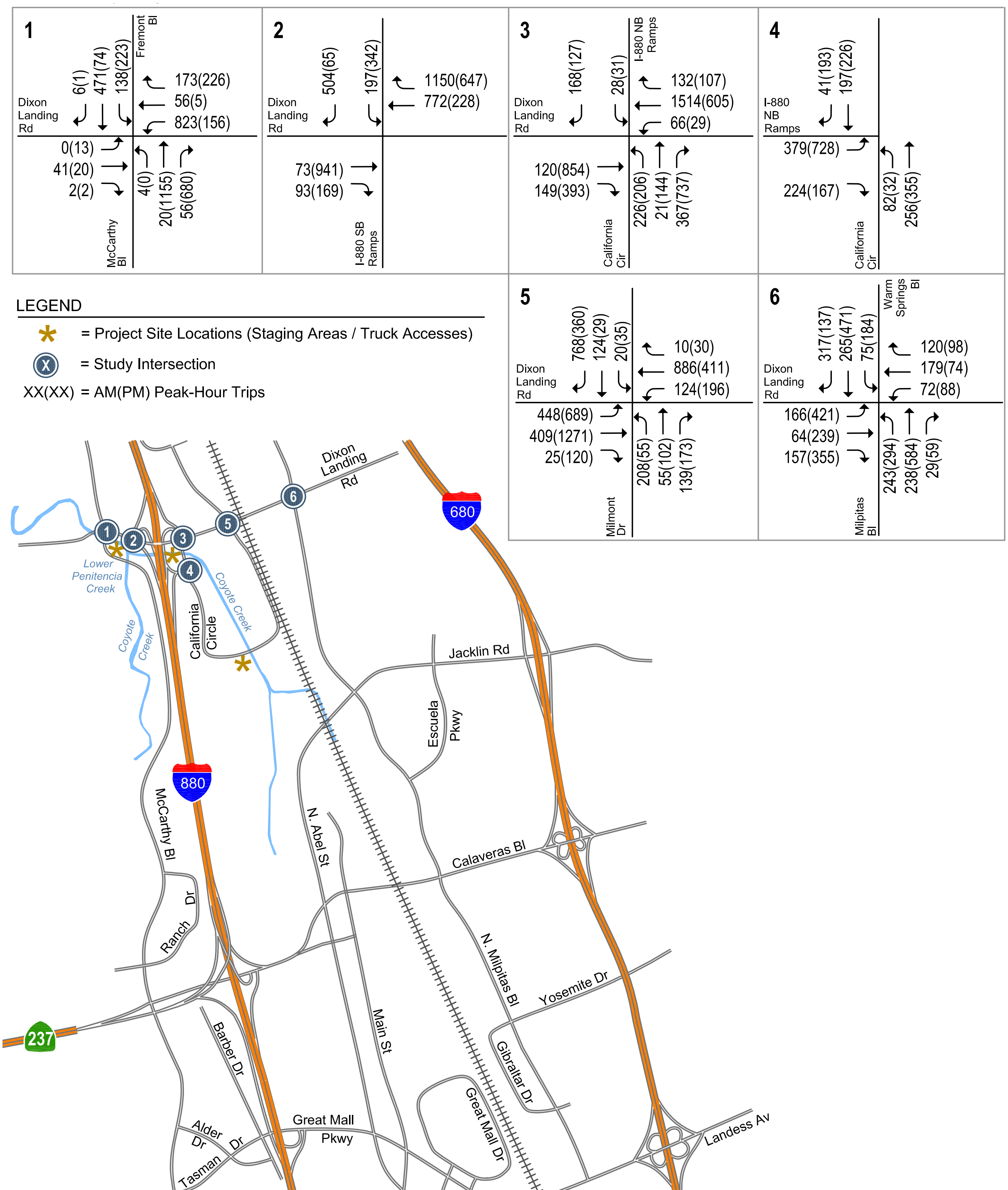
This study includes an analysis of weekday A.M. and P.M. peak-hour traffic conditions at the above-listed signalized intersections. The A.M. peak hour of traffic is typically between 7:00 AM and 9:00 A.M., and the P.M. peak hour is typically between 4:00 P.M. and 6:00 P.M. It is during these periods that the most congested traffic conditions occur on an average weekday. Traffic conditions were evaluated for the following scenarios:

Scenario 1: *Existing Conditions.* Existing conditions are represented by existing peak-hour traffic volumes on the existing roadway network. Existing traffic volumes were obtained from recent traffic counts, which are presented in **Appendix H**, *Traffic Memorandum*.

Scenario 2: *Existing plus Project Conditions*. Existing plus project conditions were estimated by adding to existing traffic volumes the additional traffic generated by the proposed project during construction. Existing plus project conditions were evaluated relative to existing conditions to determine the proposed project's impacts.

Scenario 3: *Existing Conditions plus Approved and Pending Developments*. A list of approved and pending developments that would add traffic in the same time frame and geographic area as the proposed project was obtained from the City of Milpitas. (See "Signalized Intersection LOS Analysis" below.) Traffic volumes generated by approved and pending projects were added to existing traffic volumes to estimate this scenario. The roadway network was assumed to be unchanged from existing conditions for this scenario.

Scenario 4: *Existing Conditions plus Approved and Pending Developments and Project Conditions*. Project-generated traffic was added to the Scenario 3 traffic volumes, which accounts for traffic volumes generated by approved and pending projects in the City of Milpitas, to estimate "Existing Conditions plus Approved and Pending Developments." These conditions were evaluated relative to Scenario 3 conditions to determine project-related impacts. This scenario is equivalent to cumulative conditions with the proposed project taken into consideration.



Source: Hexagon 2016

Figure 3.13-1.
Existing Traffic Volumes

Lower Penitencia Creek Improvements Project

Prepared by:

Horizon WATER and ENVIRONMENT

Project Construction Phasing Assumptions

For the purposes of this analysis, it was assumed that all construction-related traffic would be generated over a single 2-month period, despite the fact that construction would occur within an 8-month period spread over 2 years. By assuming a compressed 2-month project schedule, far more truck trips were assumed to occur during the AM and PM commute periods than would otherwise occur if truck traffic were distributed evenly over an 8-month schedule. It was also assumed that the majority of construction work would take place during the daytime between 7:00 A.M. and 5:00 P.M.

Construction Traffic Generation Estimates

Estimates of construction trips generated by the proposed project were developed based on the number of workers and the amount of materials being hauled to and from the project site (described in Chapter 2). A maximum of 40 workers would be on site; it is anticipated that approximately 5,800~~00~~ cy of material would require trucking to or from the project site. Trucking to the site is called on-hauling and trucking away from the project site is called off hauling. As of May 2017, it is estimated that 2,300 cy would be off-hauled and 3,~~50~~460 cy would be on-hauled. The project's construction trip generation estimates were developed in 2016 using more conservative assumptions, and estimated that 10,200 cy of material would require trucking to or from the project site. Other assumptions included: (1) nearly all workers would drive and arrive/depart during the same 60-minute commute periods; (2) each material truck would carry 10 cy; (3) all construction activities within the different reaches would occur simultaneously; (4) all truck trips would occur over a 2-month construction period; (5) all truck trips would be spread evenly over a typical 8-hour workday; and (6) for the LOS calculations, all truck trips would be equivalent to two passenger vehicle trips (also known as passenger car equivalents [PCE]). As shown in **Table 3.13-2**, the proposed project would generate approximately 158 daily trips, with 43 trips occurring during each of the AM and PM peak commute hours.

It is expected that, during final design of the proposed project, the material quantities could vary slightly from what was assumed for this analysis. In addition, on an average workday, fewer than 40 workers would likely be on site during construction. For this reason, and because truck hauling was assumed to be distributed over 2 months rather than 8 months, the trip generation calculations presented for this analysis are believed to be conservative (i.e., greater than would likely be the case).

Table 3.13-2. Construction Trips Generated by the Proposed Project

Actual	Project Characteristics		Trip Time Period	Average Employee Trips [2]	Average Heavy Vehicle Trips [3]	Total Trips		
	Max. Workers	Material Yardage [1] (CY)				To the Project Site	From the Project Site	Total
Actual	40	10,200	AM Peak Hour	40	3	40	3	43
			PM Peak Hour	40	3	3	40	43
			Daily	132	26	79	79	158
PCE Adjusted [3]	40	10,200	AM Peak Hour	40	6	41	5	46
			PM Peak Hour	40	6	5	41	46
			Daily	132	52	92	92	184

Note: cy = cubic yards; PCE = passenger car equivalents.

Assumes one commute trip per employee per peak hour and miscellaneous trips such as deliveries, visitor trips, and lunch trips.

[1] Material off-hauled (e.g., excess soil) is estimated to be 6,500 cy; material hauled on site (e.g., concrete) is estimated to be 3,500 cy.

[2] Based on 10 cubic yards of material per heavy vehicle trip during the busiest 2-month work schedule. Truck trips evenly distributed throughout 8 hours of a typical day.

[3] Assumes each heavy vehicle trip is equivalent to two passenger trips with respect to impacts on roadway capacity.

Source: Hexagon 2016 (provided in Appendix H)

The proposed project's trip distribution and assignment were developed based on the locations of complementary land uses (i.e., similar types of land uses to those surrounding the proposed project area) and data from the Creekside Warehouse Traffic Impact Analysis (City of Fremont 2013). The Creekside Warehouse project is located on the Fremont Boulevard extension, just north of Dixon Landing Road. Warehouse trips are a reasonable proxy for construction trips because they comprise both employee trips and heavy vehicle trips. The project trip distribution is shown in **Figure 3.13-2** and the project trip assignment is shown in **Figure 3.13-3**.

Signalized Intersection LOS Analysis

Traffic volumes for background conditions were estimated by adding the existing traffic volumes to the trips generated by approved and pending developments. **Figure 3.13-4** shows the background traffic volumes. The City of Milpitas identified the following approved and pending development projects in the project vicinity and requested that trips anticipated due to build-out of these development projects be included in the proposed project's Background Conditions scenario (Chan, pers. comm., 2015):

- *Springhill Marriot Suites at 1201 Cadillac Court* a 124-room hotel development at the southwest quadrant of the Cadillac Court/California Circle intersection
- *Holiday Inn Suites at 1100 Cadillac Court* a 129-room hotel development at the southeast quadrant of the Cadillac Court/Fairview Way intersection

- *Waterstone Residential* an 84-single-family-unit residential development located on California Circle just south of Dixon Landing Road
- *iStar Residential* a 144-townhouse-unit residential development located on California Circle just west of the Milmont Drive bridge

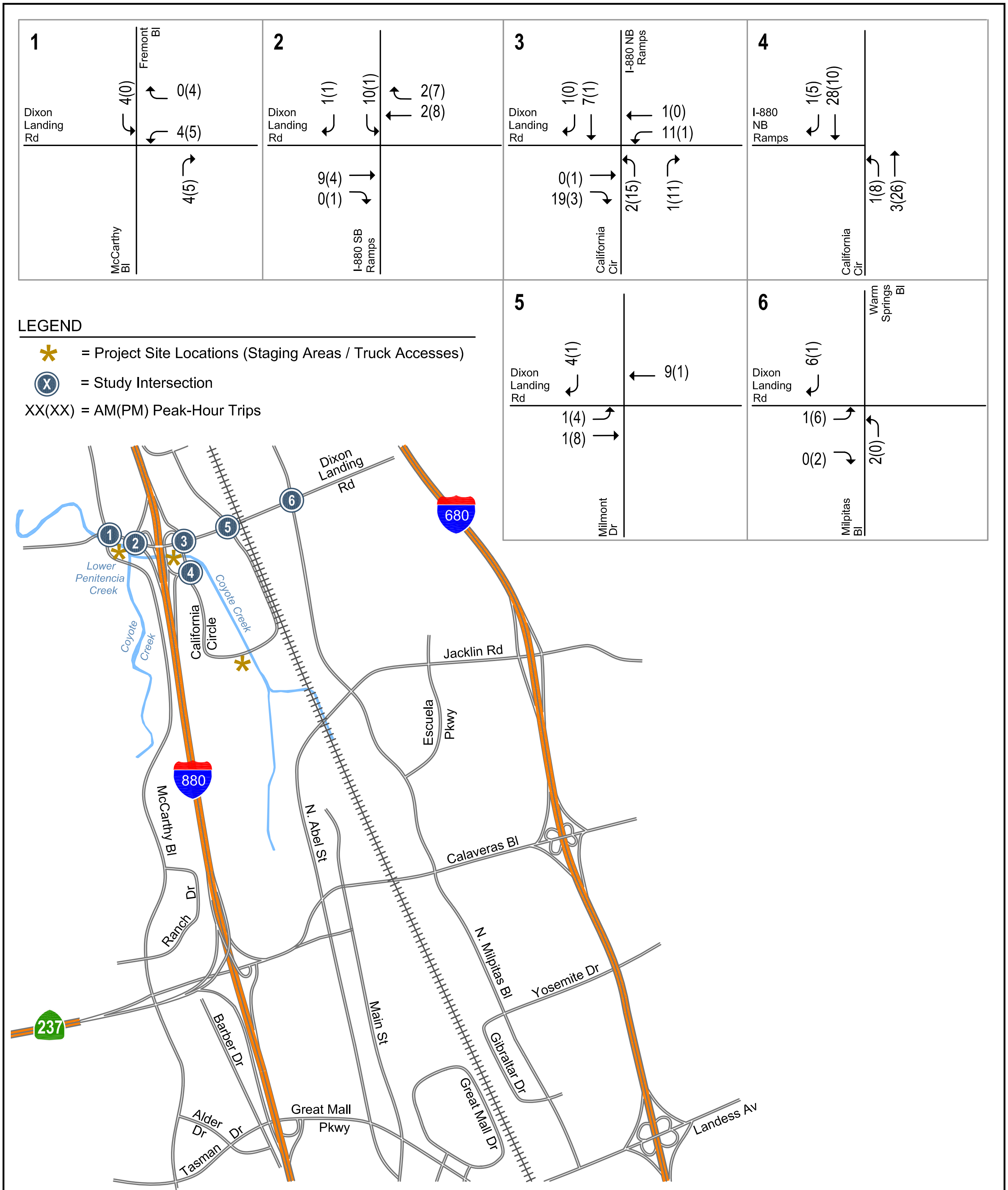
Under Existing plus Project Conditions and Existing Conditions plus Approved and Pending Developments, the roadway network was assumed to be unchanged from existing conditions. The traffic volumes for the Existing Plus Project Conditions and Existing Conditions plus Approved and Pending Developments Plus Project are shown in **Figure 3.13-5** and **Figure 3.13-6**, respectively.

Source: Hexagon 2016

Figure 3.13-2.
Project Trip Distribution

Lower Penitencia Creek Improvements Project

Prepared by:
Horizon WATER and ENVIRONMENT

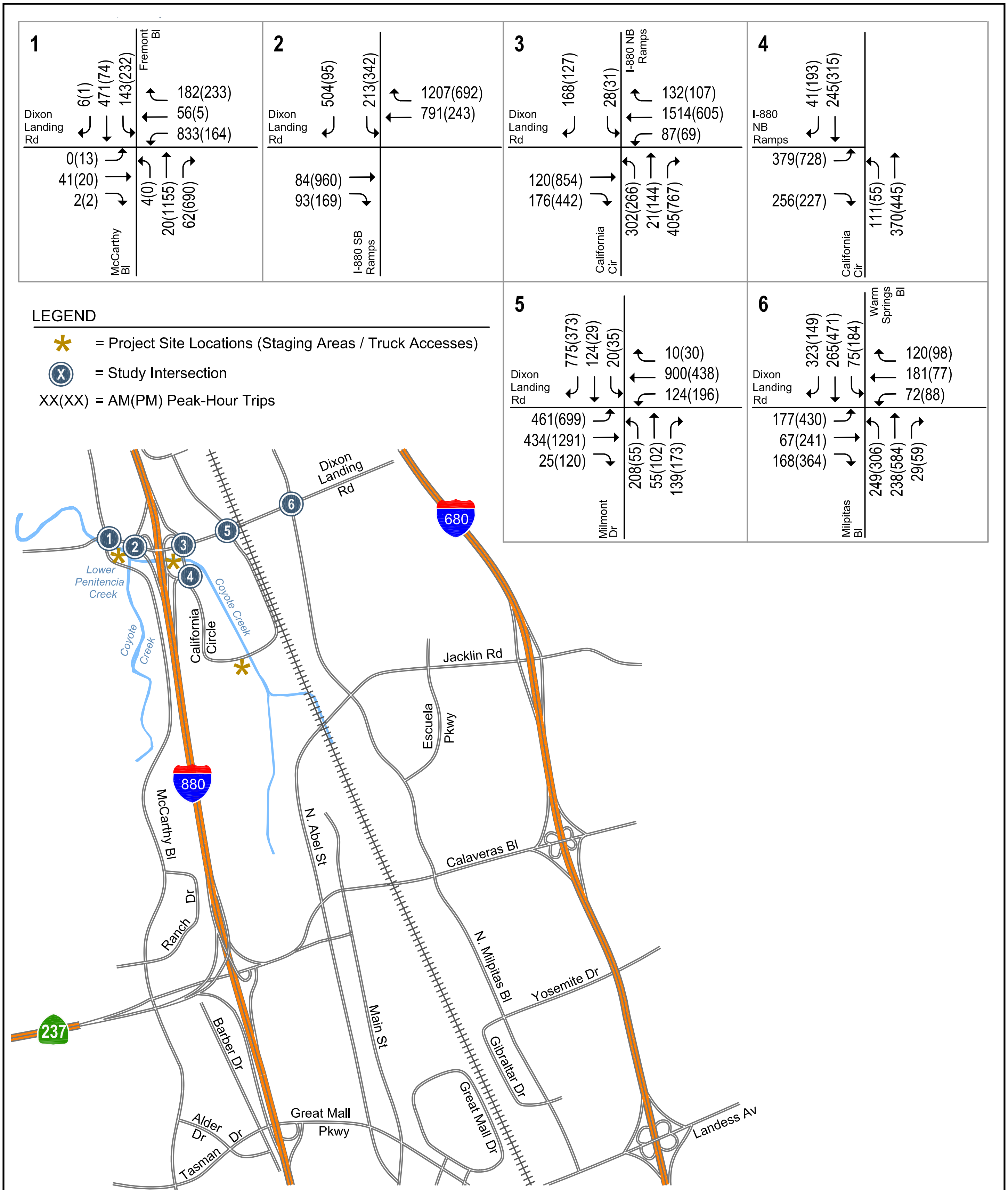


Source: Hexagon 2016

Figure 3.13-3.
Project Trip Assignment

Lower Penitencia Creek Improvements Project

Prepared by:
Horizon WATER and ENVIRONMENT

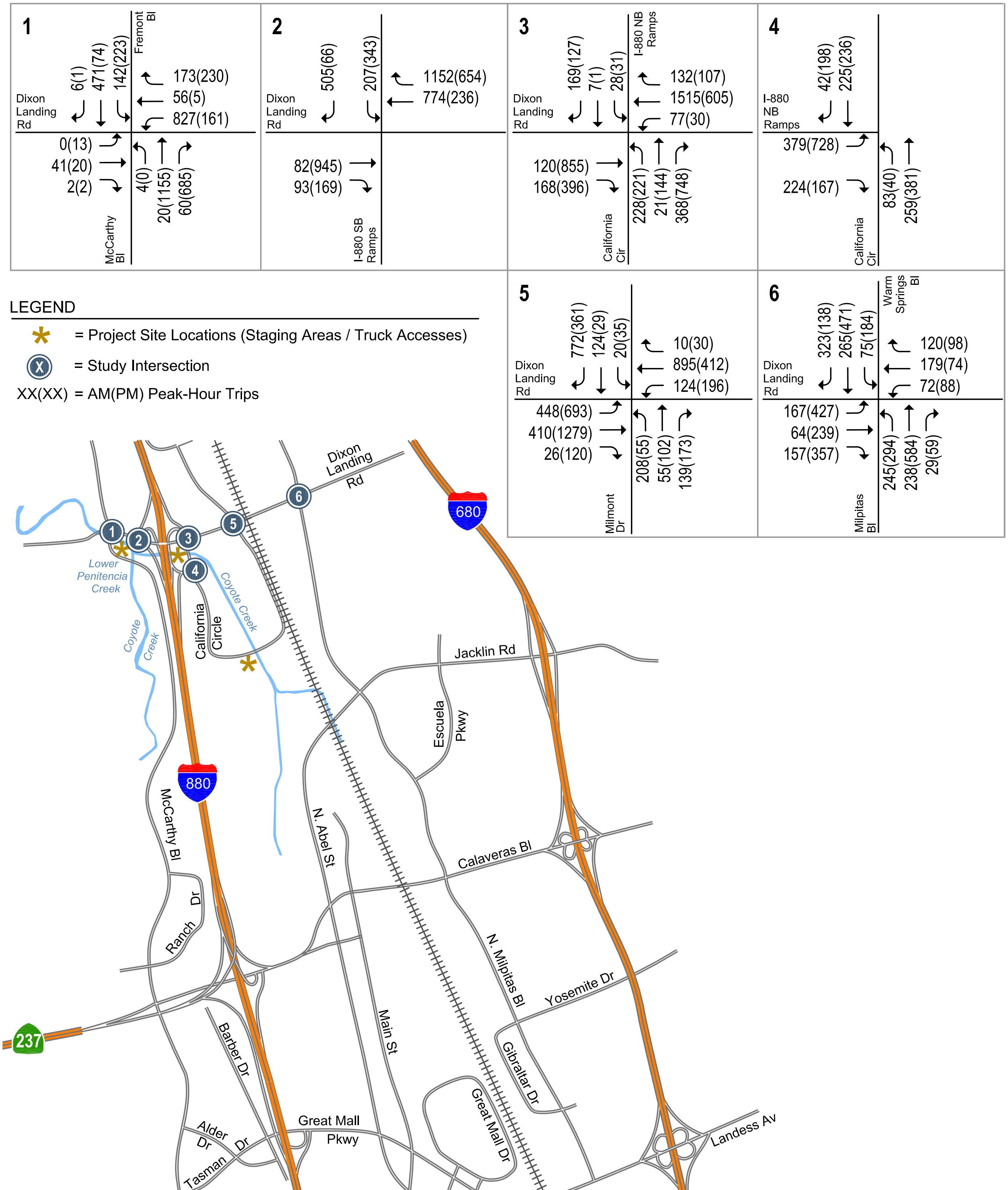


Source: Hexagon 2016

Figure 3.13-4.
Background Traffic Volumes

Lower Penitencia Creek Improvements Project

Prepared by:
Horizon Water and Environment

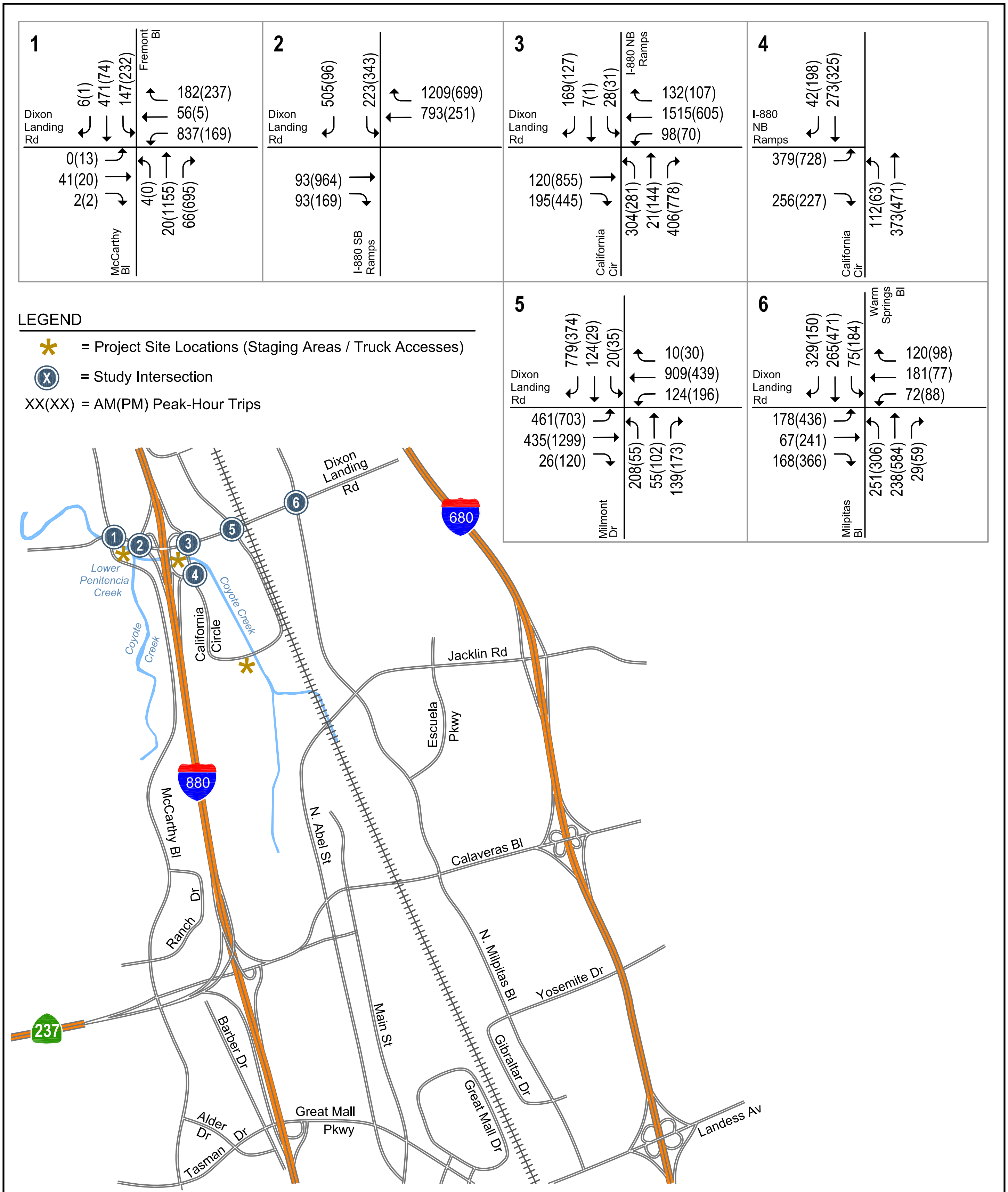


Source: Hexagon 2016

Figure 3.13-5.
Existing Plus Project Traffic Volumes

Prepared by:
Horizon Water and Environment

Lower Penitencia Creek Improvements Project



Source: Hexagon 2016

Figure 3.13-6.
Background Plus Project Traffic Volumes

Prepared by:
Horizon WATER and ENVIRONMENT

Lower Penitencia Creek Improvements Project

Criteria for Determining Significance

Based on Appendix G of the State CEQA Guidelines, the proposed project would result in a significant impact related to transportation and traffic if it would:

- Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel, and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- Conflict with an applicable congestion management program, including, but not limited to, LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;
- 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;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities or otherwise decrease the performance or safety of such facilities.

LOS Standards and VTA CMP Guidelines

The City of Milpitas' LOS standard for non-CMP signalized intersections is LOS D (City of Milpitas 2002). All of the study intersections are non-CMP intersections according to the *VTA 2014 Monitoring and Conformance Report* (VTA 2014b). According to the City of Milpitas' LOS standards (City of Milpitas 2002), a project would create a significant adverse impact on traffic conditions at a signalized intersection if, for either peak hour:

1. The LOS at the intersection would be degraded from an acceptable LOS D or better under no project conditions to an unacceptable LOS E or LOS F under project conditions, or

2. If the intersection is already operating at an unacceptable LOS E or LOS F under no project conditions, the addition of the proposed project traffic would cause an increase in average critical delay of 4 seconds or more and the volume-to-capacity ratio (V/C) would be increased by more than 0.01 when proposed project traffic is added.

A significant impact at a signalized intersection would be mitigated to a less-than-significant level when appropriate measures are implemented that would restore intersection LOS to an acceptable level or restore the intersection to operating levels that are better than no project conditions.

According to the *2014 VTA CMP Transportation Impact Analysis Guidelines* (VTA 2014a), a project would have an adverse impact on pedestrian and bike circulation if: (1) its vehicle trips would present a barrier to bikes/pedestrians safely crossing roadways, or (2) it would reduce or sever existing or planned bike/pedestrian circulation in the area. A project would have an adverse impact on transit service if it would: (1) cause vehicular congestion that would significantly degrade transit operations, or (2) conflict with existing transit service plans or preclude future transit service to the project area.

Impact Summary

Table 3.13-3 summarizes transportation and traffic impacts of the proposed project.

Table 3.13-3. Summary of Impacts Transportation and Traffic

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance After Mitigation
TRA-1: Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel, and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit	S	Mitigation Measure TRA-1	LM
TRA-2: Conflict with an applicable congestion management program, including, but not limited to, LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways	LS	None	LS
TRA-3: 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	NI	None	NI
TRA-4: Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)	S	Mitigation Measure TRA-1	LM
TRA-5: Result in inadequate emergency access	S	Mitigation Measure TRA-1	LM

NI= No Impact; LS = Less than Significant; LM = Less than Significant with Mitigation; S = Significant

Environmental Impacts

Impact TRA-1: Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit (Less than Significant with Mitigation)

The policies in the City of Milpitas *General Plan*, City of Milpitas *Bikeway Master Plan Update,* and City of Milpitas *Trails Master Plan* and VTA's *Transportation Impact Analysis Guidelines* (which comply with Caltrans's Traffic Impact Analysis requirements) establish measures of effectiveness for the performance of the circulation system that are intended to address the long-term and permanent effects of a project on the circulation system (e.g., roads, sidewalks, and bicycle and transit facilities). Given the nature of the proposed project (improvements to an existing flood control channel), the project would not permanently affect the City's transportation and circulation system. Therefore, the following analysis evaluates temporary impacts on the overall transportation and circulation system during the construction phase, including roadways, pedestrian and bicycle facilities, and public transit; and overall compatibility with goals and policies contained in the City of Milpitas *General Plan*, City of Milpitas *Bikeway Master Plan Update,* and City of Milpitas *Trails Master Plan* and guidelines contained in VTA's *Transportation Impact Analysis Guidelines*.

Construction Impacts

Trucks on Local Roadways

For local residential streets, such as Milmont Drive and San Andreas Drive, traffic generated by construction vehicles could result in a substantial traffic increase due to the relatively small traffic volume on these streets. Milmont Drive and San Andreas Drive are located in close proximity to residential uses, which are typically sensitive to heavy vehicle traffic. According to the City of Milpitas *General Plan*, Milmont Drive and San Andreas Drive are not designated truck routes. While construction traffic would not degrade the level of existing traffic to an unacceptable level (as discussed in Impact TRA-2 below), the addition of heavy trucks and other construction vehicles could temporarily disrupt traffic flow on these residential streets. Potential use of Milmont Drive and San Andreas Drive by heavy vehicles during construction would constitute a significant impact. Mitigation Measure TRA-1 would be implemented to address this impact.

Pedestrian and Bicycle Facilities

Currently, sidewalks on both sides of San Andreas Drive provide neighborhood pedestrian access to North Abbott Avenue and the surrounding local streets. There are no bike lanes on this street. Construction of the proposed headwalls at the north (downstream) face and the south (upstream) face of the San Andreas Drive bridge would require sidewalk closure on both sides of San Andreas Drive. As the District would construct only one headwall at a time, at least one sidewalk would remain open throughout the San Andreas Drive bridge construction phase. Based on site observations, there is minimal pedestrian and bicycle activity on San Andreas Drive in the vicinity of the San Andreas Drive bridge. However, temporary sidewalk closure on one side of the San Andreas Drive bridge would require detouring of pedestrians to the opposite sidewalk on the bridge. In addition, during headwall construction, bicyclists would continue to share the road with motorists along this street.

As described in other sections of this ~~D~~EIR, the Penitencia Creek Trail runs along the east side of Reach 3. The trail starts on the east side of the California Circle bridge and ends on the north side of the Milmont Drive bridge. As described in Chapter 2, this trail would require temporary closure throughout the duration of project construction activities within and along Reach 3. This would result in temporary conflicts with the City of Milpitas *Trail Master Plan* and City of Milpitas *Bikeway Master Plan* as temporary closure of the Penitencia Creek Trail would reduce linkages to other alternative transportation routes in the vicinity for pedestrians, bicyclists, and joggers. While the trail and sidewalk on the San Andreas Drive bridge are temporarily closed, pedestrians and bicyclists would be required to find other similar facilities in the area to use (e.g., sidewalks and paths) or alternative modes of transportation.

Implementation of BMP TR-1 (Use Suitable Public Safety Measures), which requires that fences, barriers, lights, flagging, guards, and signs be installed around the work areas, would help increase public awareness and minimize traffic safety impacts on pedestrians and bicyclists. However, the BMP would not effectively reduce this impact as the measure does not address temporary lane reduction at the San Andreas Drive bridge work area, impacts of heavy truck traffic on residential streets, or temporary closure of pedestrian facilities like the Penitencia Creek Trail. These effects on pedestrian and bicycle mobility, and temporary conflicts with goals and objectives established in the City of Milpitas *General Plan*, *Trail Master Plan*, and *Bikeway Master Plan* are considered significant. Mitigation measure TRA-1 would be implemented to address this impact.

Public Transit

Given that there are no transit services on Milmont Drive, California Circle, Dixon Landing Road, or San Andreas Drive in the project vicinity, it is anticipated that very few, if any, construction workers would use public transit. Most construction workers would arrive at the project site either by driving alone or carpooling. In addition, the proposed project would not remove or alter the existing transit service in any way, nor would it materially increase the intersection delay on existing bus routes. For these reasons, the proposed project's impact on transit service would be less than significant.

Mitigation Measures

Mitigation Measure TRA-1: Traffic Control Plan

The District will develop a traffic control plan in accordance with professional traffic engineering standards to reduce the effects of project construction activities and traffic on surrounding local roads, bicycle and pedestrian facilities, and emergency access. The District and/or its contractor will coordinate development and implementation of this plan with the City of Milpitas. Components of the Traffic Control Plan will include, but not be limited to, the following:

- Restrict truck access to truck routes designated by the City.
- Confine heavy truck traffic such as material hauling to California Circle.

- Prohibit work-site access via residential streets (e.g., Milmont Drive and San Andreas Drive) to the extent feasible. Should construction staging require use of Milmont Drive and San Andreas Drive by heavy vehicles for brief periods, the District and/or its contractor will coordinate with the City of Milpitas to obtain approval.

- Provide advance construction warning signage for lane reduction at San Andreas Drive during headwall construction at the bridge.

- Provide advance notification of necessary closures of sidewalks on San Andreas Drive and maintain pedestrian access during construction of the headwalls where safe to do so. For the San Andreas Drive sidewalk closures, detour pedestrians away from construction activity to the sidewalk on the opposite side of the street. For the Penitencia Creek Trail closure, route pedestrians along the existing sidewalks on California Circle and Milmont Drive, where appropriate.

- To accommodate the temporary closure of the Penitencia Creek Trail along Reach 3 and the narrowing of travel lanes on the San Andreas Drive bridge, provide signage that indicates where bicycles and motor vehicles should share the roadway, and detour bikes to Milmont Drive and California Circle, where appropriate.

- Traffic handling plans for San Andreas Drive shall be prepared and implemented in accordance with Caltrans and *California Manual on Uniform Traffic Control Devices* (MUTCD) standards. The traffic handling plans shall demonstrate how two-way traffic operations can be maintained during work hours (e.g., use of flaggers) and when construction activity ends each day.

- Notify and consult with emergency service providers such as police and fire stations, hospitals, and schools prior to the start of construction. The District will maintain emergency access at all times, by whatever means necessary, to expedite and facilitate the passage of emergency vehicles.

Significance After Mitigation

Implementation of Mitigation Measure TRA-1 would ensure that a traffic control plan is developed and implemented to minimize effects related to truck traffic on residential streets and minimize pedestrian and bicycle safety impacts during construction. This measure would reduce temporary conflicts with goals and objectives, including measures of effectiveness, outlined in the City of Milpitas *General Plan*, City of Milpitas *Trail Master Plan,* City of Milpitas *Bikeway Master Plan,* and VTA's *Transportation Impact Analysis Guidelines*. This impact would be less than significant with mitigation.

Impact TRA-2: Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways (Less than Significant)

Construction Impacts

Freeway Segments

According to the CMP guidelines, a freeway segment should be studied when a proposed development would add traffic to a segment that totals more than 1 percent of its capacity. **Table 3.13-4** shows this comparison. The methods used to assign project traffic to the roadway network are described in the "Construction Traffic Generation Estimates" section in Section 3.13.4, above. The capacity of a mixed-flow lane, as specified by the HCM, is 2,200 vehicles per hour (vph) on four-lane facilities and 2,300 vph on facilities with six or more lanes. HOV lanes and auxiliary lanes were not included in this calculation. Some stretches of I-880 between SR 237 and Mission Boulevard have five mixed-flow lanes in each direction, but the capacity analysis in Table 3.13-2 uses four mixed-flow lanes in each direction to be conservative (i.e., the analysis understates the number of available lanes and thereby overstates the project effect).

The number of construction trips that the proposed project would add to the freeway would be less than 1 percent of its capacity in both directions in both the AM and PM peak hours. Based on this comparison, the proposed project would not result in a substantial impact on freeway segments, and no additional analysis is required.

Table 3.13-4. Freeway Segment Evaluation

Freeway	Segment	Direction	Mixed Flow Lanes	Capacity per Lane[1] (vph)	Total Capacity (vph)	1% of Capacity	Project Trips	
							AM	PM
I-880	SR 237 to Dixon Landing Road	NB	4	2,300	9,200	92	8	1
I-880	Dixon Landing Road to Mission Boulevard	NB	4	2,300	9,200	92	2	13
I-880	Mission Boulevard to Dixon Landing Road	SB	4	2,300	9,200	92	11	2
I-880	Dixon Landing Road to SR 237	SB	SB	2,300	9,200	92	2	8

Notes: NB = northbound; SB = southbound; SR = State Route; vph = vehicles per hour.

[1] Mixed-flow lane capacity is based on the ideal capacity cited in the 2000 HCM.

Source: Data from TRB 2000 modified and analyzed by Hexagon; see Appendix H.

Intersection LOS Analysis

As shown in Table 3.13-2 in the "Methodology" section above, project construction is anticipated to total 43 AM and 43 PM peak-hour trips on local roadways near the project site. The results of the intersection LOS analysis are summarized in **Table 3.13-5**. The results show that, measured against the City of Milpitas LOS standards, all signalized study intersections are projected to operate at an acceptable LOS D or better during the AM and PM peak hours under both "Existing plus Project Conditions" and "Existing Conditions plus Approved and Pending Developments and Project" scenarios. Therefore, the proposed project would not result in a substantial adverse effect at the study intersections. The LOS calculation sheets are shown in Appendix H.

Based on the above analysis, truck trips and construction worker vehicle trips generated during project construction would not substantially affect capacity on nearby freeway segments, nor would it degrade the City of Milpitas LOS standards. Conflicts with the VTA's CMP or the City of Milpitas LOS standards would be less than significant.

Operational Impacts

Once construction is complete, maintenance activities described in Chapter 2 would be similar to those that currently occur under the District's SMP with the exception of occasional repair and maintenance of the new floodwalls and headwalls. Minimal truck trips would be generated for the project's maintenance activities. Therefore, the proposed project would not result in long-term conflicts with the City of Milpitas LOS standards or the VTA's CMP. This impact would be less than significant.

Table 3.13-5. Intersection LOS Analysis Summary

Study Intersection Number	Intersection	Peak Hour	LOS Standard	Existing		Existing plus Project		Background (Existing plus Approved)			
								No Project		With Project	
				Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]
1	Dixon Landing Road and North McCarthy Boulevard	AM	D	23.4	C	23.4	C	23.4	C	23.5	C
		PM	D	45.4	D	46.5	D	48.6	D	49.8	D
2	Dixon Landing Road and SB I-880 Ramps	AM	D	7.5	A	7.5	A	7.6	A	7.6	A
		PM	D	12.7	B	12.7	B	11.8	B	11.8	B
3	Dixon Landing Road and NB I-880 Ramps/California Circle	AM	D	14.4	B	17.7	B	15.7	B	19.7	B
		PM	D	26.3	C	35.3	D	27.5	C	38.6	D
4	California Circle and NB I-880 Ramps	AM	D	11.3	B	12.7	B	11.7	B	13.0	B
		PM	D	13.9	B	26.2	C	14.8	B	33.6	C
5	Dixon Landing Road and Milmont Drive	AM	D	40.1	D	40.3	D	40.4	D	40.6	D
		PM	D	26.1	C	26.1	C	26.2	C	26.2	C
6	Dixon Landing Road and North Milpitas Boulevard	AM	D	31.5	C	31.6	C	31.7	C	31.7	C
		PM	D	39.8	D	39.6	D	39.6	D	39.6	D

Notes: LOS = level of service.

Signalized intersection levels of service and delays reported are for average control delay per vehicle.

Source: Hexagon 2016 (provided in Appendix H)

Impact TRA-3: 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 (No Impact)

Construction and Operational Impacts

There are no airports in the project vicinity. As such, the proposed project would not affect existing air traffic patterns during construction or operation. There would be no impact.

Impact TRA-4: Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) (Less than Significant with Mitigation)

Construction Impacts

The presence of large, slow-moving construction-related vehicles and equipment among the general-purpose traffic on roadways in the project area could result in substantial safety hazards, especially on nearby residential streets. In addition, as described in Impact TRA-2, construction of the proposed headwalls at the San Andreas Drive bridge may require temporary lane closures or narrowing of travel lanes. A single-lane, two-way traffic control operation may need to be in place on the bridge deck during peak hours when construction work is in progress. In the event that temporary lane closures are needed, traffic safety hazards could occur near the San Andreas Drive and North Abbott Avenue corner (approximately 50 feet west of the bridge) as there would be limited space at this sharp, 90-degree turn and driver visibility may be somewhat limited. As a result, construction at this location may temporarily increase vehicular safety hazards. Implementation of BMP TR-1 would involve installation of fences, barriers, lights, flagging guards, and signs to address the potential for safety hazards. While this measure would generally avoid confusion for drivers, bicyclists, and pedestrians, the presence of construction vehicles and equipment would still pose a significant impact related to traffic safety.

Operational Impacts

The proposed project would not involve changes to any road configurations that could create sharp curves or dangerous intersections. Therefore, no impact related to safety hazards in the long-term would occur.

Mitigation Measures

> **Implement Mitigation Measure TRA-1: Traffic Control Plan** (see full text of measure in Impact TRA-1 above).

Significance After Mitigation

The presence of slow-moving construction vehicles and equipment would pose a significant impact related to traffic safety even with implementation of BMP TR-1. Implementation of Mitigation Measure TRA-1 would reduce this impact by requiring development of a traffic control plan that would account for movement of construction vehicles and equipment and recommend warnings devices, signage, and traffic controls to prevent hazards to other road users. The District would require the contractor to implement the traffic control plan during construction, which would reduce this impact to less than significant with mitigation.

Impact TRA-5: Result in inadequate emergency access (Less than Significant with Mitigation)

Construction Impacts

The presence of slow-moving construction trucks and vehicles could delay or obstruct the movement of emergency vehicles on local roads in the project vicinity. As discussed in Impacts TRA-2 and TRA-4, the temporary lane reduction at the San Andreas Drive bridge crossing would reduce roadway capacity and could substantially increase the response time for emergency vehicles traveling through the work area. This impact is considered significant.

Operational Impacts

Once construction is complete, local roads in the project vicinity would operate similar to existing conditions. Access to the project area would continue to occur using existing access roads and local roads. In addition, because maintenance activities would occur on a periodic and as-needed basis, impacts related to impaired emergency access during project operation would be less than significant.

Mitigation Measures

> **Implement Mitigation Measure TRA-1: Traffic Control Plan** (see full text of measure in Impact TRA-1 above).

Significance After Mitigation

Mitigation Measure TRA-1 requires the preparation an implementation of a construction-period traffic control plan. The plan would identify effects on traffic flow from construction activities and traffic, and specify measures to ensure that affected roadways remain open for use by emergency responders at all times. The District would require the construction contractor to adhere to the plan throughout construction. This measure would reduce this impact to less than significant with mitigation.

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3.14 Utilities and Service Systems

3.14.1 Overview

This section evaluates the proposed project's impacts on utilities and service systems, including water supply, wastewater, stormwater, natural gas, electricity, and solid waste management. The regulatory setting section describes applicable laws, regulations, and policies related to utilities and service systems, and the environmental setting section describes existing utility infrastructure and utility supplies and demands at the project site and surrounding area. The impact analysis section evaluates impacts on utilities and service systems in light of the existing regulatory and environmental settings. Resources used to prepare this section include information and regulations from the various service providers, as referenced below; the City of Milpitas *General Plan*; and state regulations. The proposed project's effects on energy use are described in Section 3.7, *Greenhouse Gas Emissions and Energy Use.*

3.14.2 Regulatory Setting

Federal Laws, Regulations, and Policies

No federal laws, regulations, or policies relate to utilities and service systems and the proposed project.

State Laws, Regulations and Policies

California Integrated Waste Management Act of 1989

The California Integrated Waste Management Act of 1989 (CIWMA) (PRC Division 30) requires all California cities and counties to implement programs to reduce, recycle, and compost wastes by at least 50 percent by the year 2000 (PRC Section 41780). California has since established a goal of 75 percent recycling, composting, or source reduction by 2020. The California Department of Resources Recycling and Recovery (CalRecycle) administers the CIWMA and assigns jurisdictions tailored per capita and employee disposal rate targets to determine compliance and to focus efforts on successful implementation of diversion programs. Targets are met if a jurisdiction's per capita disposal rate is below or at the target rate (i.e., if each resident is disposing of the target amount or less each year). CalRecycle notes that meeting the disposal rate targets is not necessarily an indication of compliance (CalRecycle 2017a). The most recent information from CalRecycle indicates that Milpitas is meeting its per capita and employee disposal rate targets, as shown in **Table 3.14-1** below.

Table 3.14-1. City of Milpitas Per Capita and Employee Disposal Targets and Rates

Report Year	Annual Per Capita Disposal Rate (ppd) Per Resident	Annual Per Capita Disposal Rate (ppd) Per Employee
Target	**6.3**	**9.7**
2011	4.2	7.2
2012	4.5	7.2
2013	5.0	8.2
2014	4.9	7.9
2015	5.3	8.4

Note: ppd = pounds per day

Source: CalRecycle 2017a

Title 8, Section 1541 of the California Code of Regulations: Excavations

Section 1541 of the California Code of Regulations requires, among other things, that excavators identify the location of subsurface utilities prior to initiating construction, as follows: "the approximate location of subsurface installations, such as sewer, telephone, fuel, electric, water lines, or any other installations that reasonably may be expected to be encountered during excavation work, shall be determined by the excavator prior to opening an excavation" (Section 1541[b][1]). Additional requirements of Section 1541 include training of employees involved in excavation work, notification by excavators of regional notification centers (see California Government Code Section 4216 et seq. below) and all known owners of subsurface installations, protection of subsurface installations when the excavation is open, and notification of regional notification centers and utility owners in the event of damage or accidents.

California Government Code Section 4216 et seq.

California Government Code Section 4216 et seq. requires owners and operators of underground utilities to become members of and participate in a regional notification center, which notifies them of planned excavation reports from public and private excavators. This section of the California Government Code also requires every subsurface installation operator to locate and field mark, if known, subsurface installations that may be affected by the excavation prior to the excavation start date indicated by the excavator. In the project area, Underground Service Alert–Northern California (USA North) is the main notification center that is compliant with Section 4216.

3.14.3 Environmental Setting

Water

The City of Milpitas receives potable water from both the District and the San Francisco Public Utilities Commission (SFPUC). The City of Milpitas purchases approximately 65 percent of its water from the District and the remainder from SFPUC (SCVWD 2011). Water provided by the District is primarily from the Sacramento–San Joaquin River Delta with some contributions from local watersheds (e.g., Anderson, Calero Reservoirs), while the water provided by the SFPUC originates primarily from its Hetch Hetchy watershed in the Sierra Nevada mountains. In addition to the potable supplies it receives from the District and the

SFPUC, the City of Milpitas purchases recycled water from the South Bay Water Recycling Program (SBWR), which is administered by the City of San Jose, for irrigation, industrial, and other purposes (SCVWD 2011).

The City of Milpitas owns, operates, and maintains a potable water distribution system consisting of approximately 200 miles of water main, 4,300 valves, 1,600 fire hydrants, five water tanks, four pumping stations, and one well serving more than 16,000 service connections (City of Milpitas 2011a). The City of Milpitas also operates and maintains a recycled water system, owned by the City of San Jose SBWR, which consists of approximately 20 miles of recycled main and associated facilities, serving one industrial and 180 irrigation services in the City. In 2010, the City of Milpitas delivered approximately 9,143 acre-feet of potable water to customers (City of Milpitas 2011a).

Wastewater

The City of Milpitas owns and operates its municipal sewer collection system, consisting of 175 miles of gravity pipe, 5 miles of force main, and two pump stations (City of Milpitas 2011b). Wastewater collected by the City of Milpitas' sewer collection system is routed to the San Jose–Santa Clara Regional Wastewater Facility for treatment. The San Jose–Santa Clara Regional Wastewater Facility treats an average of 110 million gallons per day (mgd) of wastewater, with treatment capacity of up to 167 mgd (City of San Jose 2015). This facility is the largest tertiary treatment plant in the western United States, serving 1.4 million residents and 17,000 business-related sewer connections in an eight-city area. The City of Milpitas discharged 8.4 mgd to the San Jose–Santa Clara Regional Wastewater Facility in 2009/2010 and is contractually limited to a flow of 14.25 mgd (City of Milpitas 2002).

Stormwater

The City of Milpitas *Storm Drain Master Plan* (Schaaf & Wheeler 2013) identifies two stormwater lagoons in the project area: California Circle Lagoon and Abbott Lagoon. California Circle Lagoon is located along the left bank of Reach 2, downstream of the California Circle bridge and upstream of the I-880 crossing. Abbott Lagoon is located at the upstream terminus of Reach 4, just west of North Abbott Avenue. These lagoons drain adjacent streets and ultimately discharge stormwater to Lower Penitencia Creek via pump stations (Schaaf & Wheeler 2013).

Solid Waste

Solid waste generated by the proposed project would be transported to one of a number of landfills in Santa Clara County or neighboring Alameda County. **Table 3.14-2** shows active landfills in the project vicinity that could potentially accept solid waste generated by the proposed project.

Table 3.14-2. Active Landfills in Santa Clara and Alameda Counties

Landfill	Maximum Permitted Capacity (cy)	Remaining Estimated Capacity (cy)	Percentage of Capacity Remaining	Remaining Capacity Date	Estimated Closure Date
Santa Clara County					
Guadalupe Sanitary Landfill	28,600,000	11,055,000	38%	January 1, 2011	January 1, 2048
Kirby Canyon Recycling and Disposal Facility	36,400,000	16,191,600	45%	June 11, 2001	December 31, 2022
Newby Island Landfill	57,500,000	21,200,000	37%	October 31, 2014	January 1, 2041
Zanker Material Processing Facility	640,100	640,100	100%	August 22, 2012	November 1, 2025
Alameda County					
Altamont Landfill and Resource Recovery	124,400,000	65,400,000	53%	December 31, 2014	January 1, 2025
Vasco Road Sanitary Landfill	32,970,000	7,959,079	24%	July 31, 2014	December 31, 2022

Note: cy = cubic yards.

Source: CalRecycle 2017b

Electricity and Natural Gas

Electricity and natural gas are provided to the project area by PG&E. According to the proposed project's Planning Study Report (SCVWD 2016), two parallel PG&E gas lines traverse Reach 1 (one 30-inch-diameter and another 36-inch-diameter gas line). There is also a 10-inch underground nitrogen line in the vicinity of the two gas lines.

In addition, PG&E also operates overhead high-voltage power lines mounted on steel-lattice towers on the east overbank in Reaches 3 and 4. Five power line towers are located east of Reaches 3 and 4. In Reach 2, overhead electrical distribution lines cross the channel.

3.14.4 Impact Analysis

Methodology

The following impact analysis is both qualitative and quantitative in nature. The evaluation involved comparing anticipated service system demands from the proposed project to existing system provider capacity and facilities.

Criteria for Determining Significance

Based on Appendix G of the State CEQA Guidelines, the proposed project would result in a significant impact on utilities and service systems if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- 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;
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Have insufficient water supplies available to serve the project from existing entitlements and resources;
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- Fail to comply with federal, state, and local statutes and regulations related to solid waste.

Additionally, this ~~D~~EIR applies the following additional criterion and considers that the proposed project would have a significant effect on utilities and service systems if it would:

- Disrupt operation or require relocation of local utilities that results in substantial disruption of service.

Impact Summary

Table 3.14-3 summarizes utilities and service system impacts of the proposed project.

Table 3.14-3. Summary of Impacts Utilities and Service Systems

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance After Mitigation
UTL-1: Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board	LS	None	LS
UTL-2: 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	NI	None	NI
UTL-3: 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	LS	None	LS

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance After Mitigation
UTL-4: Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed	LS	None	LS
UTL-5: 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	LS	None	LS
UTL-6: Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs	LS	None	LS
UTL-7: Comply with federal, state, and local statutes and regulations related to solid waste	LS	None	LS
UTL-8: Potential disruption and/or relocation of existing utilities	LS		LS

LS = Less than Significant, NI = No Impact,

Environmental Impacts

Impact UTL-1: Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board (Less than Significant)

Construction and Operational Impacts

As described in Chapter 2, *Project Description,* the proposed project would be limited to conducting channel improvements in Lower Penitencia Creek for the purpose of providing increased flood protection. The proposed project would not generate wastewater during operation of the project and therefore would not require construction of any new wastewater treatment facilities. During the construction phase, construction workers would use portable restrooms that would be off-hauled by the contractor for disposal. Short-term increases in wastewater generated by construction workers would not substantially increase the volume of wastewater in the system such that exceedance of wastewater treatment requirements would be an issue at the San Jose–Santa Clara Regional Wastewater Facility. This impact would be less than significant.

Impact UTL-2: Require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects (No Impact)

Construction and Operational Impacts

As the purpose of the proposed project is to improve flood protection, the proposed project would not require any new water supply or water treatment facilities. Therefore, no new water or wastewater treatment facilities would be required. Project construction would require some amount of water for dust control purposes, but this amount of water would not be anticipated to be substantial and would be supplied by a water truck rather than the City of Milpitas' municipal system. Therefore, no impact related to construction of new water treatment facilities or insufficient existing entitlements would occur.

Impact UTL-3: Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects (Less than Significant)

A project could have a significant adverse impact on an existing stormwater drainage system if it substantially increases impervious area such that it would require or result in the construction of new or expanded stormwater drainage facilities.

Construction Impacts

The proposed project would involve improvements to Lower Penitencia Creek, which is a stormwater drainage facility that collects and conveys flow from several local storm drain facilities and tributaries. As stated in the City's Storm Drain Master Plan, all City-owned stormwater facilities drain to District-owned creeks and channels. Penitencia Creek conveys flows from local storm drain facilities to Coyote Creek and eventually to San Francisco Bay. Throughout project construction, all local stormwater facilities would remain in operation. Portions of the creek would be dewatered during construction by diverting creek flow into pipes that would convey the flow around the construction area and back into the creek downstream from the construction area. All local storm drains emptying into Penitencia Creek would be connected to the diversion system so that they would continue to function properly. Dewatering would only occur during the summer dry season, when flows in the storm drains would be minimal; nonetheless, they would continue in operation with no reduction in capacity during creek dewatering.

As described in the environmental setting above, the City of Milpitas' *Storm Drain Master Plan* identifies several existing stormwater drainage facilities in the project area, including the California Circle Lagoon located along the left bank of Reach 2 (visible in Figure 2-3). Given its proximity to the proposed project area, operation of this facility could be affected during project construction (e.g., pumping of water from the lagoon to the creek channel may need to be suspended during certain construction activities). Project construction would occur during the dry season (June 15–October 15); therefore, limitations on pumping from this facility during construction within Reaches 1 and 2 would not be expected to cause adverse effects. The proposed project would not be anticipated to physically affect the lagoon itself, as it would be outside the construction work area. In general, effects on any existing stormwater drainage facilities would not be substantial, and the proposed project would not require or result in the construction of additional stormwater drainage facilities. This impact would be less than significant.

Operational Impacts

The proposed project would not substantially increase impervious areas or otherwise increase the generation of stormwater. The proposed modifications to the San Andreas Drive bridge would result in new headwalls at the downstream and upstream side of the bridge, but any increase in impervious area from the headwall would be minimal and would not substantially affect stormwater runoff generation rates. As mentioned above, the proposed project itself is an improvement of existing stormwater conveyance facilities and would be operated similar to existing conditions following project construction. Lower Penitencia Creek would continue to convey stormwater flows and provide flood protection. This impact would be less than significant.

Impact UTL-4: Have sufficient water supplies available to serve the project from existing entitlements and resources (Less Than Significant Impact)

Construction Impacts

Project construction would consume water for dust control and street cleaning. Recycled water would be used for these purposes. Small amounts of water would be consumed by construction workers, but would have a negligible impact on potable water supplies This impact would be less than significant.

Operational Impacts

During project operation, water use would be negligible. Water may be used to clean graffiti from structures, but that use would be infrequent and the amount of water used would be negligible. The wetlands plantings in Reach 1 would be flooded during high tides on a daily basis and would not require irrigation. Trees would be planted as required by the Milpitas Tree Protection Ordinance to compensate for trees removed during project construction. Those trees would require watering to establish. The number of trees to be planted would be less than 50, and they would be native trees adapted to the local climate. To the extent possible, recycled water would be used for irrigation. The amount of water required would not exceed available supplies. This impact would be less than significant.

Impact UTL-5: Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments (Less than Significant)

Construction and Operational Impacts

As described in Impact UTL-1, the proposed project would not generate substantial volumes of wastewater that during construction or operation. Short-term increases in wastewater generated by construction workers would not substantially increase the volume of wastewater in the system such that treatment capacity would be an issue at the San Jose–Santa Clara Regional Wastewater Facility. Therefore, impacts regarding wastewater treatment capacity would be less than significant.

Impact UTL-6: Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs (Less than Significant)

The proposed project's impacts on existing landfill capacity during both construction and operation are discussed below.

Construction Impacts

As described in Chapter 2, *Project Description*, project construction would involve soil excavation for the replacement levee and vegetated bench in Reach 1, floodwalls, and headwalls at the San Andreas Drive bridge. Approximately 800 cy of accumulated sediment would also be removed from Reaches 2 and 4 and about 1,500 cy of accumulated sediment would be removed from Reach 3. Soil excavated within Reach 1 would be reused to construct the setback replacement levee in Reach 1 and the raised levee in Reach 4, and to backfill low areas along the floodwalls. Based on geotechnical investigations performed for the project (Kleinfelder 2017), almost all of the excavated soils will be have suitable physical properties for reuse on site. The total volume of excess soil or sediment requiring off-site disposal or re-use is estimated at 2,300 cy.

As shown in Table 3.14-2, multiple landfills in Santa Clara County and Alameda County could serve the proposed project, and many of these have substantial remaining capacity. From a worst-case perspective, assuming that all construction waste generated by the proposed project requires disposal at the Vasco Road Landfill (i.e., the landfill with the lowest percentage of remaining capacity), the proposed project would reduce that facility's remaining capacity by less than 0.02 percent. Assuming all construction waste is disposed of at Zanker Material Processing Facility (i.e., the landfill with the lowest amount of total capacity), the proposed project would reduce remaining capacity by approximately 0.3 percent. These two scenarios represent the "worst-case" scenario as far as impacts on existing landfill capacity. While it is unlikely that all construction waste would be sent to one landfill, even if it were, it would not result in a significant impact on existing capacity. This impact would be less than significant.

Operational Impacts

As described in Chapter 2, project operation and maintenance activities following construction would be similar to existing conditions. New maintenance activities that could generate solid waste for disposal at a landfill include trash and debris removal associated with maintenance and repair of the floodwalls and headwalls. While these activities would generate some amount of waste that would require disposal at a solid waste landfill, this amount would be similar to existing operations and would not be substantial. For this reason, the proposed project's long-term effects on landfill capacity would be less than significant.

Impact UTL-7: Comply with federal, state, and local statutes and regulations related to solid waste (Less than Significant with Mitigation)

As described in the regulatory setting section above, the CIWMA requires cities to divert 75 percent of solid waste by 2020. The City of Milpitas is currently meeting its per capita and employee target disposal rates under the CIWMA (see Table 3.14-1) (CalRecycle 2017a). While CIWMA targets are not directly applicable to the District or to individual construction projects, the project would be consistent with CIWMA policies by maximizing reuse of materials on site and minimizing the amount of waste generated.

Construction Impacts

As described in Impact UTL-2, the proposed project would involve excavation and demolition of existing structures, which could generate relatively large volumes of construction waste. Excavated material from the vegetated benches proposed for Reach 1 would be reused to construct the setback replacement levee in Reach 1 and the raised levee in Reach 4, and to backfill low areas along the floodwalls. About 2,300 cy of sediment would be removed from the creek channel would have unsuitable properties for on-site re-use. That sediment would be exported from the project site for off-site disposal. In total, about 90 percent of the excavated soil and sediment generated by the proposed project would be reused on-site. The proposed project would also generate modest amounts of typical construction wastes, such as lumber, wire, metals, and plastics. By using sheetpiles to construct the floodwalls instead of cast-in-place concrete piles, which are commonly used, the proposed project would generate substantially less construction waste. All project-related waste would be handled, classified, temporarily stored, transported, and disposed of in conformance with applicable federal and state solid waste regulations. This impact would be less than significant.

Operational Impacts

Generation and disposal of solid waste during project operation would be similar to existing conditions. As described in Chapter 2, the District's ongoing maintenance activities, such as trash removal, vegetation management, and maintenance road grading, would continue following project construction. New maintenance activities would involve periodic repair and maintenance of the floodwalls and headwalls. These activities may generate small amounts of solid waste, but not substantially more than under existing conditions. Therefore, long-term effects pertaining to compliance with solid waste regulations would be less than significant.

Impact UTL-8: Potential disruption and/or relocation of existing utilities (Less than Significant)

Buried underground utilities may be encountered during project construction activities without adequate identification and avoidance measures, resulting in disruptions in service, damage, or potentially hazardous accident conditions (e.g., explosion from striking a natural gas pipeline). Such disruptions in service or hazardous accident conditions, as well as any necessary substantial relocation of existing utilities, could constitute a significant impact. The proposed project's potential to adversely affect existing utilities is discussed below for both project construction and operation.

Construction Impacts

As described in the previous impact discussions, project construction would involve excavation and use of heavy earth-moving equipment (e.g., excavator, backhoe). The proposed project also would involve modifications to the San Andreas Drive bridge, which may carry existing utilities. Two parallel PG&E gas lines traverse Reach 1 (one 30-inch and another 36-inch gas line). There is also a 10-inch underground nitrogen line in the vicinity of the two gas lines. In addition to these known utilities, there may be unknown buried utilities along the proposed project reaches that could be affected during project construction and excavation activities. Construction of the proposed vegetated benches, floodwalls, and levees would require excavation, which would present the possibility of impacts on unknown buried utilities.

As described in the environmental setting section above, PG&E electrical distribution lines and poles are present in Reach 2 and PG&E electric transmission lines traverse Reaches 3 and 4. Additionally, within Reaches 3 and 4, overhead electric transmission lines and steel lattice towers run parallel to the eastern levee and maintenance road. Use of tall equipment under the transmission lines would be a potential hazard as a contact between the equipment and power lines could disrupt operation of the powerlines. To avoid that hazard, the project design avoids locating floodwalls directly under the PG&E transmission lines. A number of underground utility lines are present within the project area, including water supply, wastewater, natural gas, and power lines. The District will require the contractor to notify

Underground Service Alert North prior to start of excavation or demolition activities and will coordinate with line utility owners and operators to ensure that project construction does not damage the lines or disrupt service. This construction impact would be less than significant.

Operational Impacts

During project operation, the proposed project would not be anticipated to affect, or have the potential to affect, existing utilities. Similar to existing conditions, project operations would include routine maintenance activities, such as trash and debris removal, vegetation management, maintenance road grading, management of wildlife conflicts, fence repair, and graffiti removal. New maintenance activities would involve periodic repair and maintenance of the floodwalls and headwalls. No substantial excavation or use of heavy equipment are anticipated to be necessary following project construction; therefore, no impacts on underground and aboveground utilities would be anticipated to occur. This operational impact would be less than significant.

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Chapter 4
OTHER STATUTORY CONSIDERATIONS

This chapter describes irreversible impacts, significant and unavoidable impacts, growth-inducing impacts, and cumulative impacts as required by the State CEQA Guidelines.

4.1 Irreversible Impacts

State CEQA Guidelines Section 15126.2(c) requires that an EIR must identify any irreversible impacts, also referred to as "irreversible environmental changes," which may be caused by a proposed project, including current or future commitments to using nonrenewable resources, and secondary, or growth-inducing, impacts that commit future generations to similar uses. Section 15126 of the State CEQA Guidelines states that significant irreversible environmental changes associated with a proposed project may include the following:

- uses of nonrenewable resources during the initial and continued phases of the project that may be irreversible because a large commitment of such resources makes removal or nonuse thereafter unlikely;
- primary impacts and, particularly, secondary impacts (such as highway improvements that provide access to a previously inaccessible area) that commit future generations to similar uses; and
- irreversible damage, which may result from environmental accidents associated with the project.

The irreversible commitment of nonrenewable resources would occur as a result of the proposed project. Construction activities would require the temporary use of heavy construction equipment, which would require the use of fossil fuels, and the permanent use of raw materials, including nonrenewable resources. The proposed project would provide flood protection to many Milpitas residences and businesses and would reduce the likely need for cleanup and repair work that could be required in the event that a 1-percent (100-year) flood event occurred.

Operation of the proposed project would result in irreversible changes associated with energy consumption. Such an increase in energy demands would be minimal as these would be limited to periodic maintenance activities of the newly installed floodwalls and San Andreas Drive bridge headwalls.

4.2 Growth Inducement

Section 15126.2(d) of the State CEQA Guidelines requires an EIR to include a detailed statement of a proposed project's anticipated growth-inducing impacts. The analysis of growth-inducing impacts must discuss the ways in which a proposed project could foster economic or population growth or the construction of additional housing in the surrounding environment. The analysis must also address project-related actions that would remove existing obstacles to population growth, tax existing community service facilities and require construction of new facilities that would cause significant environmental effects, or encourage or facilitate other activities that could, individually or cumulatively, have a significant effect on the environment. A project would be considered growth inducing if it induces growth directly (through the construction of new housing or increasing population) or indirectly (by increasing employment opportunities or eliminating existing constraints on development). Under CEQA, growth is not assumed to be either beneficial or detrimental.

The proposed project would not involve new development or infrastructure installation that could directly induce substantial population growth in the project area. Construction-related jobs would increase in the Bay Area in the short term and would be anticipated to draw from the existing work force. The proposed project would not displace any existing housing units or persons, or create any housing units. Minimal, if any, job growth would be associated with operation of the proposed project, and would not generate sufficient economic activity to result in substantial population growth.

Adequate flood protection is one type of public service, though not the only, that is needed to support additional growth in the City of Milpitas. Other factors that influence residential, commercial or industrial growth in the region include the general plans and other policies of Milpitas, Santa Clara County, and other nearby cities, as well as the availability of water supply, wastewater treatment and disposal capacity, public schools, and transportation services. Economic factors also affect development rates and locations of development.

The proposed project would provide improved flood protection for existing residents and businesses and new residential developments that are currently being constructed near the Lower Penitencia Creek flood zone. Increased flood protection is necessary since future flows within Penitencia Creek are expected to increase as a result of upstream land use changes. However, the City of Milpitas is highly built out and the proposed project would not change current land uses in the project vicinity. Future and ongoing development in the City of Milpitas has been addressed in the City's general plan and other land use planning documents. As previously stated, the proposed project would not increase future density of local housing development or significantly increase economic activity.

For the reasons described above, the proposed project would not induce growth any direct or indirect population growth.

4.3 Cumulative Impacts

According to State CEQA Guidelines Section 15130(a)(1), a cumulative impact is created by the combination of a proposed project with other past, present, and probable future projects causing related impacts. Cumulative impacts can result from individually minor but collectively substantial projects taking place over time (State CEQA Guidelines Section 15355[b]). Under CEQA, an EIR must discuss the cumulative impacts of a project when the project's incremental contribution to the group effect is "cumulatively considerable." An EIR does not need to discuss cumulative impacts that do not result, at least in part, from the project evaluated in the EIR.

To meet the adequacy standard established by State CEQA Guidelines Section 15130, an analysis of cumulative impacts must contain the following elements:

- an analysis of related past, present, and reasonably foreseeable projects or planned development that would affect resources in the project area similar to those affected by the proposed project;
- a summary of the environmental effects expected to result from those projects with specific reference to additional information stating where that information is available; and
- a reasonable analysis of the combined (cumulative) impacts of the relevant projects.

The cumulative impacts analysis must evaluate a project's potential to contribute to the significant cumulative impacts identified, and it must discuss feasible options for mitigating or avoiding any contributions assessed as cumulatively considerable. The discussion of cumulative impacts is not required to provide as much detail as the discussion of the effects attributable to the project alone. Rather, the level of detail is to be guided by what is practical and reasonable.

4.3.1 Approach to Analysis

The following analysis of cumulative impacts focuses on whether the impacts of the proposed project are cumulatively considerable within the context of impacts resulting from the proposed project and other past, present, or reasonably foreseeable future projects. The cumulative impact scenario considers other projects proposed within the area defined for each resource that have the potential to contribute to significant cumulative impacts.

State CEQA Guidelines Section 15130 provides the following two alternative approaches for analyzing and preparing an adequate discussion of significant cumulative impacts:

- the list approach, which involves listing past, existing, and probable future projects or activities that have or would produce related or cumulative impacts, including, if necessary, those projects outside the control of the lead agency; or
- the projection approach, which uses a summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions and their contribution to the cumulative effect.

This EIR uses the list approach for analyzing cumulative impacts. Activities related to the proposed project that are included in the cumulative analysis were determined using several factors, including the location and type of activity and the characteristics of the activity related to resources with the potential to be affected by the proposed project. In addition, regional or global conditions that might lead to cumulative impacts (e.g., GHG emissions) are also described.

Resource Topics Considered and Dismissed

Greenhouse gas emissions are, by nature, a cumulative issue and are already addressed in Section 3.7, *Greenhouse Gas Emissions;* therefore, this topic is not discussed further in this section. For all other resource topics, as shown in **Table 4-1**, significant cumulative impacts do not exist.

Table 4-1. Resource Topics Dismissed from Further Consideration in the Analysis of Cumulative Impacts due to Lack of Significant Cumulative Impacts

Resource Topic	Rationale for Dismissing from Further Consideration
Aesthetics	The geographic scope of the cumulative aesthetics evaluation is the project site and the nearby areas within visual sight lines. Because the topography of the project vicinity is relatively level and the area is mostly urbanized, proposed improvements would only be visible from nearby viewpoints. Nearby development would be similar to existing urban development in the area and would be guided by the City of Milpitas General Plan as to allowable uses and size and bulk of structures. Based on the above and given the existing urbanized appearance of the area, there would be no significant cumulative impact to aesthetics when considering the proposed project and other projects in the area. The proposed project and other projects would not result in adverse effects on scenic resources, or substantially alter the visual character of the area. When considering the proposed project along with other projects, there would not be a significant cumulative impact on aesthetics.
Cultural Resources	The geographic scope of cumulative cultural resources evaluation includes the project area and immediate surroundings. Construction of the proposed project and other development projects in Milpitas could lead to cumulative loss of significant historic, archaeological, or paleontological resources. As described in Section 3.5, *Cultural Resources*, there are no historical resources and no known archaeological resources within the project site. The District would implement BMPs to ensure that archaeological resources, including Native American human remains are protected from damage and properly studied, recovered, and curatedin the event that they are found during project construction. State law requires other development projects to similarly protect archaeological resources and human remains uncovered during construction of those projects. When considering the proposed project along with other projects, there would not be a significant cumulative impact on\cultural resources.
Geology, Soils, and Seismicity	The geographic scope of geology, soils, and seismicity evaluation includes the project area and immediate surroundings. Other projects in Milpitas would be required to comply with California Building Code requirements. The proposed project and other developments would be designed to withstand seismic hazards (e.g., liquefaction) and expansive and corrosive soils. When considering the proposed project along with other projects, there would not be a significant cumulative impact to geology, soils, or seismicity.
Hazards and Hazardous Materials	With the exception of activities conducted by the District's SMP, there are no other cumulative projects that would be located within the same footprint as the proposed project. As described in Section 3.8, *Hazards and Hazardous Materials*, no known hazardous waste sites are located at the project site; however due to the urbanized nature of the area, potential exists for project excavations to encounter contaminated soil or groundwater. District BMPs would be implemented to ensure that contaminated media, if encountered, are

Resource Topic	Rationale for Dismissing from Further Consideration
	handled in compliance with federal and state laws regarding hazardous wastes. Other nearby cumulative construction projects such as the Lower Berryessa Creek Flood Improvements Project and iStar and Waterstone development projects would also be required to follow federal and state laws regarding contaminated soil or groundwater. Based on the lack of the known contamination in the project area, and legal requirements for handling of contaminated media if encountered in the future, the potential for other nearby projects to contribute to cumulative impacts regarding hazardous materials is low. When considering the proposed project along with other projects, there would not be a significant cumulative impact to hazards or hazardous materials.
Land Use	As described in Section 3.10, *Land Use and Planning,* the proposed project would not divide an established community or change land use at the project site or vicinity. The proposed project would also not conflict with local plans such as the *City of Milpitas General Plan, Milpitas Trails Master Plan* or the City of Milpitas' *Bikeway Master Plan*. Similar to the proposed project, other projects are subject to planning, environmental review, and permitting processes. Through those processes, inconsistencies with relevant plans and policies would be resolved before project implementation. When considering the proposed project along with other projects, there would not be a significant cumulative impact to land use.
Recreation	Similar to the proposed project, other nearby projects including the Upper Berryessa Creek Flood Protection Project and the Upper Penitencia Creek Project (described in detail in Table 4-3 below) have the potential to affect recreational trails in their respective project areas during construction. However, because these projects and the proposed project are in different stages of development, it is unlikely that they would be under construction simultaneously. The District's Lower Berryessa Creek Flood Protection Improvement Project adjoins the proposed project area and would temporarily affect recreational trails during construction. However, construction of Phase 1 of the Lower Berryessa Creek project, which is closest to the Lower Penitencia Creek Improvements Project area, has been completed and will not occur concurrently with construction of the proposed project. Construction of Phase 2 of the Lower Berryessa Creek project may overlap construction of the proposed project, but would be over 0.5 mile from the Lower Penitencia Creek project area. When considering the proposed project along with other projects, there would not be a significant cumulative impact to recreation.
Utilities and Service Systems	For aboveground and belowground utilities, the geographic scope for evaluating cumulative impacts includes the project area and immediate surrounding areas. With regards to solid waste management, the geographic scope includes Santa Clara County. The Lower and Upper Berryessa Creek projects are under construction and include plans to relocate aboveground and underground utilities lines as necessary. Buried underground utilities may be encountered during project construction activities. To prevent significant disruption of service, affected parties will be notified in advance of possible service disruptions and safety protocols would be implemented to avoid damage, or potentially hazardous accident conditions (e.g., explosion from

Resource Topic	Rationale for Dismissing from Further Consideration
	striking a natural gas pipeline). Other development projects would conform to the City of Milpitas General Plan and would not result in increased demand on utility and service systems beyond that which can be accommodated by existing and planned infrastructure. Milpitas is served by the San Jose/Santa Clara Water Pollution Control Plant, which has prepared a Master Plan to accommodate expected future increases in wastewater treatment growth in the plant's service area. Population growth within Santa Clara County would result in increased generation of solid wastes; however, this would be offset by the requirements for increased re-use and diversion of solid waste included in the CIWMA. Existing solid waste facilities in the County have many years of estimated capacity to accommodate solid wastes, and overall capacity would be increased by the Newby Island Sanitary Landfill Rezoning and Recyclery Project. That project would provide 15.12 million cubic yards of additional landfill capacity. When considering the proposed project along with other projects, there would not be a significant cumulative impact to utilities and services systems.

Geographic Scope of Analysis

The level of detail of a cumulative impact analysis should consider a proposed project's geographic scope and other factors (e.g., a project's construction or operational activities, the nature of the environmental resource being examined) to ensure that the level of detail is practical and reasonable. The discussion below focuses on the cumulative impacts of the proposed project for environmental resources that could be expected to be cumulatively affected by the proposed project in conjunction with other past, present, and reasonably foreseeable future projects. The specific geographic scope for each environmental resource topic analyzed in this EIR for cumulative impacts is provided below.

The defined specific geographic scope for each environmental resource area analyzed in this ~~D~~EIR to which the proposed project could contribute to cumulative impacts is provided below in **Table 4-2**.

Table 4-2. Geographic Scope for Resources with Significant Cumulative Impacts Relevant to the Proposed Project

Resource	Geographic Scope
Air Quality	San Francisco Bay Area Air Basin
Biological Resources	Lower Penitencia Creek Watershed
Hydrology and Water Quality	Upper and Lower Berryessa Creek, Lower Penitencia Creek, Coyote Creek, and South San Francisco Bay
Noise and Vibration	Project area and surrounding areas exposed to noise and ground-borne vibration generated in the project area (within the City of Milpitas)

Resource	Geographic Scope
Transportation and Traffic	I-880 and roadways with traffic generated by the proposed project, including Dixon Landing Road, California Circle, Milmont Drive, N. Milpitas Boulevard, and San Andreas Drive

Table 4-3 lists projects planned in the City of Milpitas that could affect resources that would also be affected by the proposed project. The list was developed by reviewing sources available on the City of Milpitas website, communication with City of Milpitas staff, and referring to the Governor's Office of Planning and Research CEQAnet database. While it is unlikely that every cumulative project is listed, the list of cumulative projects is considered comprehensive and is representative of the types of impacts that would be generated by other projects related to the proposed project. The evaluation of cumulative impacts assumes that the impacts of past and present projects are represented by baseline conditions, and that cumulative impacts are considered in the context of baseline conditions alongside reasonably foreseeable future projects.

Table 4-3. Reasonably Foreseeable Future Projects that Might Cumulatively Affect Resources of Concern for the Proposed Project

No.	Project Title	Brief Project Description	Distance from Proposed Project Site
Milpitas Development Projects			
1	Waterstone California Circle Residential Project	The project proposes development of 84 single-family homes on 10.7 acres at 1494-1600 California Circle. This project was approved in 2013. At the time the proposed project EIR was prepared, construction of the Waterstone California Circle project was underway. Construction is expected to be complete before construction of the proposed project commences.	Immediately west of Reach 3 of the project site
2	iStar Residential	The project proposes construction of 145 units on 9.45 acres at 1210 California Circle. Construction is expected to be complete before construction of the proposed project commences.	Immediately west of the southern portion of Reach 3
3	Springhill Marriott Suites	The project proposes construction of a new hotel at 1201 Cadillac Court. This project is identified as pending by the City of Milpitas.	Approximately 0.25 mile west of Reach 4
4	Holiday Inn 1100 Cadillac Court	The project proposes a two-lot subdivision of an undeveloped parcel with the Venture Commerce Center. A hotel would be developed at 1100 Cadillac Court. Approval to begin foundation was approved in September 2015; building permits are currently under review with the City of Milpitas Planning Department.	Approximately 0.25 mile southwest of Reach 4
5	Pacific Mall & Hotel	The project proposes development of 284,587 square feet of retail uses at a mall and a 12-story (240-room) hotel at 11 Ranch Drive. This project was approved in 2014; no building permits have been submitted (Rosas, pers. comm., 2015).	Approximately 1.2 miles southwest of Reach 4
6	Orchid	The project proposes construction of 199 units on 3.02 acres at 31 South Milpitas Boulevard.	Approximately 1.25 miles southeast of Reach 4
7	Taylor Morrison	The project proposes construction of 26 units and 5 live-work spaces on 1.26 acres at 75 South Milpitas.	Approximately 1.35 miles southeast of Reach 4
8	Los Coches Residential Project	The project consists of two separate parcels at 31 South Milpitas (one 7.4-acre built-out parcel and another 3.9-acre parcel). The project entails demolition of the entire 11.3-acre site and construction of 80 single-family residential homes, including on- and off-site pedestrian and bicycle-oriented trail improvements. Construction is currently underway.	Approximately 1.25 miles southeast of Reach 4

No.	Project Title	Brief Project Description	Distance from Proposed Project Site
9	Los Coches Live/ Work Residential Project	The project proposes development of 28 units and 4 live-work spaces on 9.65 acres planned at 345 Los Coches (at the intersection of South Milpitas Boulevard and Los Coches Street). Construction has not yet begun.	Approximately 1.35 miles southeast of Reach 4
10	905-980 Los Coches Street (Robson Single-Family)	The project proposes development of 83 dwelling units planned on 4.98 acres at 905-980 Los Coches Street. Construction is currently underway.	Approximately 1.6 miles southeast of Reach 4
11	Cerano Apartments	The project proposes development of 374 units on 7.58 acres at 501 Murphy Ranch Road.	Approximately 2.1 miles southwest of Reach 4
12	Coyote Creek Townhomes	The project proposes construction of 134 units on 9.2 acres at 601 Murphy Ranch Road. Construction is nearly complete (Rosas, pers. comm., 2015).	Approximately 2.1 miles southwest of Reach 4
13	Landmark Tower	The project proposes development of 375 units on 3 acres at 600 Barber Lane. Planning entitlements have been received but the project proponent has not yet submitted building plans.	Approximately 1.75 miles south of Reach 4
14	1102 Abel Street (Centria West)/ D.R. Horton	The project proposes development of 366 units on 5.2 acres at 1102 Abel Street. Construction is currently underway (Rosas, pers. comm., 2015).	Approximately 2.27 miles south of Reach 4
15	Ilara Apartments	The project proposes development of 204 dwelling units surrounding a parking garage on 2.83 acres at 1201 South Main Street. Construction is near completion (Rosas, pers. comm., 2015).	Approximately 2.45 miles south of Reach 4
16	Integral Properties	The project proposes development of 954 units on 13.36 acres at 1315 McCandless Avenue. Construction status is currently unknown (Rosas, pers. comm., 2015).	Approximately 2.45 miles south of Reach 4
17	Avenue Community	The project proposes development of 203 units on 9.68 acres at 1515 McCandless Avenue. Construction status is currently unknown (Rosas, pers. comm., 2015).	Approximately 2.7 miles south of Reach 4
18	Senior Lifestyle	The project proposes development of 387 units on 5.94 acres at 1504 South Main Street.	Approximately 2.7 miles south of Reach 4
19	D.R. Horton Harmony Project	The project proposes development of a mixture of 276 townhomes and condominiums on a 12.33-acre site at Montague Expressway and McCandless Drive. Construction is nearly complete (Rosas, pers. comm., 2015).	Approximately 3 miles southeast of Reach 4

No.	Project Title	Brief Project Description	Distance from Proposed Project Site
20	450 Montague Residential Project (Lyon Communities Montague)	The project proposes development of 89 units on 10.5 acres at 450 Montague Expressway. Planning entitlements have been obtained; the City of Milpitas Planning Department is currently reviewing building plans.	Approximately 2.8 miles southeast of Reach 4
21	Pace Contour	The project proposes development of 134 units on 9.2 acres at 300, 324-368 Montague Court.	Approximately 2.75 miles southeast of Reach 4
22	Traverse Residential Project	The project proposes development of 207 dwelling units on 12.5 acres at 569-625 Trade Zone Boulevard. Building permit has been approved for one 5-unit building as of December 2014 (Rosas, pers. comm., 2015).	Approximately 3 miles southeast of Reach 4
23	Edge	The project proposes development of 381 units and 8,100 square feet of commercial use on 5.6 acres at 765 Montague Expressway.	Approximately 2.75 miles southeast of Reach 4
24	Citation	The project proposes development of 732 units on 16 acres at 1200 Piper Drive.	Approximately 2.6 miles southeast of Reach 4
25	115-245 North McCarthy Boulevard (Equity Office)	The project proposes construction of 424,814 square feet of office space in six 5-story buildings and a parking garage. Site development and tentative map have been approved but building permit has not been issued (Rosas, pers. comm., 2015).	Approximately 1.3 miles southwest of Reach 4
26	Sinclair Frontage Road	The project proposes development of 80 single-family dwellings on 9.65 acres at 245-371 Sinclair Frontage Road. No building permit has been submitted yet (Rosas, pers. comm., 2015).	Approximately 1.7 miles southeast of Reach 4
27	New McCandless Drive Elementary School Project	The Milpitas Unified School District is proposing to acquire land on and in the vicinity of McCandless Drive and Houret Court in Milpitas to develop and operate a K-6 elementary school. The site is approximately 10 acres and would span several vacant and developed parcels. The school would alleviate increases in the District's existing and projected student enrollment and would be in operation by the 2018/2019 school year. The NOP was published January 2015 (CEQANet 2016).	Approximately 3 miles south of Reach 4

No.	Project Title	Brief Project Description	Distance from Proposed Project Site
Other SCVWD, Public Infrastructure, and Flood Protection Projects			
28	SCVWD Lower Berryessa Creek Flood Protection Project	The project proposes to provide flood protection in the event of a 100-year flood event. The project extends approximately 1.7 miles through the City of Milpitas from the confluence of Lower Berryessa Creek with Lower Penitencia Creek south to Calaveras Boulevard. It also includes approximately 2.1 miles of Calera and Tularcitos Creeks. Construction of the project's first phase (just south of the Milmont Drive bridge to Abel Street) began in 2015 (SCVWD 2015a). Overall project construction is scheduled for completion in 2018.	Adjacent to the southernmost portion of the project area
29	USACE Upper Berryessa Creek Flood Protection Project	The project proposes to increase flood protection throughout Upper Berryessa Creek to provide adequate flood protection from a 100-year flood event. Project area extends from Calaveras Boulevard to I-680. Construction of this project is scheduled for completion in 2017.	Approximately 1.5 miles southeast of project area
30	SCVWD Stream Maintenance Program	The District's SMP provides maintenance standards and guides maintenance activities for the District to meet its designed flood protection mandates. It is an ongoing, districtwide program that focuses on sediment removal, vegetation management (e.g., mowing of levee banks for fire safety purposes), and bank protection activities Regulatory permits for this ongoing project provide coverage through 2023. The project area along the Lower Penitencia Creek channel is maintained within the SMP. Reaches 3 and 4 of the Lower Penitencia Creek channel undergo periodic sediment removal, most recently in October 2015, to maintain conveyance capacity in the channel.	Overlaps the project area
31	SCVWD Upper Penitencia Creek Project	The Upper Penitencia Creek Project would provide flood protection in the event of a 100-year flood. The project encompasses approximately 4.2 miles of Upper Penitencia Creek from Dorel Drive to the Coyote Creek confluence in San Jose. The project is currently in the planning phase (SCVWD 2015b).	Approximately 5.5 miles south of the project area
32	BART Silicon Valley (formerly Silicon Valley Rapid Transit Corridor)	BART and VTA are working together to construct a 16.1-mile extension of the BART system from the planned Warm Springs Station in Fremont through Milpitas and San Jose to Santa Clara. The first phase of BART Silicon Valley (referred to as the Berryessa Extension Project) consists of the first 9.9 miles of the extension of BART from the current planned Warm Springs station, through Milpitas, to near Las Plumas Avenue in San Jose. Construction is currently underway at different areas along the planned line (CEQANet 2016). Roadway improvements for Dixon Landing Road/Milmont Drive are currently underway and were estimated to be complete by mid-2016 (VTA BART Silicon Valley 2016).	Approximately 0.25 mile east of Reach 3

No.	Project Title	Brief Project Description	Distance from Proposed Project Site
33	Newby Island Sanitary Landfill Rezoning and Recyclery Project	The City of San Jose proposes to rezone the Newby Island Sanitary Landfill and the adjacent Recyclery to increase the landfill's maximum permitted height and authorize uses that were unauthorized by the previous zoning. The project would allow an increase in capacity of the landfill by approximately 15.12 million cubic yards, excluding cover materials.	Approximately 0.2 mile west of the project area
34	San Jose/Santa Clara Water Pollution Control Plant Master Plan (Plant Master Plan)	The Plant Master Plan includes various improvements needed at the water pollution control plant to address aging infrastructure, reduce odors, accommodate anticipated population growth in the plant's service area, and comply with evolving water quality regulations. The Plant Master Plan also includes a long-term land use plan for lands surrounding the existing plant.	Existing Plant approximately 1.7 miles west of the project area; Plant Master Plan planning area approximately 0.5 mile west of the project area
35	City of Milpitas Bicycle Master Plan projects	According to the City of Milpitas *Bicycle Master Plan*, a Class I multi-use trail is proposed along Lower Penitencia Creek between North McCarthy Boulevard and California Circle. The timing of this trail project is unknown but would likely occur after completion of the proposed project.	Overlaps with Reaches 1 through 3
36	South San Francisco Bay Shoreline Study	The South San Francisco Bay Shoreline Study is a congressionally authorized study by USACE, the District, and the California Coastal Conservancy to identify and recommend flood risk management and ecosystem restoration projects along South San Francisco Bay for federal funding. This study is looking at the feasibility of options for managing flood risk along the South Bay shoreline, undertaking ecosystem restoration, and expanding public access. The goal of the study is to protect the parts of Santa Clara County's shoreline with the highest potential damages and threats to human health and safety from flooding. A tentatively selected plan for levee alignments, wetland restoration, and public access has been identified in the Alviso area. An Environmental Impact Study was completed in 2015.	Adjacent to Reach 1

Sources: City of Milpitas 2015a and 2015b; SCVWD 2015a and 2015b; Rosas, pers. comm., 2015

4.3.2 Significant Cumulative Impacts

This section describes the topic areas for which past, present, and reasonably foreseeable projects would cause significant cumulative impacts.

Air Quality

The San Francisco Bay Area air basin is considered in attainment or unclassified for all air pollutants except the state and federal ozone and particulate matter of 2.5 micrometers or less ($PM_{2.5}$) ambient air quality standards, and the state particulate matter of 10 micrometers or less (PM_{10}) ambient air quality standard. Ozone is primarily caused by emissions of ozone-precursors from on-road mobile (vehicle) emissions, off-road mobile sources, organic compounds evaporation, and consumer products (BAAQMD 2014). The primary sources of $PM_{2.5}$ are combustion from stationary sources, on-road motor vehicles, off-road mobile sources, and dust sources (BAAQMD 2014). In addition, PM_{10} emissions in the Bay Area air basin are primarily from fugitive dust from construction and farming operations, paved and unpaved road dust, domestic combustion, and on-road motor vehicles. In addition, accidental fires can contribute to PM_{10} and $PM_{2.5}$ emissions. (BAAQMD 2014).The projects listed in Table 4-3 would directly generate considerable amounts of NO_x and PM and indirectly ozone. Because the Bay Area is in nonattainment of federal and state ambient air quality standards for ozone and $PM_{2.5}$, and state standards for $PM_{10,}$ cumulative emissions would result in a significant cumulative impact on air quality.

Biological Resources

Future and ongoing development activities in Milpitas, other District projects such as the Lower Berryessa Creek Flood Protection Project, and the District's ongoing activities associated with the SMP could result in impacts on many of the same habitat types and species in the Lower Penitencia Creek Watershed that would be affected by the proposed project. Table 4-3 identifies several projects that have been or would be constructed near the project area (e.g. Lower Berryessa Creek Flood Protection Project, the District's SMP, iStar and Waterstone developments, and South San Francisco Bay Shoreline Study), potentially affecting biological resources during the same period as the proposed project. When considering the proposed project along with other projects in the same watershed, this is considered a significant cumulative impact.

Hydrology and Water Quality

As listed in Table 4-3, several nearby projects could result in a variety of impacts on water resources in the project vicinity. Specifically, these projects could include the Waterstone California Circle Residential Project (immediately west of Reach 3), South San Francisco Bay Shoreline Study, Plant Master Plan, the iStar Residential Project (immediately west of the southern terminus of Reach 3), and other District projects such as the Lower Berryessa Creek Flood Protection Project (directly upstream of the project area) and the USACE Upper Berryessa Creek Flood Protection Project. Additionally, the SMP activities are ongoing in the project area. Increased development, mostly through redevelopment or more intensive densification in urban areas, including the Berryessa Creek watershed, could lead to a variety of impacts on water resources, including new sources of point-source and non-point-source pollution. Because the San Francisco Bay RWQCB requires all new development to retain and manage additional runoff on site, the increase in impervious surfaces and increased volume of stormwater runoff associated with additional development and urban densification are not anticipated to change substantially. According to the most recent list of water quality impairments under Section 303(d) of the CWA, Lower Penitencia Creek is not listed as impaired; however, the lower portion of Coyote Creek (downstream of Lower Penitencia Creek) is listed for diazinon and trash from stormwater runoff and illegal dumping. Construction projects in the area would have the potential to generate water pollutants, including trash and diazinon. Because increased intensity of urban development in the area could add to the impaired status of lower Coyote Creek, there would be a significant cumulative impact to water quality.

The Upper and Lower Berryessa Creek projects would increase the flow conveyance capacity of over 4 miles of creeks that are upstream of Lower Penitencia Creek. Those projects are under construction and would enlarge those channels to accommodate the 1% flow without overtopping of the creek banks. As a result of those projects, the 1% flow discharged to Lower Penitencia Creek would increase from the existing 4,830 cfs to 6,900 cfs, which would be a significant cumulative hydrologic impact.

Noise and Vibration

The geographic scope of cumulative noise impacts encompasses the project area as well as areas adjacent to construction access and haul routes that are located near noise-sensitive land uses. Several projects listed in Table 4-3 may overlap with the proposed project's construction activities. Projects located within 0.25 mile of the proposed project would generate noise that could, when combined with project construction noise, cause a significant cumulative noise impact. Those projects are: the Waterstone Residential Project, iStar Residential Project, Springhill Marriott, Holiday Inn/ 1100 Cadillac Court, Lower Berryessa Creek Flood Protection Project, Stream Maintenance Program (SMP), and Bart Silicon Valley Extension. Construction of the first four of those projects could occur simultaneously with project construction. Construction of Phase 1 of the Lower Berryessa Flood Protection Project was completed in 2016 and Phase 2 construction would occur more than 0.25 miles from the project site. SMP activities would not occur at the same time as project construction. Construction is also complete on the section of and Bart Silicon Valley Extension within 0.25 miles of the project site. Thus, construction of these latter three projects would not overlap project construction and would not add to cumulative noise impacts. Nevertheless, construction of the Waterstone, iStar, Springhill Marriott and Holiday Inn projects would occur at the same time as project construction, and would contribute to cumulative noise and vibration exposure of local residents and nearby noise-sensitive uses. Cumulative noise and vibration impacts due to construction activities at the project site and vicinity would be significant.

Transportation and Traffic

As described in Section 3.13, *Transportation and Traffic,* intersections evaluated for the proposed project operate at acceptable LOS; however, with increased development and population growth in Milpitas and adjacent areas, traffic congestion may worsen. Table 4-3 identifies several projects that would generate temporary and/or permanent new traffic on the same roadways and during the same period that would be affected by construction of the proposed project. The combined generation of traffic would temporarily result in a significant cumulative impact.

4.3.3 Project Contributions to Significant Cumulative Impacts

The following section describes the proposed project's contribution to significant cumulative impacts. **Table 4-4** summarizes the proposed project's contribution to cumulative impacts.

Table 4-4. Summary of Significant Cumulative Impacts and Project Contribution

Impact	Level of Significance Before Mitigation	Applicable Mitigation Measures	Level of Significance After Mitigation
CUM-1: Cumulative Impacts on Air Quality	S	Mitigation Measure AQ-1	NCC
CUM-2: Cumulative Impacts on Biological Resources	S	Mitigation Measures BIO-1 through BIO-13	NCC
CUM-3: Cumulative Impacts on Hydrology and Water Quality	S	None	NCC
CUM-4: Cumulative Impacts on Noise and Vibration	S	Mitigation Measure NOI-1	CC
CUM-5: Cumulative Impacts on Traffic Patterns and Safety Hazards	S	Mitigation Measure TRA-1	NCC

S = Significant; NCC = Not Cumulatively Considerable; CC = Cumulatively Considerable

Impact CUM-1: Cumulative Impacts on Air Quality (Not Cumulatively Considerable)

As described in Section 3.3.<u>4</u>, <u>*Impact Analysis*,</u> ~~*Air Quality*,~~ emissions related to construction ~~and operation~~ of the proposed project would <u>result in emissions of NO_x above the established BAAQMD thresholds.</u> ~~not violate an air quality standard or make a substantial contribution to existing air pollution. According to the BAAQMD's established mass emissions thresholds of significance (BAAQMD 2010), projects emitting less than the project-level significance thresholds for construction and operational impacts (identified in Table 3.3-5) would not be expected to result in a considerable contribution to a significant cumulative impact (pertaining to existing regional ozone and PM issues). The significance thresholds that apply to cumulative impacts were developed considering other sources of air pollutants and overall growth of emissions in the air basin.~~

~~At the time of Draft EIR preparation, the BAAQMD was not recommending use of these construction thresholds due to ongoing litigation on unrelated thresholds. However, the District considers these thresholds to be appropriate for use in this analysis because they are based on substantial evidence developed by the BAAQMD as the level to ensure attainment of air quality standards.~~

~~The analysis of proposed project emissions presented in Section 3.3.4, *Impact Analysis*, shows that~~<u>However</u>, with implementation of <u>BMP AQ-1 and</u> Mitigation Measure AQ-1, the BAAQMD's significance thresholds would not be exceeded. Implementation of ~~Mitigation Measure AQ-1~~<u>these measures</u> would ~~further~~ reduce air emissions <u>to</u> ~~and ensure the proposed project's emissions would be reduced to~~ a level such that ~~it~~ <u>the proposed project</u> would not make a considerable contribution to cumulative air quality impacts even when considering the other projects occurring in the area.

Impact CUM-2: Cumulative Impacts on Biological Resources (Not Cumulatively Considerable)

The proposed project could affect biological resources in the Lower Penitencia Creek watershed through habitat alterations or losses. Project activities would involve dry-season channel dewatering, floodwall construction, levee modifications, bench excavations, and bridge headwalls.

As discussed in Section 3.4, *Biological Resources,* the proposed project could adversely affect special-status species or habitat used by special-status species including longfin smelt, Central California Coast steelhead, western pond turtles, burrowing owls, Alameda song sparrow and San Francisco common yellowthroat, salt marsh harvest mouse, special-status bats, and Congdon's tarplant (see Impact BIO-1). Implementation of various District BMPs pertaining to water quality and biological resources would minimize the proposed project's potential impacts on these species. Projects in close proximity to the project area such as the Lower Berryessa Creek Flood Protection Project could also result in impacts on western pond turtles and special-status birds and bats. Construction of the iStar and Waterstone development could also result in adverse effects on special-status birds and bats, resulting in a significant cumulative impact.

As described in Section 3.4, the proposed project would implement a number of mitigation measures to reduce impacts on sensitive habitats and on special-status species, jurisdictional wetlands and other waters, and locally protected trees. Specifically, implementation of Mitigation Measures BIO-1 (Exclude Fish Prior to Dewatering Activities), BIO-2 (Conduct Preconstruction Surveys for Western Pond Turtles and Relocate if Necessary), BIO-3 (Conduct Preconstruction Surveys for Nesting Birds), BIO-4 (Implement Buffer Zones for Nesting Birds), BIO-5 (Develop and Conduct Worker Environmental Awareness Program), BIO-6 (Implement Hand Removal of Vegetation in Reach 1 and Staging Area A), BIO-7 (Install Exclusion Barrier and Conduct Salt Marsh Harvest Mouse Preconstruction Survey), BIO-8 (Salt Marsh Harvest Mouse Habitat Monitoring Plan), BIO-9 (Conduct Focused Preconstruction Survey for Congdon's Tarplant), BIO-10 (Compensate for Congdon's Tarplant Impacts), BIO-11 (Clean Construction Equipment), and BIO-12 (Dispose of Invasive Plants) would ensure the proposed project's contribution to cumulative impacts on special-status species would not be cumulatively considerable.

The proposed project would also result in temporary and permanent effects on jurisdictional wetlands and/or other waters of the U.S./state throughout all four reaches of Lower Penitencia Creek (see Impact BIO-3). The Lower Berryessa Creek Flood Protection Project, located upstream of the proposed project, would involve similar in-channel improvements and result in impacts on jurisdictional wetlands and other waters of the U.S./state. The Upper Berryessa Creek Flood Protection Project, located about two miles upstream of the proposed project would impact other waters of the U.S./state. Collectively, these projects could result in a significant cumulative impact on wetlands and other waters of the U.S./state. The proposed project includes creation of a wetland bench that would planted with native plants to create a tidal wetlands habitat. Mitigation Measure BIO-13 (Wetlands and Jurisdictional Waters Monitoring Plan and Contingency Actions) would ensure that the wetland bench supports ecological functions of wetland vegetation and the proposed project's contribution to cumulative impacts to jurisdictional wetlands and other waters of the U.S./state would not be cumulatively considerable.

The project would remove about 33~~22~~ trees with dbh of 6 inches or greater from the ~~sparse riparian canopy~~top of bank along Reaches 2, 3, and 4 of the project area. The Lower and Upper Berryessa Creek projects would also remove a number of ~~riparian~~ trees, adding to the cumulative impact on ~~riparian habitat~~trees protected under the City's tree ordinance. The proposed project would plant replacement trees in conformance with the City's tree protection ordinance; thereby ensuring that the proposed project would not make a cumulatively considerable contribution to cumulative impacts on ~~riparian~~protected trees.

Impact CUM-3: Cumulative Impacts on Hydrology and Water Quality (Not Cumulatively Considerable)

As described in Section 3.8, *Hydrology and Water Quality*, project design includes creation of a wetland bench in Reach 1 which would provide storage for flood waters and increased areas of tidal wetlands that would have a beneficial effect on water quality. The project would also continue existing drainage patterns while reducing flood risks. The elimination of flood waters overtopping the creek banks during the 1% flow event would prevent flood waters washing of large amounts of pollutants from flooded urban areas into Lower Penitencia Creek, Coyote Creek, and South San Francisco Bay. Thus, the project would improve water quality of the water bodies during periodic high creek flows, which would increase in the future due to improvements under construction to Upper and Lower Berryessa Creek, which is the largest tributary to Lower Penitencia Creek. The proposed project would divert creek water around the work areas within the channel, and would discharge that water only if it would meet discharge standards, thereby preventing adverse effect on the quality of receiving waters. Additionally, the proposed project would implement a SWPPP to prevent discharge of substantial pollutants during project construction. The District would implement a number of BMPs to prevent release of pollutants to the creek, ensure proper handling of materials, and prohibit activities in the creek channel (e.g., vehicle fueling or maintenance) which would protect water quality. The proposed project would not make a cumulatively considerable contribution to cumulative impacts on water quality.

As described in Section 4.3.1, above, a significant cumulative impact related to hydrology would occur as the Lower and Upper Berryessa Creek projects would increase the 1-percent flow from 4,830 cfs to 6,900 cfs. Without the proposed project, Lower Penitencia Creek would not have the capacity to convey the 1-percent flood event and flood hazards would increase in the project vicinity. The proposed project would increase the capacity of Lower Penitencia Creek to convey increased 1-percent flows from the improved Upper and Lower Berryessa Creek without overtopping of the Lower Penitencia Creek banks. In addition, the project would extend flood protection benefits from the upper watershed projects downstream to the Lower Penitencia Creek and Coyote Creek confluence. The Coyote Creek channel downstream of the project area has sufficient flow conveyance capacity to accommodate the combined 1% flows of Lower Penitencia and Coyote Creek. Therefore, construction and operation of the proposed project would not increase downstream flood hazards. The proposed project's contribution to cumulative hydrologic impact would not be cumulatively considerable.

Impact CUM-4: Cumulative Impacts on Noise and Vibration (Cumulatively Considerable)

As described in Section 3.11, *Noise,* project construction activities would generate noise that would exceed FTA noise exposure thresholds and the City's General Plan Policy (6-I-1) which calls for avoiding noise level increases of 3dB or more than 65 dB L_{dn} at residential property lines ~~for nearby residential uses~~. Noise generated during construction of the proposed project would also contribute to the ambient noise environment and would result in a temporary increase in community noise levels that would exceed the City's General Plan Policy G-I-1 for community noise exposure of residential uses. Construction would also cause vibration exceeding annoyance levels at nearby residences, but would not cause damage to those structures. Because noise and vibration impacts are localized, affecting only the receptors in the immediate vicinity, and because construction of the project would occur for a short duration (up to 4 months at a given location), no individual receptor would be exposed to excessive noise or vibration levels from construction for an extended period. The following projects would be located within 0.25 mile of the project site and could be under construction simultaneously with the proposed project: the Waterstone Residential Project, iStar Residential Project, Springhill Marriott, and Holiday Inn/ 1100 Cadillac Court. Construction of these projects would generate noise exceeding FTA thresholds and the City's thresholds for residential noise exposure and would result in significant temporary increases in ambient noise. Cumulative noise impacts would be significant. Implementation of Mitigation Measure NOI-1 (Implement Noise- and Vibration-reducing Measures) would minimize noise and vibration impacts associated with construction of the proposed project. However, because that measure would not reduce construction noise generated by the project to below the FTA threshold for exposure of residential uses, would likely cause a 3 dB L_{dn} or more increase in ambient noise levels at the property lines of nearby residential properties, and the project would temporarily result in a substantial increase in ambient noise levels above existing noise levels, construction of the proposed project would result in a temporary but cumulatively considerable contribution to significant cumulative noise impacts.

Impact CUM-~~6~~5: Cumulative Impacts on Traffic Patterns and Safety Hazards (Not Cumulatively Considerable)

Project construction would generate trips on several roadways within the project area, primarily in Milpitas, from materials hauling and worker commute trips. Construction trip generation is presented in Table 3.13-2 in Section 3.13, *Transportation and Traffic.* As shown in Table 3.13-5, construction trips generated by the project would not result in a degradation of LOS at any of the study area intersections. This table also shows that construction of the proposed project along with other approved projects (including the Springhill Marriot Suites, Holiday Inn Suites at 1100 Cadillac Court, Waterstone Residential, and iStar Residential Projects) would result in acceptable LOS at the study area intersections.

There is a possibility that the presence of slow-moving vehicles and equipment associated with both the proposed project and other projects could result in temporary safety hazards on local roads. This would be a significant cumulative impact. Implementation of Mitigation Measure TRA-1 (Traffic Control Plan), would minimize traffic safety hazards on local roads, including San Andreas Drive, where capacity would be temporarily reduced during construction of the San Andreas Drive bridge headwall. With implementation of this mitigation measure, the proposed project's contribution to this cumulative impact would not be cumulatively considerable.

4.4 Significant and Unavoidable Impacts

Section 15126.2(b) of the State CEQA Guidelines requires an EIR to describe any significant impacts that cannot be mitigated to a less-than-significant level. All of the impacts associated with the proposed project would be reduced to a less-than-significant level through the implementation of identified mitigation measures and BMPs, with the exception of the impacts discussed below. The following impacts have been identified as significant and unavoidable:

- Exposure of persons to or generation of noise levels in excess of standards established in excess of standards established in the local general plan or noise ordinance or, in the applicable standards of other agencies (Impact NOI-1)
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels (Impact NOI-2)
- Substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (Impact NOI-4)

In addition to the significant and unavoidable impacts described above, the project would make a cumulatively considerable contribution to significant cumulative noise impacts during project construction.

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Chapter 5
ALTERNATIVES

This chapter describes the regulatory requirements for evaluating alternatives in an EIR, presents the alternatives development process for the proposed project, describes the alternatives considered and those considered but dismissed from detailed analysis, provides environmental impact analysis of the alternatives considered, presents a comparison of alternatives, and identifies the environmentally superior alternative.

5.1 Regulatory Requirements

CEQA requires that an EIR evaluate a reasonable range of potentially feasible alternatives to the proposed project, including the No Project Alternative. The No Project Alternative allows decision makers to compare the impacts of approving the action against the impacts of not approving the action. Although no clear rule exists for determining a reasonable range of alternatives to a proposed project, CEQA provides guidance that can be used to define the range of alternatives for consideration in the environmental document.

The alternatives described in an EIR must feasibly accomplish most of the basic project objectives, should reduce or eliminate one or more of the significant impacts of the proposed project (although the alternative could have greater impacts overall), and must be potentially feasible (State CEQA Guidelines Section 15126.6[a]). In determining whether alternatives are potentially feasible, Lead Agencies are guided by the general definition of feasibility found in State CEQA Guidelines Section 15364: "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." In accordance with State CEQA Guidelines Section 15126.6(f), the Lead Agency should consider site suitability, economic viability, availability of infrastructure, general plan consistency, other regulatory limitations, and jurisdictional boundaries in determining the feasibility of alternatives to be evaluated in an EIR. An EIR must briefly describe the rationale for selection and rejection of alternatives and the information that the Lead Agency relied on in making the selection. It also should identify any alternatives that were considered by the Lead Agency but were rejected as infeasible during the scoping process and briefly explain the reason for their exclusion (State CEQA Guidelines Section 15126.6[c]).

An EIR's analysis of alternatives is required to identify the environmentally superior alternative among all those considered (State CEQA Guidelines Sections 15126.6[a] and 15126.6[e][2]). If the "no project" alternative is identified as the environmentally superior alternative, then the EIR must also identify an environmentally superior alternative amongst the other (action) alternatives.

These guidelines were used in developing and evaluating the alternatives as described below.

5.2 Alternatives Development Process

The proposed project's purpose and objectives, as well as its significant environmental impacts, were considered while developing alternatives to the proposed project. In accordance with the requirements of CEQA, alternatives were developed that would achieve most of the proposed project's basic objectives while reducing one or more of its significant adverse environmental impacts. Alternatives development was also based on feasibility. As described in Chapter 2, *Project Description,* throughout the District's Natural Flood Protection (NFP) evaluation process, the District evaluated three potentially feasible design alternatives in addition to Design Alternative 2A, which was further refined to develop the proposed project. This chapter includes an evaluation of those modified design alternatives.

5.2.1 Project Goals and Objectives

The following goals and objectives are the same as those set out in Section 2.2 in Chapter 2, *Project Description*. The primary objective of the proposed project is to convey the increased flows from the improved Upper and Lower Berryessa Creeks to Coyote Creek without overtopping of the banks.

Specific project objectives are as follows:

- Convey the Lower Berryessa Creek 1-percent design flow;
- Meet required water surface elevations at the confluences of Lower Penitencia Creek with Coyote Creek and Berryessa Creek;
- Minimize the need for seasonal removal of sediment and non-woody vegetation;
- Maintain existing FEMA accreditation of the east levee located between California Circle and Berryessa Creek; and
- Ensure the project improvements meet FEMA certification requirements.

Alternatives were developed to meet most of the specific objectives listed above.

5.2.2 Significant Environmental Impacts of the Proposed Project

A number of project impacts have been identified as significant, but would be mitigated to a level of less-than-significant through implementation of mitigation measures. The proposed project would result in significant but mitigable impacts related to; biological resources; geology, soils, and seismicity; hazards and hazardous materials; and transportation and traffic. These impacts are listed in Table ES-1 in the *Executive Summary* of this ~~D~~EIR.

5.2.3 Significant and Unavoidable Environmental Impacts of the Proposed Project

The following impacts have been identified as significant and unavoidable:

- Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance or, in the applicable standards of other agencies (Impact NOI-1)

- Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels (Impact NOI-2)

- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (Impact NOI-4)

In addition to the significant and unavoidable impacts described above, the project would make a cumulatively considerable contribution to significant cumulative noise impacts during project construction.

5.3 Alternatives Considered

The following alternatives were considered for the proposed project:

- No Project Alternative
- Alternative 1: Reach 1 Raised Levee, Floodwalls, and Ongoing Sediment Removal
- Alternative 2: Reach 1 Raised Setback Levee, Reaches 1 and 3 Wetland Benches, and Floodwalls
- Alternative 3: Reach 1 Raised Levee, Reach 3 Concrete Channel Lining, and Floodwalls

The proposed project corresponds to Design Alternative in the District's the Staff-Recommended Alternative Report (SCVWD 2015). Alternatives 1, 2, and 3 in this EIR correspond to e design alternatives in the Staff-Recommended Alternative Report as follows:

- EIR Alternative 1 = Design Alternative 1
- EIR Alternative 2 = Design Alternative 4
- EIR Alternative 3 = Design Alternative 6

These alternatives use different combinations and sizes of channel improvements to feasibly obtain the project objectives. During the District's NFP evaluation process, described in the PSR, the District determined that Design Alternative 2A would best meet the project objectives. This design alternative was then further refined to create the proposed project. **Table 5-1** summarizes the key components of the proposed project and each EIR alternative; the following sections describe characteristics of each alternative and generally describe the impacts associated with each alternative relative to the proposed project.

Table 5-1. Summary of Proposed Project and Characteristics of EIR Alternatives by Project Reach

Project/Alternative	Reach 1 Coyote Creek to I-880	Reach 2 I-880 to California Circle	Reach 3 California Circle to Milmont Drive	Reach 4 Milmont Drive to San Andreas Drive	San Andreas Drive Bridge
Proposed Project	▪ Relocate and raise south bank levee by up to 4 ft ▪ Wetland bench along south bank ▪ <u>50-foot-long section of floodwall on the north bank</u>	▪ 6-ft-tall floodwall on south bank <u>and a 25-foot-long section of floodwall on the north bank</u> ▪ Removal of 70 cy of sediment during construction	▪ 5.5-ft-tall floodwalls on both banks ▪ Earthen ramps on top of levee that cross over floodwall and connect to existing Penitencia Creek Trail ▪ Removal of 1,500 cy of sediment during construction	▪ Up to 6-ft-tall floodwall on west bank ▪ Levee raised by up to 6 ft on east bank ▪ Removal of 730 cy of sediment during construction	▪ Headwalls on the downstream and upstream faces of bridge
No Project Alternative	No improvements	No improvements	No improvements	No improvements	No improvements
Alternative 1 (Reach 1 Raised Setback Levee, Floodwalls, and Ongoing Sediment Removal)	▪ Raise south bank levee by up to 4 ft	▪ 6-ft-tall floodwalls	▪ 4-ft-tall floodwalls on both banks	▪ 5-ft-tall floodwalls on both banks	▪ Headwalls on the downstream and upstream faces of bridge
Alternative 2 (Raised Setback Levee, Reaches 1 and 3 Wetland Benches, and Floodwalls)	▪ Relocate and raise south bank levee by up to 4 ft. ▪ Wetland bench along south bank	▪ 5-ft-tall floodwall on south bank	▪ 3.5-ft-tall floodwall (up to 18.5 ft tall when viewed from channel interior) on west bank ▪ 25- to 45-ft-wide Wetland bench and depressed channel access road on west bank	▪ 3-ft-tall floodwalls on both banks	▪ Headwalls on the downstream and upstream faces of bridge

Project/Alternative	Reach 1 Coyote Creek to I-880	Reach 2 I-880 to California Circle	Reach 3 California Circle to Milmont Drive	Reach 4 Milmont Drive to San Andreas Drive	San Andreas Drive Bridge
			▪ Depressed in-channel maintenance road on west bank		
Alternative 3 (Reach 1 Raised Levee, Reach 3 Concrete Channel Lining, and Floodwalls)	▪ Raise south bank levee by up to 4 ft	▪ 5.5-ft-tall floodwall on south bank	▪ 4-ft-tall floodwalls on both banks ▪ Excavate and remove central berm ▪ Line channel with concrete	▪ 3-ft-tall floodwalls on both banks	▪ Headwalls on the downstream and upstream faces of bridge

5.3.1 No Project Alternative

Characteristics of this Alternative

Under the No Project Alternative, no new construction activities would occur. In Reach 1, the south levee would not be relocated or raised and no wetland bench would be constructed. Floodwalls would not be constructed in Reaches 1, 2, 3, or 4 and headwalls would not be added to the San Andreas Drive bridge. Ongoing maintenance activities, including sediment removal and vegetation management currently ongoing under the District's SMP, would continue in the future. This alternative would not meet the proposed project's primary objective of conveying Lower Penitencia Creek's 1-percent design flow (described further below), would not meet the required water surface elevations at the confluences with Coyote and Lower Berryessa creeks, would not maintain certification of the east levee or meet FEMA certification standards. Additionally, the alternative would not minimize the need for removal of sediment and non-woody vegetation

Impact Analysis

The No Project Alternative would avoid all of the impacts associated with construction of the proposed project because no construction or ground disturbing activities would occur, and maintenance of the channel would continue under the SMP. These include temporary noise and ground-borne vibrations in proximity to sensitive receptors, air pollutant emissions from construction equipment and vehicles, temporary impacts on water quality, traffic delays, effects on wetland habitat and special-status species, and impacts on other biological resources. Significant and unavoidable impacts related to noise and ground-borne vibration effects on nearby residences resulting from the proposed project would be avoided. In addition, significant but mitigable impacts to air quality, biological resources, geology and soils, hazardous materials, and traffic and resulting from the proposed project would be avoided. Future maintenance of the channel would continue under the District's SMP and sediment removal would occur more frequently than under the proposed project, resulting in periodic disturbance of aquatic and riparian habitat that would be greater than if the proposed project were implemented. Additionally, the enhancements to Reach 1 tidal wetlands included in the proposed project would not be achieved, and the current degraded and isolated conditions of Reach 1 wetlands, which provide marginal habitat value, would continue indefinitely.

Under the No Project Alternative, the existing flood management infrastructure within Lower Penitencia Creek would continue to function and convey the current 1-percent (or 100-year) design discharge of 4,830 cfs. However, because USACE's Upper Berryessa Creek Flood Risk Management Project and the District's Lower Berryessa Creek Flood Protection Improvements Project will increase upstream conveyance capacity, larger flows will be conveyed to Lower Penitencia Creek after construction of those two projects is completed. Lower Penitencia Creek's 1-percent flow is projected to increase to an estimated 6,900 cfs after completion of the Lower and Upper Berryessa Creek projects. Lower Penitencia Creek would lack capacity to convey those increased flows during the 100-year discharge event under the No Project Alternative. In the event of a 100-year flood event, the No Project Alternative would likely result in substantial flood damage to nearby land uses, including residential, office space, the District's maintenance roads, nearby public roads, I-880, and the Penitencia Creek Trail. Flood damage and subsequent clean-up efforts could result in significant environmental effects, including erosion; adverse water quality effects; and impacts on biological resources, cultural resources, traffic and circulation, noise, air quality, recreational resources, and utilities and service systems.

5.3.2 Alternative 1: Reach 1 Raised Levee, Floodwalls, and Ongoing Sediment Removal

Characteristics of this Alternative

Under Alternative 1, which is Design Alternative 1 in the District's PSR, the south bank levee in Reach 1 would be raised by about 4feet (similar to the project) but would not be relocated, which would prevent creation of a wetland bench in Reach 1. Floodwalls would be constructed in Reaches 2, 3, and 4 and would be of similar height as those for the proposed project. Similar to the proposed project, headwalls would be constructed on the downstream and upstream sides of the existing San Andreas Drive bridge to prevent backwater from overtopping the bridge structure and flowing into neighboring residential neighborhoods during the 1-percent design flow. Maintenance for Alternative 1 would involve periodic sediment removal in Reaches 2 and 4, which would be more frequent than under the proposed project. As with the proposed project and similar to existing conditions, other routine maintenance activities would involve vegetation management along the channel and periodic maintenance and repair for the floodwalls and San Andreas Drive bridge headwalls.

The primary difference between this alternative and the proposed project is that the Reach 1 replacement levee would not be setback from the creek and a wetlands bench would not be created in Reach 1. Alternative 1 would meet the primary objective of conveying Lower Penitencia Creek's 1-percent design flow, would meet the required water surface elevations at the confluences with Coyote and Lower Berryessa creeks, would maintain certification of the east levee, and would meet FEMA certification standards. However, this alternative would not minimize the need for removal of sediment and non-woody vegetation.

Impact Analysis

Alternative 1 would be anticipated to have fewer construction impacts associated with relocating the replacement levee and constructing the wetland bench in Reach 1 than the proposed project. Alternative 1 would have less potential to disturb special-status species and habitat used by special-status species in this area. Temporary impacts on aquatic resources would also be reduced because Reach 1 construction would mostly or completely avoid disturbance of the seasonal wetlands on the south bank.

Alternative 1 would result in similar construction-related impacts as the proposed project, including temporary transportation and traffic impacts, use of hazardous materials, air emissions, noise and vibration, and impacts on hydrology and water quality. Alternative 1 also would increase operational impacts associated with increased sediment removal in Reaches 2 and 4 compared to the proposed project. These would include emissions from operation of excavation equipment and impacts on biological resources and water quality. Future maintenance of the channel would continue under the District's SMP and sediment removal would occur more frequently than under the proposed project because the project is designed to accommodate greater accumulation of sediment before removal is required. More frequent sediment removal would result in periodic disturbance of aquatic and riparian habitat that would be greater than if the proposed project were implemented. Additionally, the enhancements to Reach 1 tidal wetlands included in the proposed project would not be achieved, and the current degraded and isolated conditions of Reach 1 wetlands, which provide marginal habitat value, would continue indefinitely.

5.3.3 Alternative 2: Reach 1 Raised Setback Levee, Reaches 1 and 3 Wetland Benches, and Floodwalls

Characteristics of this Alternative

Under Alternative 2, identified as Design Alternative 4 in the PSR, the south bank levee in Reach 1 would be relocated and raised by about 4 feet, which would create space for establishing a 50-foot-wide wetland bench immediately south of the existing channel (same as the proposed project). Floodwalls would be constructed in Reaches 2, 3, and 4. Floodwalls would be about 5 feet tall in Reach 2 and 3-3.5 feet tall in Reach 4. In Reach 3, the west bank floodwall would have a total height of 18.5 feet when viewed from inside the channel, but it would be partially below grade and extend about 4 feet above the existing levee. Since the existing levee would be removed, a new depressed maintenance road would be required within the creek channel at the base of the levee, and because the road would be exposed to creek flows, it would have to be surfaced with articulated concrete blocks, adding about 1.2 acres of new hardscape to the channel. This alternative would create enhanced tidal wetlands in Reach 1, similar to the proposed project. In Reach 3, a 25- to 45-foot-wide wetland bench and depressed channel access road would be constructed within the west side of the channel. Wetland vegetation would be planted in the bench. The channel access road would be located between the floodwall and the wetland bench.

The primary differences between Alternative 2 and the proposed project are as follows: (1) the west bank floodwall in Reach 3 for Alternative 2 would be substantially taller (when viewed from inside the channel) than the floodwall proposed as part of the project; (2) Alternative 2 would include a wetland bench in Reach 3, which is not part of the proposed project; and (3) an in-channel maintenance road would be built at the base of the west bank floodwall in Reach 3. Alternative 2 would meet the primary objective of conveying Lower Penitencia Creek's 1-percent design flow, would meet the required water surface elevations at the confluences with Coyote and Lower Berryessa creeks, would maintain certification of the east levee, and would meet FEMA certification standards.

Impact Analysis

Compared to the proposed project, Alternative 2 may result in similar or greater impacts to aesthetic resources due to the taller floodwall on the west bank of Reach 3. Although the Reach 3 floodwall would only be 4 feet tall when viewed from areas outside the channel, due to construction of the wetland bench and depressed access road, it would be about 18.5 feet tall when viewed from within the channel or from the Penitencia Creek Trail on the east bank of the creek. This could result in greater visual impacts. Recreationists using the Penitencia Creek Trail would have unobstructed views of the taller floodwall and armored maintenance road at its base. The vegetation in the Reach 3 wetland bench would contribute to the aesthetic enjoyment for recreationists using the Penitencia Creek Trail.

The increased hardscape in the channel due to the Reach 3 floodwall and depressed maintenance road could result in increased pollutant flows to the creek, adversely affecting water quality. This would be partially offset by the wetland bench between the road and the creek channel, which would help to filter pollutants from storm runoff before they reach the creek.

Alternative 2 also would have greater construction-related impacts than the proposed project due to construction of the depressed maintenance road and wetland bench in Reach 3, which would require substantially more excavation than the proposed project. Additionally, because the floodwall would be much taller than the floodwall proposed as part of the project, it may require a pile foundation, which would increase the amount of noise and vibration affecting residences located west of Reach 3 during construction. Alternative 2 would exacerbate the significant and unavoidable construction-related noise and vibration impacts resulting from the proposed project. Construction of the taller floodwall and depressed maintenance road components would result in increased haul truck trips (due to excavation and importing of construction materials) and therefore increased traffic impacts during construction. The excess soil generated by this alternative would be greater than for the proposed project; therefore, this alternative would exacerbate project-related impacts with regard to solid waste disposal. This alternative would also result in greater air emissions and noise impacts from operating equipment and vehicles.

The increased hardscape would replace existing aquatic and riparian habitat located on the side slope and base of the existing earthen levee which would be removed. Once construction is complete, Alternative 2 would create more wetland habitat than the proposed project. The wetland bench in Reach 3 would be planted with native species adapted to tidal conditions and may provide habitat for common and special-status species. Up to 3 acres of wetland vegetation would be established in this reach. This would be partially offset by the elimination of the Reach 3 central berm, which provides existing riparian habitat and would be retained by the proposed project.

5.3.4 Alternative 3: Reach 1 Raised Levee, Reach 3 Concrete Channel Lining, and Floodwalls

Characteristics of this Alternative

Under Alternative 3, identified as Design Alternative 6 in the District's PSR (SCVWD 2016), the south levee in Reach 1 would be raised by up to 4 feet but would not be relocated. Floodwalls would be constructed in Reaches 2, 3, and 4; the floodwall in Reaches 3 and 4 would be substantially shorter than the proposed project floodwalls. In Reach 3, the central berm would be excavated and removed. Throughout the entire length of this reach, the channel would be lined with concrete (trapezoidal shape, 1:1 side slopes). Increased maintenance activities would be required for graffiti removal the amount of exposed concrete would be substantially greater than for the proposed project. in Reach 3. However, this alternative would reduce vegetation management activities compared to the proposed project and existing conditions. As for the proposed project, headwalls would be constructed on the downstream and upstream sides of the existing San Andreas Drive bridge to prevent backwater from overtopping the bridge structure and flowing into neighboring residential neighborhoods during a 1-percent flood event.

The primary differences between Alternative 3 and the proposed project are as follows: (1) the Reach 1 levee would not be relocated and a wetland bench would not be constructed for Alternative 3; (2) the central berm in Reach 3 would be removed and replaced by a concrete-lined channel; Alternative 3 would meet the primary objective of conveying Lower Penitencia Creek's 1-percent design flow, would meet the required water surface elevations at the confluences with Coyote and Lower Berryessa creeks, would maintain certification of the east levee, and would meet FEMA certification standards. This alternative would only partially meet objective to minimize the need for removal of sediment and non-woody vegetation. Alternative 2 would minimize vegetation removal because about 8 acres of vegetation would be permanently replaced with concrete lining, but the need for future sediment removal would not be minimized.

Impact Analysis

This alternative would reduce impacts associated with relocation of the replacement levee in Reach 1 and the construction of a wetland bench in Reach 1, which would occur under the proposed project. Because Alternative 3 would not include these features, which would involve substantial excavation and ground disturbance, it would avoid impacts on buried cultural resources and biological resources, including aquatic habitats and special-status species. However, it also would not realize the beneficial biological resources impacts from creating wetland habitat within the Reach 1 wetland bench. Additionally, concrete lining of Reach 3 would replace about 8 acres of existing aquatic and riparian habitat with concrete ling. The 8-acre increase in hardscape within the channel would have adverse effects on water quality as the pollutant-filtering properties of a natural vegetated channel bottom would be eliminated. Increased concrete lining would tend to raise water temperatures, which would diminish the channel's habitat value for aquatic special-status species such as longfin smelt.

Alternative 3 would result in greater construction-related traffic, noise, vibration, and air quality impacts due to excavation and removal of the Reach 3 berm and installing concrete lining in the Reach 3 channel. These activities would require substantially more haul truck trips in comparison to the proposed project. Lining the channel with concrete also would result in loss of about 8 acres riparian and aquatic habitat throughout Reach 3, most of which occurs on the berm and some of which is used by special-status species; this would adversely affect the ecological functions the existing creek channel may provide.

5.4 Alternatives Considered and Dismissed

The following alternatives were considered, but ultimately were dismissed from further analysis for one or more of the following reasons: (1) an alternative would not sufficiently meet most of the proposed project objectives; (2) an alternative was determined to be infeasible; (3) an alternative would not avoid or substantially reduce one or more significant impacts of the proposed project; (4) an alternative is closely similar to the proposed project; and/or (5) another similar alternative has been evaluated in detail in this EIR.

- **Conceptual Design Alternative 7: Off-Stream Detention Basin.** This alternative would involve constructing an off-stream detention basin. Based on future1-percent design flow of approximately 6,900 cfs on Lower Penitencia Creek at the Lower Berryessa Creek confluence, approximately 650 acre-feet of water would need to be detained. The RWQCB suggested this alternative in comment 5 of its EIR scoping comment letter dated July 28, 2015 (see Appendix A).

This alternative would require 43-65 acres of land near the creek to create a detention basin with a depth of 10-15 feet that would contain 650 acre-feet of flood water. In addition, this alternative would require acquisition of substantial amount of land, demolition of large numbers of existing structures, and possibly relocation of residents and/or businesses. Additionally, this alternative would require far more earth movement than the proposed project and would result in greater construction noise impacts than the proposed project. For both the proposed project and this alternative, construction noise impacts would be significant and ~~and~~ unavoidable, but the impact would be more severe for this alternative. Similarly, this alternative would result in significant impacts to air quality, and traffic that would be more severe than for the proposed project. The cost to implement this alternative would far exceed the project budget and this alternative was determined infeasible (SCVWD 2016).

- **Conceptual Design Alternative 8: Bypass Channel to Coyote Creek.** Under this alternative, a 2,500-foot-long bypass channel would be constructed across McCarthy Ranch Boulevard, I-880, and Cadillac Court. This bypass channel would also cross four privately owned parcels, three of which have been developed with commercial buildings and parking lots. Given the high value of land in Silicon Valley, it would be very costly for the District to successfully acquire these four parcels at a reasonable cost, which could possibly include relocating these businesses. This alternative would require breaching of the Coyote Creek and Lower Penitencia Creek levees. It would also require easements to tunnel below existing residential and industrial developments, as well as I-880. The feasibility of this alternative may also be constrained due the presence of important underground utility lines. Based on preliminary evaluation, this alternative could result in adverse thermal effects on fish habitat as water is discharged from a bypass to Coyote Creek (which has been designated as critical habitat for California Central Coast steelhead). For ~~this~~these reasons, and because this alternative would result in greater construction impacts (due to excavation) and potentially greater impacts on residential and commercial uses, the bypass channel alternative was dismissed from further consideration (SCVWD 2016).
- **Conceptual Design Alternative 9: Annual Sediment Removal.** Under this alternative, sediment would be removed from the channel on an annual basis. This alternative would not meet the primary objective of conveying Lower Penitencia Creek's 1-percent design flow, would not meet the required water surface elevations at the confluences with Coyote and Lower Berryessa creeks, would not maintain certification of the east levee, and would not meet FEMA certification standards. This alternative would also not meet the objective to minimize the need for removal of sediment and non-woody vegetation. In addition, the annual removal of sediment and vegetation growing on it would result in substantial periodic disruption of the ecosystem. Additionally, dewatering of the creek during the dry season is required to remove sediment, and would dry out the creek for several months. The disruption and drying of the creek would stress the ecosystem. Full regrowth of vegetation generally takes more than one year, thus annual sediment removal would prevent full revegetation of the creek channel. By conducting such work on an annual basis, only poor-quality habitat would develop. For these reasons, this alternative was dismissed from further consideration (SCVWD 2016).

- **Geomorphic Channel Planted with Woody Riparian Trees and Reduced Channel Access Roads;** The RWQCB suggested this project alternative in comment 6 of its EIR scoping comment letter of July 28, 2015 (See Appendix A). This alternative would result in a wooded stream channel with higher roughness coefficients than the existing channel or the channel that would be constructed by the proposed project. Higher roughness values would decrease the flow capacity of the channel and prevent the channel from accommodating the design 1% flow, without either enlarging the channel or substantially constructing substantially higher floodwalls to convey the design flow. It is uncertain if the channel could be enlarged sufficiently or if floodwalls could be constructed of sufficient height to meet the project objectives of conveying Lower Penitencia Creek's 1-percent design flow and meeting the required water surface elevations at the confluences with Coyote and Lower Berryessa creeks. If the design flow cannot be met, this alternative would not maintain certification of the east levee, and would not meet FEMA certification standards. It is unlikely that this alternative would meet the project objective focused on minimizing the need for removal of sediment and non-woody vegetation, as the entire project reach is tidal and even a geomorphic channel would be subject to ongoing deposition of tidal sediment.

  Enlarging the channel in Reaches 2, 3, and 4 would require the acquisition of substantial amounts of existing developed real estate and would be cost-prohibitive. In addition, enlarging the channel alternative would require substantially more earth movement than the proposed project and would result in greater construction noise impacts than the proposed project. For both the proposed project and this alternative, construction noise impacts would be significant and unavoidable, but the noise impacts would be more severe under this alternative. Similarly, this alternative would result in significant impacts to air quality, and traffic that would be more severe than for the proposed project.

  As this alternative would require taller floodwalls than the proposed project, the floodwalls would result in substantially greater impacts than the project with respect to aesthetics, air quality, construction noise and vibration, and hazards and hazardous materials. ~~Because this alternative would increase the severity of significant and unavoidable noise and vibration impacts, this alternative would not meet the District's responsibility to reduce and/or eliminate significant environmental impacts and was rejected by the District.~~ Additionally, this alternative would cost more to implement than the proposed project because floodwalls are relatively expensive to construct and construction costs increase significantly with increased wall height.

  This alternative would result in decreased long-term impacts to biological resources as it would restore or enhance more aquatic and riparian habitat than the proposed project. However, compared to the proposed project, this alternative would exacerbate significant environmental impacts pertaining to air quality, hydrology and water quality, construction noise and vibration, and traffic and transportation. For those reasons, this alternative was rejected.

5.5 Comparison of Alternatives and Environmentally Superior Alternative

CEQA does not provide a definition for the environmentally superior alternative; however, CEQA Guidelines Section 15126.6(e)(2) states that if the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. For the purposes of this analysis, the

environmentally superior alternative is considered to be that alternative with the least adverse environmental impacts on the project area and its surrounding environment. The identification of the environmentally superior alternative considers the relative degree of significant impacts, as well as the relative degree of environmental benefit associated with each alternative as compared with the proposed project. The paragraphs below discuss and compare the environmental findings of the analyzed alternatives relative to one another and the proposed project.

The No Project Alternative would not meet the proposed project's primary objective of conveying Lower Penitencia Creek's 1-percent design flow (described further below), would not meet the the required water surface elevations at the confluences with Coyote and Lower Berryessa creeks, would not maintain certification of the east levee or meet FEMA certification standards. Additionally, the alternative would not minimize the need for removal of sediment and non-woody vegetation.

In the event of a 100-year flood event, the No Project Alternative could result in substantial impacts related to erosion, water quality, biological resources, and recreation. Clean-up efforts could result in other impacts related to temporary traffic, noise, and air quality emissions. Although the extent of such effects is undetermined at this time, the potential damage to surrounding land uses is considered severe and worse than environmental impacts associated with the action alternatives. For this reason, the No Project Alternative is not considered environmentally superior.

Alternative 1 would meet most of the project objectives. When compared to the proposed project or Alternative 2, Alternative 1 would result in less severe construction-related impacts since less earth-moving activities would take place. In the long-term, Alternative 1 would require more frequent sediment removal work in Reaches 2 and 4, and therefore result in somewhat greater operational impacts on air quality, traffic, noise, biological resources, and water quality relative to Alternative 2. Significant impacts on air quality, traffic, noise and vibration, biological resources, water quality, and aesthetics would not be reduced under this alternative.

Alternative 3 would meet most of the project objectives. As with Alternative 1, this alternative would have fewer air quality, traffic, and noise impacts in Reach 1 because no levee relocation work would occur. However, because concrete lining of the channel is expected to require substantially more haul truck trips, this alternative would likely have greater air quality, traffic, hazard and hazardous materials, and noise and vibration impacts than the proposed project or Alternative 1. This alternative would also result in significant impacts on biological resources, including the loss of riparian habitat currently found throughout the central berm in Reach 3 and substantially greater impacts on water quality, including increased water temperature, due to the concrete lining of Reach 3. Significant impacts on air quality, traffic, noise and vibration, biological resources, aesthetics, and water quality would not be reduced by Alternative 3.

Among the alternatives considered in this EIR (not including consideration of the proposed project), Alternative 2 is considered the environmentally superior alternative. When considering the proposed project against Alternative 2, however, the proposed project is environmentally superior. Alternative 2 would permanently create greater wetlands in the project area than the proposed project, but would also result in permanent removal of more riparian habitat and creation of more in-stream hardscape than the proposed project. Alternative 2 would also result in greater construction-related impacts associated with traffic, noise, vibration, hazards and hazardous materials, utilities and service systems, and air quality. While the proposed project would expose of residents to significant and unavoidable construction noise and vibration impacts, Alternative 2 would increase the severity of those impacts.

Chapter 6
REPORT PREPARATION

Santa Clara Valley Water District

5750 Almaden Expressway
San Jose, CA 95118-3686
(408) 265-2600

Madhu Thummaluru	Project Manager
James Manitakos	Associate Water Resources Specialist
Michael Coleman	Environmental Planner II
Bobby Tan	Assistant Engineer II

Horizon Water and Environment, LLC

180 Grand Avenue, Suite 1405
Oakland, CA 94612
(510) 986-1850

Ken Schwarz	Principal-in-Charge
Allison Chan	Project Manager
Janis Offermann	Senior Cultural Resources Specialist
Megan Giglini	Senior Associate
Debra Lilly	Senior Associate
Jennifer Schulte	Senior Associate
Brian Piontek	Associate
Patrick Donaldson	Associate
Johnnie Chamberlin	Analyst

Paul Glendening	Geographer
Ron Teitel	Graphic Artist
Lorrie Jo Williams	Graphic Artist and Word Processor

H.T. Harvey and Associates

983 University Avenue, Building D
Los Gatos, CA 95032
(408) 458-3200

Steve Rottenborn	Senior Wildlife Ecologist
Ginger Bolen	Associate Wildlife Ecologist

Hexagon Transportation Consultants

7901 Stoneridge Drive, Suite 202
Pleasanton, CA 94588
(925) 225-1439

Brett Walinski	Principal Associate
Eric Tse	Associate

Chapter 7
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CHAPTER 1. INTRODUCTION

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CHAPTER 2. PROJECT DESCRIPTION

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Chapter 3. Environmental Setting, Impacts, and Mitigation Measures

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