

PUBLIC REVIEW DRAFT

**INITIAL STUDY/
MITIGATED NEGATIVE DECLARATION**

**LAGUNA CREEK RESTORATION AND FLOOD CONTROL PROJECT
TOWN OF MORAGA, CONTRA COSTA COUNTY, CALIFORNIA**



LSA

June 2021

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ADMINISTRATIVE DRAFT

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MITIGATED NEGATIVE DECLARATION**

**LAGUNA CREEK RESTORATION AND FLOOD CONTROL PROJECT
TOWN OF MORAGA, CONTRA COSTA COUNTY, CALIFORNIA**

Submitted to:

Town of Moraga
329 Rheem Boulevard
Moraga, California 94556

Prepared by:

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Project No. BKF2007



June 2021

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LIST OF ABBREVIATIONS AND ACRONYMS

AAQs	Ambient Air Quality Standards
AB	Assembly Bill
AB 52	Assembly Bill 52
ABAG	Association of Bay Area Governments
ADA	Americans with Disabilities Act
APN	Assessor's Parcel Number
ASR	Alameda striped racer
BAAQMD	Bay Area Air Quality Management District
Basin Plan	Water Quality Control Plan
BERD	Built Environment Resources Directory
BMP	Best Management Practices
CalFire	California Department of Fire and Forestry Protection
California Register	California Register of Historical Resources
CBC	California Building Code
CCSWA	Central Contra Costa Solid Waste Authority
CCCSD	Central Contra Costa Sanitary District
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CGS	California Geological Survey
CH ₄	methane
Clean Air Plan	BAAQMD 2017 Clean Air Plan

CMP	corrugated metal pipe
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalents
CRLF	California red-legged frog
dB	decibel
dBA	A-weighted (sound level) decibels
DWR	California Department of Water Resources
EBMUD	East Bay Municipal Utility District
EFZ	Earthquake Fault Zones
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
GHG	greenhouse gas
GSAs	Groundwater Sustainability Agencies
GSPs	Groundwater Sustainability Plans
GWP	Global Warming Potential
Hacienda	Hacienda de las Flores Park
HFCs	hydrofluorocarbons
IS/MND	Initial Study/Mitigated Negative Declaration
L _{dn}	day-night average level

L _{eq}	equivalent continuous sound level
L _{max}	maximum instantaneous noise level
L _v	velocity in decibels
mgd	million gallons per day
MLD	Most Likely Descendant
MMI	Modified Mercalli Intensity
MOSO	Moraga Open Space Ordinance
MRZ	State Mineral Resource Zone
MTC	Metropolitan Transportation Commission
N ₂ O	nitrous oxide
NAHC	California Native American Heritage Commission
NO ₂	nitrogen dioxide
NO _x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NWIC	Northwest Information Center
Pb	lead
PFCs	perfluorocarbons
PM ₁₀	respirable particulate matter
PM _{2.5}	fine particulate matter
PPV	peak particle velocity
PRC	Public Resources Code
RoadMod	Sacramento Metropolitan Air Quality Management District Road Construction Emissions Model, Version 9.0.0
ROG	reactive organic gases
RWQCB	San Francisco Bay Regional Water Quality Control Board

SB	Senate Bill
SF ₆	sulfur hexafluoride
SFDFW	San Francisco dusky-footed woodrat
SGMA	California Sustainable Groundwater Management Act
SMARA	State Mining and Reclamation Act of 197
SO ₂	sulfur dioxide
SSC	California Species of Special Concern
State Water Board	State Water Resources Control Board
SWPPP	Storm Water Pollution Prevention Plan
TACs	toxic air contaminants
Town	Town of Moraga
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VMT	vehicle miles traveled
WSMP 2040	Water Supply Management Plan 2040

1.0 PROJECT INFORMATION

1. Project Title:

Laguna Creek Restoration and Flood Control Project

2. Lead Agency Name and Address:

Town of Moraga
329 Rheem Boulevard
Moraga, CA 94556

3. Contact Person and Phone Number:

Mark Summers, PE, Associate Civil Engineer
(925) 888-7038
msummers@moraga.ca.us

4. Project Location:

The Laguna Creek Restoration and Flood Control Project (proposed project) is located in Hacienda de las Flores Park located at 2100 Donald Drive in the Town of Moraga (Town) (Assessor's Parcel Number [APN] 255-190-010). The Town of Moraga is located in the southwest portion of Contra Costa County, approximately 4.5 miles east-southeast of Walnut Creek and 6 miles northwest of Oakland. The property is located west of Moraga Road and south of Donald Drive. Figures 1 and 2 depict the regional and project site location, respectively.

5. Project Sponsor's Name and Address:

Town of Moraga
329 Rheem Boulevard
Moraga, CA 94556

6. General Plan Designation:

Public Parks

7. Zoning:

Non-MOSO Open Space

8. Description of Project:

The Town proposes to daylight and restore the reach of Laguna Creek within the Hacienda de las Flores Park (the Hacienda). Within the project limits, Laguna Creek is currently contained within an 8-foot diameter corrugated metal pipe (CMP) that conveys flow around an existing structure, known as the Pavilion. The project site and Pavilion structure are located within the Laguna Creek Zone AE floodway.

The capacity of the existing stormwater conveyance system is exceeded when high flows associated with large storm events, such as those that may exceed the 100-year design storm, in the channel overtop the bank and inundate the Pavilion. After studying several options, the

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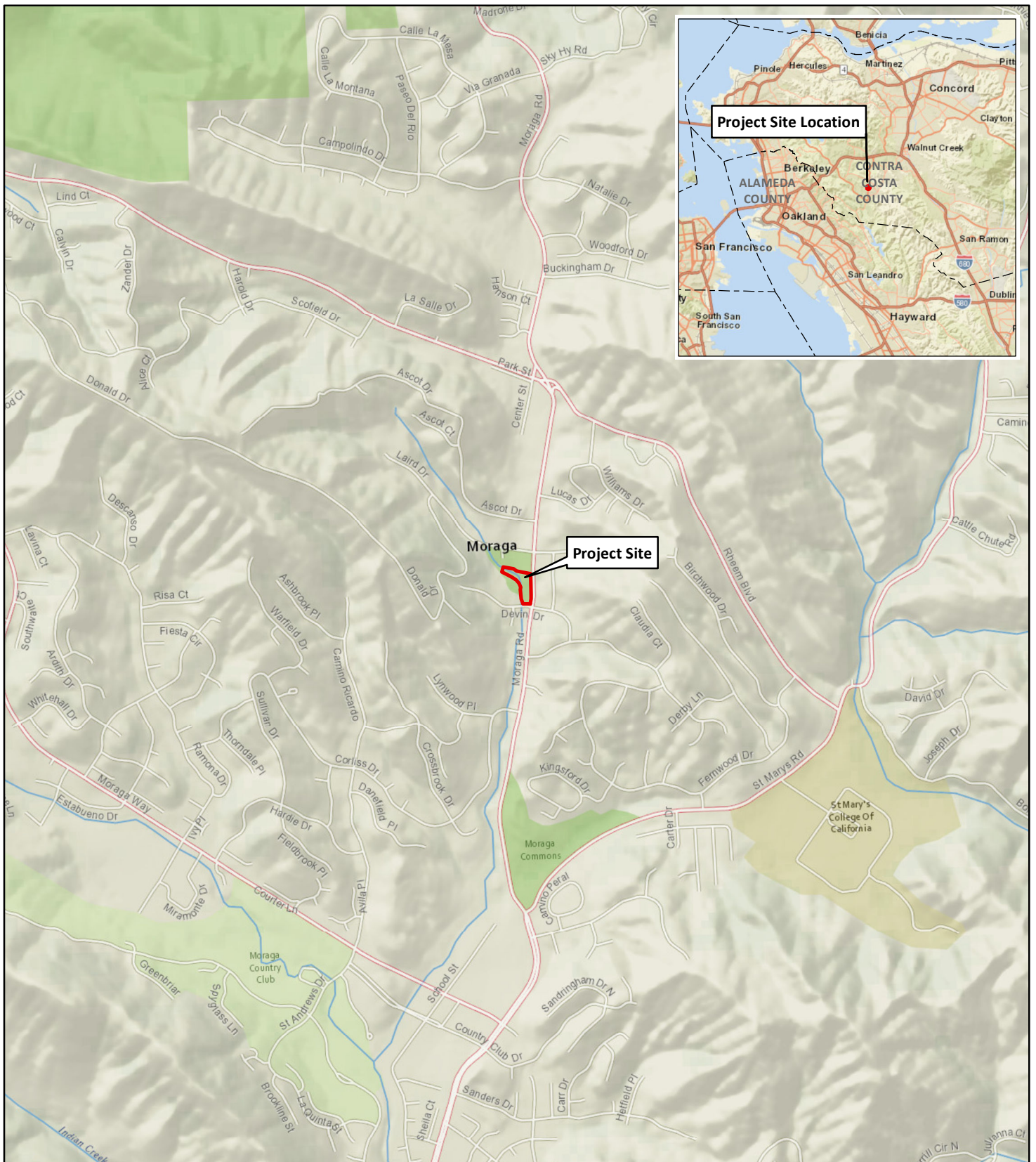
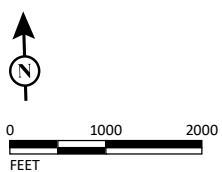


FIGURE 1



SOURCE: National Geographic (c) 2021; Esri World Street Map (c) 2021.

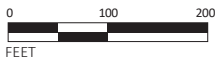
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Laguna Creek Restoration Project
Moraga, Contra Costa County, California
Regional Location



LSA

FIGURE 2



Project Boundary

SOURCES: Google Earth, 2/10/2020; LSA, 2021

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*Laguna Creek Restoration Project
Moraga, Contra Costa County, California*
Aerial Photograph of the Project Site and Surrounding Land Uses

Town determined that daylighting and restoring the creek to a natural drainage channel with ecological value would be the preferred method to mitigate flooding. The proposed project would also provide public access improvements and utility relocation. Proposed improvements would replace the culvert and construct a new natural bottom channel to convey the 100-year flood and shift the Laguna Creek floodway away from the Pavilion.

Project Background. Laguna Creek between Donald Drive and Devin Drive has historically meandered through the grounds of the Hacienda as a natural channel. To accommodate construction of a Pavilion on the southwest side of Laguna Creek adjacent to the Hacienda's main structure, the creek was realigned around the future site of the Pavilion in the 1930s. The new alignment included a 90-degree bend in Laguna Creek where an unnamed tributary (i.e., Donald Drive tributary) discharges into Laguna Creek. Just downstream of this confluence, Laguna Creek was subsequently buried in the undersized 242-foot long, 8-foot diameter CMP culvert. These conditions (90-degree bend, tributary confluence, and undersized culvert) cause Laguna Creek to overtop the right bank and inundate the Pavilion when flows exceed approximately 1,110 cubic feet per second (cfs). Based on preliminary modeling, daylighting and restoring this reach of Laguna Creek would provide flood protection for the Pavilion during a 100-year flood event (1,300 cfs).

In addition to increased flood protection, the proposed project would restore and revegetate a 242-foot long reach of Laguna Creek to create approximately 1,500 square feet of aquatic habitat, 2,750 square feet of floodplain habitat, and 22,550 square feet of riparian woodland for the California red-legged frog (*Rana draytonii*, CRLF).

Project Elements. The proposed project would remove the existing culvert and replace it with a natural stream channel to provide flood protection and enhance aquatic habitat. The proposed project would also include associated improvements to the existing Pavilion, access pathways/trails, and other landscaping treatments to enhance existing park facilities and complement the restored channel. Each of these project elements is described further below. The proposed improvement plan is shown on Figure 3.

Flood Control/Restoration Plantings. The proposed project would remove the existing culvert and replace it with a natural stream, along with a floodplain bench and channel, able to convey a 2-year flood event. The proposed project would create a low-flow channel flanked by a floodplain bench of variable widths. The right bank upslope from the floodplain would be bioengineered with natural boulder slope protection, backfilled with native soil, and planted with cottonwood or willow poles for added stability. The left bank may contain root wads upslope from the floodplain, but would otherwise remain unarmored, to protect the banks from erosion, while allowing the low flow channel to create complex flow patterns and permit the dimensions of the left bank and floodplains to adjust.

To provide additional flood protection and provide pool habitat for CRLF, rocks/boulders would be placed strategically to direct flows toward the center of the channel, thereby minimizing bank erosion, maintaining the sediment transport function of the stream and creating plunge pools that provide habitat for CRLF. The restored channel would be lined with appropriate substrate and would be allowed to form flow patterns with bars and riffles.

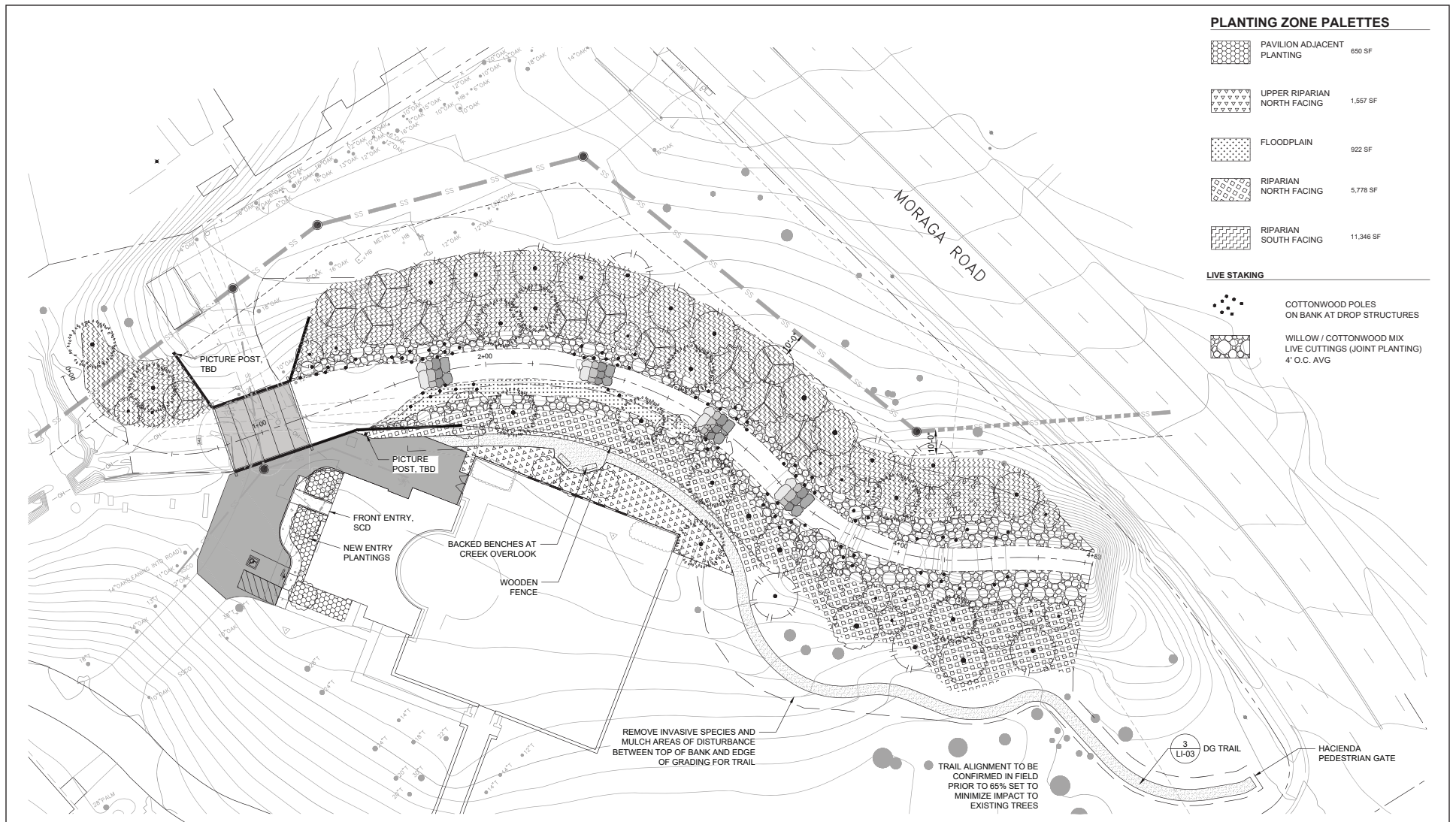
Current conditions put many existing trees at risk for failure/falling from incised banks and erosion. Trees within the grading envelope would be removed and replaced with native riparian species. In addition, the proposed project would remove the invasive vegetation at the project site and revegetate the restored stream banks with regionally-appropriate riparian vegetation. The planting plan would specify several vegetation zones to mimic the pre-existing natural conditions of Laguna Creek. The banks of the low-flow channel would be vegetated with species tolerant of period inundation, such as soft rush (*Juncus effuses*), coastal wood fern (*Dryopteris argute*) and California hedgenettle (*Stachys bullata*). The floodplain benches would be planted with willow or cottonwood to stabilize the banks. Riparian trees and shrubs, such as big leaf maple (*Acer macrophyllum*), coyote brush (*Baccharis pilularis*), and California wild rose (*Rosa californica*) would be planted in the uplands.

In addition to riparian woodland planting along the creek corridor, native planting would be provided between the Pavilion and the creek, to provide landscape screening and native habitat areas to enhance the existing park. Figure 4 illustrates the proposed revegetation plan.

Habitat Enhancement. CRLF, a State- and federally-listed species, is known to inhabit the project site and has been observed at the plunge pool just downstream of the existing culvert.¹ The proposed project would connect two existing pools that provide habitat for CRLF, which are currently separated by the existing culvert. The upstream pool is created by the backwater from a concrete spillway that protects a Central Contra Costa Sanitary District (CCCSD) sewer line, which would be relocated, in coordination with CCCSD. The spillway would be replaced with a weir or similar structure, constructed of natural materials (e.g., logs, boulders, and cobble) to provide high-quality habitat. In addition, the project would remove invasive vegetation and revegetate the entire restored stream banks with regionally-appropriate riparian vegetation, as described above. Other habitat features such as root wads, riparian vegetation, and plunge pools would be created. The depth of ponding in the plunge pools would be optimized for CRLF.

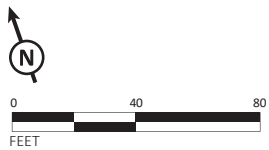
Pavilion Improvements. The Hacienda is an approximately 100-year old estate, which is a valued community facility and an historic resource, as identified in the Town General Plan. The proposed project would safeguard the historic Pavilion from flooding and provide an opportunity to enhance the Pavilion site with native landscaping. To accommodate the proposed restoration project and enhance views to the creek from the Pavilion, the existing asphalt concrete parking along the north side of the Pavilion would be removed and the parking area reconfigured to improve circulation and accessibility. Americans with Disabilities Act (ADA)-accessible parking would be re-located to the front of the Pavilion structure, using the existing ramp and entrance. A raised area would be provided north of the access road to accommodate a future hospitality area.

¹ LSA. 2021. *Biological Resources Report, Laguna Creek Restoration Project, Town of Moraga, Contra Costa County, California*. May.



LSA

FIGURE 4



*Laguna Creek Restoration Project
Moraga, Contra Costa County, California
Revegetation Plan*

SOURCE: Restoration Design Group, Inc., 2021

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To maintain existing vehicular access patterns within the Hacienda, a new, open-bottomed bridge would be constructed with sufficient width to accommodate a pedestrian path in addition to vehicular traffic. Surface of the new bridge and wing walls would be designed to match existing walls at the project site.

Improved Public Path. A public access trail would be constructed/enhanced along the top of the restored stream channel. The existing trail consists of an informal, mulched surface. As part of the proposed project, the trail segment connecting the Hacienda gate to the Pavilion would be upgraded with an accessible surface. In addition, the trail would provide an overlook to the restored creek channel with seating and fencing designed to be consistent with the Pavilion. Ornamental planting would create a buffer between the existing latticed Pavilion wall and the proposed trail. The proposed trail along the creek would provide a trail connection between Moraga Road to the east and the Mullholland Ridge Open Space Preserve to the southwest.

Utilities. Constructing the new stream channel would require relocating an existing sanitary sewer line owned and operated by CCCSD.

Project Construction. Project construction is anticipated to begin in April 2023 and last approximately 6 months. Construction activities would be conducted in compliance with the Town of Moraga's Code of Ordinances, which limits construction activities to between 8:00 a.m. and 5:00 p.m. on weekdays and weekends. The construction staging area would be located within the boundaries of the Hacienda. Construction workers and vehicles would access the site via Moraga Road and Devin Drive. Once construction activities are complete, staging areas would be restored to their existing condition or improved as part of project activities.

During project construction, temporary closures of the Pavilion building may be needed; however, to the extent feasible, the Pavilion would remain open for public and private events. Construction would be limited on Friday, Saturday and Sunday to accommodate events at the Pavilion. If possible, construction staging would occur at a distance from the Pavilion or closer to Moraga Road to address the line of sight from within the Pavilion building and Pavilion grounds. As feasible, screening of staging areas would be provided to block construction materials from sight.

The on-site construction workforce would consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel. It is conservatively assumed that approximately 8 to 12 workers would be on-site during construction activities.

The contractor would employ the use of heavy construction machinery, likely including the following: excavator and/or backhoe, bobtail or larger truck to off-haul spoils, dump trucks, pick-up trucks, a medium sized crane, and an air compressor/generator. A dewatering system, consisting of either a gravity fed system with a cofferdam or a pump system, would be used to divert any naturally-occurring flows within the channel around the work area during the construction period. Erosion and sediment control best management practices would be implemented during construction consistent in compliance with State and local requirements.

Net spoils exported from the site would equal approximately 4,500 cubic yards. Spoils would be off-hauled to an existing area within Moraga Commons Park, located off Moraga Road. Trucks would access the stockpile area via an existing maintenance road within the Park. A temporary access road would need to be cut in from Moraga Road to provide access to the stockpile area. The temporary access road would be restored to pre-project conditions following the completion of construction activities.

9. Surrounding Land Uses and Setting:

Laguna Creek is a perennial stream in Contra Costa County that generally flows in a southeast direction toward the Upper San Leandro Reservoir. The project reach is located approximately 2 miles upstream from the confluence with San Leandro Reservoir and has a watershed area of approximately 1.9 square miles.

The project reach starts at the confluence of the Donald Drive Tributary channel where Laguna Creek makes a sharp 90-degree turn to the east and ends upstream of Devin Drive where it enters a 12-ft by 10-ft box culvert. Immediately upstream of the confluence of Donald Drive Tributary channel and Laguna Creek, an existing 18-inch sewer line passes under the channel flowing from west to east, and then runs parallel to the channel toward the 8-foot CMP inlet. An existing concrete spillway apron that was installed by the CCCSD protects the existing sewer where it crosses under the channel.

The inlet to the 8-foot CMP is located approximately 50 feet downstream of confluence with Donald Drive Tributary. The inlet structure was replaced in 2013, and improvements included a new headwall structure that extends along the right (west) bank to help protect against scour at the 90-degree bend. The 8-foot CMP conveys flows around the Pavilion and discharges to a plunge pool. The 2013 improvements included repair to the downstream channel by providing 1-ton RSP at the outlet face of the culvert, and an RSP cross vane to stabilize the downstream channel and provide additional scour protection.

Vegetation at the site consists of a mixed riparian woodland dominated by Fremont cottonwood (*Populus fremontii*), coast live oak (*Quercus agrifolia*), and California bay (*Umbellularia californica*). Several non-native ornamental trees that were planted as part of the Hacienda's landscaping or have escaped from adjacent gardens also occur at the site, including several types of Monterey pine (*Pinus radiata*), coast redwood (*Sequoia sempervirens*), eucalyptus (*Eucalyptus* sp.), olive (*Olea europaea*), and plum (*Prunus* sp.). Understory vegetation include saplings of the above-mentioned tree species as well as twinberry (*Lonicera* sp.), hawthorn (*Crataegus* sp.), Himalayan blackberry (*Rubus armeniacus*), and poison oak (*Toxicodendron diversilobum*). Nearly the entire ground surface adjacent to the creek is covered by a dense mat of English ivy (*Hedera helix*), which also covers many of the degraded concrete structures and several of the tree trunks.

The primary land use in the vicinity of the Hacienda de las Flores Park is residential. The Mulholland Ridge Open Space Preserve, which consists of 250 acres of undeveloped annual grassland and mixed evergreen woodland, is located approximately 0.3 mile south and southwest of the project site.

10. Other Public Agencies Whose Approval is Required (e.g., permits, financial approval, or participation agreements):

- Federal Emergency Management Agency
- California Department of Fish and Wildlife
- Regional Water Quality Control Board
- U.S. Army Corps of Engineers
- East Bay Regional Parks District
- California Natural Resources Agency

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

In May 2021, the Town provided formal notification to those California Native American tribes that are traditionally and culturally affiliated with the geographic area within which the proposed project is located pursuant to the consultation requirements of AB 52. Letters were sent to all tribal representatives identified by the Native American Heritage Commission. To date, the Town has received no requests for consultation.

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2.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” or “Less Than Significant with Mitigation Incorporated” as indicated by the checklist in Chapter 3.0.

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

2.1 DETERMINATION

On the basis of this initial evaluation:

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


Signature

6/24/21
Date

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3.0 CEQA ENVIRONMENTAL CHECKLIST

3.1 AESTHETICS

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

a. *Would the project have a substantial effect on a scenic vista? (No Impact)*

A scenic vista is defined as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public. According to the Town of Moraga General Plan (2002), scenic resources in the Town include ridgelines, hillside areas, mature native tree groups, and other significant natural features that contribute to the Town's semi-rural character. These scenic resources should be considered when evaluating nearby development proposals and treated as aesthetic opportunities, which should be incorporated into the design of any new development.

Moraga Road, located along the project's eastern boundary, is a designated Scenic Corridor according to the Community Design Element of the Town's General Plan. The General Plan requires the protection of viewsheds along scenic corridors. Per Policy CD3.6 in the General Plan, the Town has also adopted Development Standards and Design Guidelines for Scenic Corridors to control site design and setbacks, landscaping, infrastructure locations, grading, and signage.

The project site is located along the Laguna Creek stream channel within an existing community park. Vegetation at the site consists of riparian woodland and ornamental landscaping associated with the existing Pavilion. The site also contains existing water infrastructure (e.g., culvert, concrete spillway), built facilities associated with the historic Pavilion, the Town corporation yard and the CCCSD sewer pipeline.

The topography of the site and relatively dense vegetation results in a limited viewshed to and from the site. Visible elements of the proposed project would include restoration plantings, natural elements (e.g., rock, boulders, pebbles) used for bank stabilization, the accessible trail, new paved parking area at the north end of the Pavilion, and the proposed bridge with associated wing walls.

Implementation of the proposed project would require removal of vegetation and trees within the project area; however, the proposed project would replace all trees removed and provide extensive restoration planting. All areas temporarily impacted during construction would be revegetated with native species. Implementation of the proposed project would restore the natural stream channel by removing the existing culvert, excavating a new low-flow channel, and installing native plantings. All proposed improvements would either be at-grade or within the existing channel and would not obstruct scenic vistas. Once completed, the visual character or quality of the site would be enhanced due to the removal of the existing water infrastructure and restoration of the natural channel. Therefore, the proposed project would not have a substantial adverse effect on a scenic vista. No impact would occur.

b. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? (Less-Than-Significant Impact)

The Caltrans Landscape Architecture Program administers the Scenic Highway Program, contained in Streets and Highways Code Sections 260–263. State highways are classified as either Officially Listed or Eligible. No Officially Listed or Eligible State Scenic Highways designated under the Scenic Highway Act are located in close proximity to the project site.² Moraga Road is a designated Scenic Corridor according to the Community Design Element of the Town’s General Plan. The General Plan includes goals and policies to ensure that scenic corridors are enhanced throughout the Town and provides adopted development standards and guidelines to control site design and setbacks, landscaping, infrastructure locations, grading, and signage.

No ancestral or heritage trees,³ or rock outcroppings are located on the project site or in the project vicinity. However, project construction would require the removal of some native trees, which are protected under Chapter 12.12, *Tree Preservation*, of the Town of Moraga Municipal Code. Tree removal would be required to comply with the terms of the tree removal permit issued by the Town Planning Director. In addition, all trees and vegetation removed would be replaced with native species consistent with the proposed Revegetation Plan (Figure 4).

The project site includes the Pavilion, which is a historic building. The proposed project would include improvements to the parking area and entrance of the Pavilion, as well as construction of a trail connection along the restored stream bank adjacent to the existing building. In addition, the new bridge would require installation of wing walls in proximity to one side of the Pavilion. However, proposed improvements would not substantially damage this historic building. Therefore, implementation of the proposed project would result in a less than significant impact related to damaging scenic resources within a State Scenic Highway or a locally designated scenic corridor.

² California, State of. 2019. Department of Transportation, California State Scenic Highway System Map. Website: caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=2e921695c43643b1aaf7000dfcc19983 (accessed May 6, 2021).

³ Chapter 12.12 of the Town of Moraga Municipal Code defines the classes of trees that are protected under the Town’s Tree Preservation Ordinance. None of the trees in the work area have been designated of historic significance. Therefore, no ancestral or heritage trees would be impacted by the proposed project.

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

The proposed project is located in an urbanized area of the Town of Moraga. The existing visual characteristics of the project area are consistent with a community park in an urban setting. The project site consists of the existing culvert, the Pavilion and associated parking area, and associated vegetation. Surrounding uses include residential development. The proposed project involves restoration of the creek channel and associated improvements (e.g., vehicular bridge, trail connection, parking lot improvements) within an existing community park. Implementation of the proposed project would improve the visual character of the project site through removal of the existing culvert and restoration of the creek to a natural stream channel.

The proposed project is located within the Hacienda and is zoned as Non-MOSO Open Space. The project site is also located adjacent to Moraga Road, a designated Scenic Corridor. Section 8.132 – Scenic Corridors, of the Moraga Municipal Code establishes the guidelines and approval procedures for the development and improvement of land located within major scenic corridors. Consistent with Section 8.132.050, Development Guidelines, the proposed project would remove the existing culvert and restore the natural creek channel, including planting of native riparian trees and vegetation along the creek corridor. Proposed improvements would be compatible with the natural terrain and designed to complement and enhance scenic views and the natural landscape.

Chapter 8.136, Hillside Development, of the Moraga Municipal Code establishes requirements for approval of a development project in a Hillside Area. The requirements are intended to ensure that development in Hillside Areas preserves Moraga's scenic qualities, minimizes environmental impacts, and reduces exposure to geologic and other hazards. The proposed project is not located in a designated Hillside Area; therefore, Chapter 8.136 would not apply.

Chapter 8.72, Design Review of the Moraga Municipal Code provides for the review of the design of projects proposed in all land use districts, including projects that meet thresholds for design review pursuant to Chapter 8.132, Scenic Corridors, Chapter 8.136, Hillside Development, Title 14, Grading, and Chapter 8.88, Signs and Outdoor Advertising, and projects requiring land use review by the planning commission, such as those under Chapter 8.52, MOSO and non-MOSO open space, and variance and conditional use permit regulations. As the proposed project is located within the Non-MOSO Open Space district, it would be subject to design review and approval by the Town prior to implementation.

Chapter 12.12, Tree Preservation, of the Moraga Municipal Code, establishes regulations classifying and controlling the removal and the preservation of trees within the town. As described in Section 3.1.b., the proposed project would require the removal of trees to accommodate the proposed restoration project. However, the proposed project would include extensive planting along the creek channel, which would replace those trees to be removed in compliance with the Tree Preservation Ordinance.

Implementation of the proposed project would enhance the visual character and quality of the site by removing the existing culvert and restoring the natural stream channel. Proposed improvements would include native riparian planting to replace trees and vegetation removed to implement the project. The proposed project would provide a trail along the top of the restored creek bank with a lookout to provide public views of the stream channel. Overall, the proposed project would not conflict with applicable Town of Moraga Municipal Code/Zoning Code standards pertaining to aesthetics/visual character. This impact would be less than significant.

d. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? (No Impact)

Streetlights, vehicle headlights and taillights, and lighting along Moraga Road and Donald Drive, as well as existing lighting sources associated with nearby residential development provide the existing sources of light and glare in the project area. The proposed project would remove the existing culvert and restore the natural stream channel. No new light standards would be installed as part of the proposed project. Implementation of the proposed restoration project would not generate any additional traffic (e.g., additional vehicle headlights) or light or glare. Therefore, implementation of the proposed project would not create a new source of light or glare, which would adversely affect day or nighttime views. No impact would occur.

3.2 AGRICULTURE AND FORESTRY RESOURCES

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

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? (No Impact)

The project site is currently developed as a community park and is located within an urbanized area. No agricultural uses are located within or adjacent to the project site. Additionally, the project area is classified as "Urban and Built-Up Land" by the State Department of Conservation;⁴ therefore, the proposed project would not involve the conversion of agricultural land to a non-agricultural use. The proposed project would not result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use and there would be no impact.

⁴ California, State of. 2016. Department of Conservation. California Important Farmland Finder. Website: maps.conservation.ca.gov/dlrp/ciff (accessed May 5, 2021).

b. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract? (No Impact)

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. The project site is zoned Non-MOSO Open Space on the Town of Moraga zoning map.⁵ The project area is not subject to a Williamson Act contract. Therefore, the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract, and the proposed project would have no impact.

c. Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))? (No Impact)

The project site is located within an existing community park and is zoned Non-MOSO Open Space on the Town of Moraga zoning map. The proposed project would not conflict with the existing zoning for, or cause rezoning of, forest land or conversion of forest land to non-forest uses. Therefore, the proposed project would have no impact related to forest land, timberland, or timberland zoned Timberland Production.

d. Would the project result in the loss of forest land or conversion of forestland to non-forest use? (No Impact)

Refer to Section 3.2.c. The proposed project would not result in the loss of forest land or conversion of forest land to non-forest uses. Therefore, the proposed project would have no impact related to loss of forest land or conversion of forest land.

e. Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? (No Impact)

Refer to Sections 3.2.a and 3.2.c. The project area is located within an existing community park and would not result in the extension of infrastructure into an undeveloped area, the development of urban uses on a previously undeveloped greenfield site, or other physical changes that would result in the conversion of farmland to non-agricultural uses or forest land to non-forest uses. The proposed project would not adversely affect agricultural or forestry resources.

⁵ Moraga, Town of. 2019. Town of Moraga Parcel Lookup & Layer Viewer. Website: Available online at: gis-moragatown.opendata.arcgis.com/app/663037efdd864d5880754db256f8df83 (accessed May 5, 2021).

3.3 AIR QUALITY

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

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The proposed project is located in the Town of Moraga, and is within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD), which regulates air quality in the San Francisco Bay Area. Air quality conditions in the San Francisco Bay Area have improved significantly since the BAAQMD was created in 1955. Ambient concentrations of air pollutants and the number of days during which the region exceeds air quality standards have fallen substantially. In Moraga, and the rest of the air basin, exceedances of air quality standards occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons.

Within the BAAQMD, ambient air quality standards for ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM₁₀, PM_{2.5}), and lead (Pb) have been set by both the State of California and the federal government. The State has also set standards for sulfate and visibility. The BAAQMD is under State non-attainment status for ozone and particulate matter standards. The BAAQMD is classified as non-attainment for the federal ozone 8-hour standard and non-attainment for the federal PM_{2.5} 24-hour standard.

a. Would the project conflict with or obstruct implementation of the applicable air quality plan? (Less-Than-Significant Impact)

The applicable air quality plan is the BAAQMD 2017 Clean Air Plan, which was adopted on April 19, 2017. In addition, the Regional Climate Protection Strategy is included in the 2017 Clean Air Plan, which identifies potential rules, control measures, and strategies that the BAAQMD can pursue to reduce greenhouse gases throughout the Bay Area. The 2017 Clean Air Plan/Regional Climate Protection Strategy serves as a roadmap for the district to reduce air pollution and protect public health and the global climate. The 2017 Clean Air Plan also includes measures and programs to reduce emissions of fine particulates and toxic air contaminants.

Consistency with the 2017 Clean Air Plan is determined by whether or not the proposed project would result in significant and unavoidable air quality impacts or hinder implementation of control measures (e.g., excessive parking or preclude extension of transit lane or bicycle path). The proposed project would remove the existing culvert and replace it with a natural stream channel to provide flood protection and enhance aquatic habitat. The proposed project would also include associated improvements to the existing Pavilion, access pathways/trails, and other landscaping treatments to enhance existing park facilities and complement the restored channel.

The proposed project, as indicated in the analysis that follows, would not result in significant operational or construction-period emissions. The proposed project does not conflict with the goals of the Clean Air Plan in that the project would daylight and restore the reach of Laguna Creek within the Hacienda de las Flores Park. The proposed project would not conflict with any of the control measures identified in the plan or measures designed to bring the region into attainment. Additionally, the proposed project would not increase the population, vehicle trips, or vehicle miles traveled. The proposed project would not hinder the region from attaining the goals outlined in the Clean Air Plan. Therefore, the proposed project would not inhibit or disrupt implementation of any control measures from the applicable Clean Air Plan and impacts would be less than significant.

b. Would the project 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? (Less Than Significant with Mitigation Incorporated)

The BAAQMD is currently designated as a nonattainment area for State and national ozone standards and national particulate matter ambient air quality standards. BAAQMD nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

According to BAAQMD CEQA Guidelines, to meet air quality standards for operational-related criteria air pollutant and air precursor impacts, the project must not:

- Generate average daily construction emissions of reactive organic gases (ROG), nitrogen oxides (NO_x), PM_{2.5} exhaust emissions greater than 54 pounds per day, or PM₁₀ exhaust emissions greater than 82 pounds per day;
- Contribute to CO concentrations exceeding the State ambient air quality standards; or

- Generate operational emissions of ROG, NO_x, or PM_{2.5} of greater than 10 tons per year or 54 pounds per day or PM₁₀ emissions greater than 15 tons per year or 82 pounds per day.

The following analysis assesses the potential project-level construction- and operation-related air quality impacts and CO impacts.

Construction Emissions. During project construction, short-term degradation of air quality may occur due to the release of particulate matter emissions (i.e., fugitive dust) generated by grading, hauling, and other activities. Emissions from construction equipment are also anticipated and would include CO, NO_x, ROG, directly emitted particulate matter (PM_{2.5} and PM₁₀), and toxic air contaminants (TACs) such as diesel exhaust particulate matter.

Construction-related effects on air quality from the proposed project would be greatest during the disturbance of soils. If not properly controlled, these activities would temporarily generate particulate emissions. Sources of fugitive dust would include disturbed soils at the construction site. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM₁₀ emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM₁₀ emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of operating equipment. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Water or other soil stabilizers can be used to control dust, resulting in emission reductions of 50 percent or more. The BAAQMD has established standard measures for reducing fugitive dust emissions (PM₁₀). With the implementation of these Basic Construction Mitigation Measures, fugitive dust emissions from construction activities would not result in adverse air quality impacts.

In addition to dust-related PM₁₀ emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO₂, NO_x, ROG, and some soot particulate (PM_{2.5} and PM₁₀) in exhaust emissions. These emissions would be temporary and limited to the immediate area surrounding the construction site.

Construction emissions were estimated for the project using the Sacramento Metropolitan Air Quality Management District Road Construction Emissions Model, Version 9.0.0 (RoadMod). As described in Section 1.0, Project Information, construction is anticipated to begin in April 2023 and last approximately 6 months. It is conservatively assumed that approximately 8 to 12 workers would be on-site during construction activities. The contractor would employ the use of heavy construction machinery, likely including the following: excavator and/or backhoe, bobtail or larger truck to off-haul spoils, dump trucks, pick-up trucks, a medium sized crane, and an air compressor/generator. In addition, net spoils exported from the site would equal approximately 4,500 cubic yards. These construction assumptions were included in RoadMod.

RoadMod results are estimated in terms of maximum daily emissions and total emissions. For consistency with BAAQMD Guidelines, total emissions were averaged over the 6-month construction period to determine average daily emissions for comparison to the average daily emissions

threshold. Construction-related emissions for the project are shown in Table 3.A. Detailed calculations are provided in Appendix A.

Table 3.A: Project Construction Emissions in Pounds Per Day

Project Construction	ROG	NO _x	Exhaust PM ₁₀	Fugitive Dust PM ₁₀	Exhaust PM _{2.5}	Fugitive Dust PM _{2.5}
Average Daily Emissions	2.3	21.1	1.0	15.0	0.9	3.1
BAAQMD Average Daily Emission Thresholds	54.0	54.0	82.0	BMP	54.0	BMP
Exceed Threshold?	No	No	No	NA	No	NA

Source: LSA (May 2021).

BMP = Best Management Practices

As shown in Table 3.A, construction emissions associated with the project would be less than significant for ROG, NO_x, and PM_{2.5} and PM₁₀ exhaust emissions. The BAAQMD also requires the implementation of BAAQMD Basic Construction Mitigation Measures (Best Management Practices) to reduce construction fugitive dust impacts to a less-than-significant level.

Mitigation Measure AIR-1:

In order to meet the BAAQMD fugitive dust threshold, the following BAAQMD Basic Construction Mitigation Measures shall be implemented:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off site shall be covered.
- All visible mud or dirt tracked out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure Title 13, Section 2485 of the California Code of Regulations). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. All

equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

- A publicly visible sign shall be posted with the telephone number and person to contact at the Town of Moraga regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD phone number shall also be visible to ensure compliance with applicable regulations.

Construction emissions associated with the project would be less than significant with implementation of Mitigation Measure AIR-1. Therefore, construction of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standards (AAQS).

Operational Emissions. Long-term air emission impacts are associated with stationary sources and mobile sources. Stationary source emissions result from the consumption of natural gas and electricity. Mobile source emissions result from vehicle trips and result in air pollutant emissions affecting the entire air basin. As discussed above, the proposed project would remove the existing culvert and replace it with a natural stream channel to provide flood protection and enhance aquatic habitat. The proposed project would also include associated improvements to the existing Pavilion, access pathways/trails, and other landscaping treatments to enhance existing park facilities and complement the restored channel. Once operational, the project would not result in an increase in the generation of vehicle trips or vehicle miles traveled that would increase air pollutant emissions. The project would not be a source of stationary source emissions. Therefore, operation of the proposed project would not result in a cumulatively considerable net increase of PM₁₀ or any criteria pollutant for which the project region is non-attainment under an applicable federal or State AAQS and impacts would be less than significant.

Localized CO Impacts. The BAAQMD has established a screening methodology that provides a conservative indication of whether the implementation of a proposed project would result in significant CO emissions. According to the BAAQMD CEQA Guidelines, a proposed project would result in a less-than significant impact related to localized CO concentrations if the following screening criteria are met:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, and the regional transportation plan and local congestion management agency plans.
- Project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The project would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, or below-grade roadway).

Implementation of the project would not conflict with the Contra Costa County Transportation Authority for designated roads or highways, a regional transportation plan, or other agency plans. The project site is not located in an area where vertical or horizontal mixing of air is substantially limited. In addition, the proposed project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour and would not result in localized CO concentrations that exceed State or federal standards. Therefore, this impact would be less than significant and no mitigation is required.

c. Would the project expose sensitive receptors to substantial pollutant concentrations? (Less-Than-Significant Impact)

Sensitive receptors are defined as residential uses, schools, daycare centers, nursing homes, and medical centers. Individuals particularly vulnerable to diesel particulate matter are children, whose lung tissue is still developing, and the elderly, who may have serious health problems that can be aggravated by exposure to diesel particulate matter. Exposure from diesel exhaust associated with construction activity contributes to both cancer and chronic non-cancer health risks.

The closest sensitive receptors include residential uses located adjacent to the project boundary. Construction of the proposed project may expose these surrounding sensitive receptors to airborne particulates, as well as a small quantity of construction equipment pollutants (i.e., usually diesel-fueled vehicles and equipment). However, construction contractors would be required to implement BAAQMD Basic Construction Mitigation Measures, as required by Mitigation Measure AIR-1 above. With implementation of Mitigation Measure AIR-1, project construction emissions would be below BAAQMD significance thresholds. Once the project is constructed, the project would not be a source of substantial emissions. Therefore, sensitive receptors are not expected to be exposed to substantial pollutant concentrations during project construction or operation, and potential impacts would be considered less than significant.

d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? (Less-Than-Significant Impact)

During construction, the various diesel-powered vehicles and equipment in use on the site would create localized odors. These odors would be temporary and are not likely to be noticeable for extended periods of time beyond the project site. The potential for diesel odor impacts is therefore considered to be less than significant. In addition, once the project is operational, it would not be a source of odors. Therefore, the proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people, and potential impacts would be considered less than significant.

3.4 BIOLOGICAL RESOURCES

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

To identify biological resources on the project site, a biological resources reconnaissance-level survey was conducted at the project site on November 10, 2020, while an additional site visit was completed on July 15, 2020. A survey of the riparian trees on the site was conducted on April 19, 2021. Prior to conducting the reconnaissance-level survey, the California Natural Diversity Database,⁶ California Native Plant Society Inventory of Rare and Endangered Plants,⁷ official species list from the United States Fish and Wildlife Service (USFWS) of federally listed species⁸ and a National Marine Fisheries Service's California Species Tools species list were reviewed in order to compile a list of special-status species that could occur at the site. The vegetation, wildlife and soils present at the project site are described below.

⁶ California Department of Fish and Wildlife. 2020. California Natural Diversity Database. Commercial version. Biogeographic Data Branch, California Department of Fish and Wildlife, Sacramento.

⁷ California Native Plant Society. 2020. Rare Plant Program. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website www.rareplants.cnps.org (accessed November 16).

⁸ U.S. Fish and Wildlife Service. 2020. IPaC Information for Planning and Consultation. List of Threatened and Endangered Species That May Occur in Your Proposed Project Location, and/or May Be Affected By Your Proposed Project. November 16.

Vegetation. Vegetation at the site consists of a mixed riparian woodland dominated by planted Fremont cottonwood (*Populus fremontii*), coast live oak (*Quercus agrifolia*), and California bay (*Umbellularia californica*). Several non-native ornamental trees that were planted as part of the Hacienda's landscaping or have spread from adjacent gardens also occur at the site, including Monterey pine (*Pinus radiata*), coast redwood (*Sequoia sempervirens*), eucalyptus (*Eucalyptus* sp.), olive (*Olea europaea*), and plum (*Prunus* sp.). Understory vegetation includes saplings of the above-mentioned tree species as well as a mix of native and non-native shrubs, including twinberry (*Lonicera involucrata*), hawthorn (*Crataegus* sp.), Himalayan blackberry (*Rubus armeniacus*), and poison oak (*Toxicodendron diversilobum*). Nearly the entire ground surface adjacent to the creek is covered by a dense mat of English ivy (*Hedera helix*), which also covers many of the degraded concrete structures and several of the tree trunks.

Other areas in the project site support mostly trees, such as coast live oak, California bay, Fremont's cottonwood, and coast redwood, with only sparse understory vegetation. The ground surface in much of this area is covered by wood chips with a few ruderal non-native plants present, such as bristly oxtongue (*Helminthotheca echioides*), dandelion (*Taraxacum officinale*), bull thistle (*Cirsium vulgare*), and field hedge parsley (*Torilis arvensis*).

Wildlife. Wildlife observed during the November 2020 field survey consist of American crow, Steller's jay, chestnut-backed chickadee, white-breasted nuthatch, oak titmouse, black phoebe, Nuttall's woodpecker, northern flicker, Anna's hummingbird, hermit thrush, dark-eyed junco, yellow-rumped warbler, fox squirrel (*Sciurus niger*), and San Francisco dusky-footed woodrat (SFDWF; *Neotoma fuscipes annectens*) houses. Other wildlife observed during the July 2020 visit included Pacific-slope flycatcher, American robin, and red-shouldered hawk.

During surveys and monitoring for the Laguna Creek Repairs project, which occurred at the same general location as this project, an LSA biologist detected California red-legged frog (CRLF; *Rana draytonii*) adult and larvae in the plunge pool downstream of the culvert in June and July, 2013 and one adult CRLF in June 2007.

Other wildlife likely to occur at the project site include striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), black-tailed deer (*Odocoileus hemionus*), western fence lizard (*Sceloporus occidentalis*), and a variety of other species of birds.

Soils. Soils on the project site include Cropley clay 2 to 5 percent slopes.⁹ No alkaline soils or soils derived from serpentinite are present.

⁹ United States Department of Agriculture. 2020. Web Soil Survey. Natural Resources Conservation Service. Available at: websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

- a. *Would the project 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 Incorporated)*

Based on the CNDDDB and CNPS searches and USFWS species list, 14 special-status species (4 plant and 10 animal species) occur within 2 miles of the project site (Table 3.B). Due to prior disturbance and the introduction of non-native invasive plants, no suitable habitat for special-status plants is present.

Two of the special-status animal species, CRLF (federally threatened; California Species of Special Concern [SSC]) and SFDFW (SSC), have been detected in the project area. These two species along with the Alameda striped racer (ASR; *Masticophis lateralis euryxanthus*; federally and State threatened), western pond turtle (*Emys marmorata*; SSC), pallid bat (*Antrozous pallidus*; SSC), and western red bat (*Lasirurs blossevillii*; SSC) are discussed in more detail below. Other species, which are on the USFWS species list,¹⁰ are not likely to occur at the project site because the site does not contain suitable habitat for these species.

California Red-Legged Frog. CRLF is federally listed as threatened. Critical Habitat for CRLF was designated in 2010 and the project site is not located within a Critical Habitat unit. Adult CRLF are primarily aquatic, although adjacent upland habitats are also important since they are used by adults and juveniles for escaping high water during flood events, aestivating, and dispersing to other aquatic habitats. During times of dispersal, CRLF are known to move more than 1 mile through upland habitats to reach other sources of water.

The segment of Laguna Creek on the project site provides suitable aquatic and breeding habitat for CRLF. CRLF adults and larvae were observed at the plunge pool just downstream of the existing culvert in 2007 and 2013. The upland areas on the site provide the majority of the upland retreat habitat available for use by CRLF. Suburban development surrounds the property to the north, east, and south and the western edge is bordered by Moraga Road, a busy thoroughfare.

CRLF are also present upstream in Laguna Creek and on the Palos Colorados project site in Moraga and several other locations within 5 miles of the site (Table 3.C).

¹⁰ U.S. Fish and Wildlife Service. 2020, op. cit.

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Table 3.B: Special-Status Species Evaluated for the Project

Species	Status* Federal/ State/Other	Habitat and Blooming Period (plants only)	Evaluation
Plants			
Bent-flowered fiddleneck <i>Amsinckia lunaris</i>	--/--/1B	Coastal bluff scrub, cismontane woodland valley and foothill grassland. Elevation: 3 - 500 meters Blooms: March-June	No suitable habitat present.
Loma Prieta hoita <i>Hoita strobilina</i>	--/--/1B	Usually mesic sites on serpentinite in chaparral, cismontane woodland, riparian woodland. Elevation: 30 - 860 meters Blooms: May-July (sometimes August-October)	No suitable habitat present due to prior disturbance and introduction of non-native plants at the site.
Diablo helianthella <i>Helianthella castanea</i>	--/--/1B	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. Elevation: 60 - 1300 meters. Blooms: March-June.	No suitable habitat present due to prior disturbance and introduction of non-native plants at the site.
Woodland woollythreads <i>Monolopia gracilis</i>	--/--/1B	Mixed evergreen forest, redwood forest, and chaparral. Elevation: 150 - 1110 meters Blooms: March-July	No suitable habitat present due to prior disturbance and introduction of non-native plants at the site.
Animals			
Obscure bumble bee <i>Bombus caliginosus</i>	-- /Sensitive/--	Bumble bees typically nest underground in cavities often in abandoned rodent burrows, holes in building foundations, stacks of dry wood etc. The obscure bumble bee feeds primary on the nectar and pollen of native plants including lupine (<i>Lupinus</i> spp.) and ceanothus (<i>Ceanothus</i> spp.).	Whether this species occurs on the project site is unknown; however, the historic disturbance on the site, low diversity of native flowering plants, and isolation of the project site from areas of natural habitats by urban development reduces the likelihood of the occurrence of this species.

Table 3.B: Special-Status Species Evaluated for the Project

Species	Status* Federal/ State/Other	Habitat and Blooming Period (plants only)	Evaluation
Western bumble bee <i>Bombus occidentalis</i>	-- /Sensitive/--	Feeds upon nectar and pollen from a variety of plants species, but is most adapted to native species. Nests in abandoned rodent burrows and bird nests. The flight period in California is from early February to late November, peaking in late June and late September. Little is known about sites where queens overwinter. The species is currently restricted to high elevation sites in the Sierra Nevada and scattered coastal areas.	As with the obscure bumble bee, whether this species occurs on the project site is unknown; however, the historic disturbance on the site, low diversity of native flowering plants, and the isolation of the project site from areas of natural habitat by urban development reduces the likelihood of the occurrence of this species.
Steelhead (central California coast Distinct Population Segment) <i>Oncorhynchus mykiss</i>	FT/SSC/--	Coastal streams from Russian River south to Aptos Creek (Santa Cruz Co.), including streams tributary to San Francisco and San Pablo Bays.	Although suitable aquatic habitat is present in Laguna Creek, salmonids do not occur in the project site's segment of the creek due a downstream barrier, the vertical drop at the downstream end of the Corliss Rainbow trout are present approximately 2 miles downstream from the project site within the Upper San Leandro Reservoir ¹¹ and spawn in Laguna Creek.
California red-legged frog <i>Rana draytonii</i>	FT/SSC/--	Generally prefers ponds, but also occurs in streams, marshes, and other waterways. Will move along stream corridors and through adjoining upland habitat during wet weather.	Suitable habitat is present within Laguna Creek and surrounding riparian habitat. Adults and/or larvae have been observed in 2007 and 2013 in Laguna Creek in the plunge pool immediately downstream of the existing culvert within the project site.

¹¹ Leidy, R.A., G.S. Becker, and B.N. Harvey. 2005. Historical Distribution and Current Status of Steelhead/Rainbow Trout (*Oncorhynchus mykiss*) in Streams of the San Francisco Estuary, California. Center for Ecosystem Management and Restoration, Oakland, CA.

Table 3.B: Special-Status Species Evaluated for the Project

Species	Status* Federal/ State/Other	Habitat and Blooming Period (plants only)	Evaluation
Foothill yellow-legged frog <i>Rana boylei</i>	--/SE, SSC	Occurs along rocky/gravelly streams in areas with clear flowing water and sunny banks. Requires slow flowing pools or backwaters for egg laying and tadpole rearing.	This frog was historically known from Contra Costa County, ^{12,13} but has been extirpated. Suitable habitat is not present on the site. This species does not occur.
Western pond turtle <i>Emys marmorata</i>	--/SSC/--	Deep pools and ponds with basking areas and adjacent upland areas for nesting.	Suitable habitat is present within Laguna Creek. This species has not been recorded within 2 miles of the project site.
Alameda striped racer <i>Masticophis lateralis euryxanthus</i>	FT/ST/--	Chaparral and sage scrub with patches of grassland and rock outcrops.	This snake is known to occur within 2 miles of the site, but is not likely to occur on the site due to the absence of rock outcrops and scrub vegetation and the isolation of the project site by urban development from areas occupied by this species.
San Francisco dusky-footed wood rat <i>Neotoma fuscipes annectens</i>	--/SSC/--	Chaparral, coastal scrub, and oak and riparian woodlands.	Suitable habitat is present and two stick houses were observed in the southeast corner of the property during LSA's field survey.
Pallid bat <i>Antrozous pallidus</i>	--/SSC/--	Roosts in old buildings, under bridges, large rock outcrops, and large tree hollows. Forages for large insects often on the ground	Suitable roosting habitat may be present within the on-site sheds and within trees with large hollows. This species could also forage at the project site.

¹² Thomson, R.C., A.N. Wright, and H.B. Schaffer. 2016. California Amphibian and Reptile Species of Special Concern. California Department of Fish and Wildlife, Sacramento, and University of California Press, Berkeley and Los Angeles.

¹³ California Department of Fish and Wildlife. 2020, op. cit.

Table 3.B: Special-Status Species Evaluated for the Project

Species	Status* Federal/ State/Other	Habitat and Blooming Period (plants only)	Evaluation
Western red bat <i>Lasiurus blossevillei</i>	--/SSC/--	Roosts primarily in trees, 2-40 feet above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	Suitable roosting habitat present in trees on and adjacent to the site. Suitable foraging habitat present at the site.

Source: LSA Associates, Inc. (2021)

*Special-status species designations:

FT = federally listed as Threatened

ST = State-listed as Threatened

SE = State Endangered

SSC = California Species of Special Concern

1B = California Rare Plant Rank 1B: species considered rare or endangered in California and elsewhere

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

Table 3.C: Regional Occurrence Records of California Red-legged Frog

Distance from Site	Location/Notes/Year
On Project Site	Laguna Creek, grounds of Hacienda de Las Flores, 2007 and 2013 (Not in CNDDDB).
0.8 mile	Laguna Creek at Buckingham Drive in Moraga.
1.0 mile	Palos Colorados project site, stock ponds, yearly observations since 2000 (CNDDDB Occurrence #374). ¹
1.2 miles	Palos Colorados project site, stock ponds 1.5 miles north of the intersection of Rheem Boulevard and Saint Mary's Road, 1999 (CNDDDB Occurrence #373).
1.5 miles	Las Trampas Creek behind Lafayette Community Center, 1994 (CNDDDB Occurrence #120).
3.1 miles	Unnamed tributary to Brookside Creek, south of Orinda, 1997 (CNDDDB Occurrence #226). No longer extant.

Source: LSA Associates, Inc. (2021)

¹ CRLF have been observed at six other locations on Palos Colorados.

Proposed construction activities, including channel dewatering and restoration activities along the stream bed and bank, could result in indirect and direct disturbance, injury, and/or mortality to CRLF. During construction, the work footprint would represent a temporary loss of CRLF foraging and breeding habitat. Heavy equipment and associated noise and vibration may also disturb individuals upstream and downstream of the work areas.

The existing plunge pool downstream of the culvert would be removed as part of the proposed project, but two new 3-foot-deep plunge pools would be created in the same area. These pools are expected to provide suitable breeding habitat for CRLF. The restored creek and plunge pools have been designed to keep sediment from accumulating within the plunge pools in order to maintain suitable habitat for CRLF. The proposed project may impact CRLF, if present during the restoration work for the project. Implementation of the Mitigation Measure BIO-1, described below, would reduce the proposed project's impacts to CRLF and western pond turtle to less than significant.

Western Pond Turtle. Laguna Creek contains suitable habitat for western pond turtle. Survey work has not detected them at this location. Similar to potential impacts to CRLF, proposed construction activities, including channel dewatering and restoration activities along the stream bed and bank and construction noise, could result in indirect and direct disturbance, injury, and/or mortality to pond turtles. Implementation of the Mitigation Measure BIO-1, described below, would reduce the proposed project's impacts to CRLF and western pond turtle to less than significant.

Mitigation Measure BIO-1a: The Town shall implement the following measures to avoid or minimize potential impacts to CRLF, western pond turtle, and their habitat:

- A U.S. Fish and Wildlife Service (USFWS) - and California Department of Fish and Wildlife (CDFW)-approved biologist shall survey the work area(s) within 24 hours before the initiation of construction activities. If western pond turtles or any life stage of the CRLF is found and these individuals are

likely to be killed or injured by construction activities, the approved biologist with USFWS and CDFW approval shall be allowed sufficient time to move them from the site before construction begins. The biologist shall relocate the individual western pond turtles and/or CRLF to the shortest distance possible to a location in Laguna Creek that provides suitable habitat and shall not be affected by construction activities. The biologist shall maintain detailed records of any individuals that are moved (e.g., size, coloration, any distinguishing features, photos) to assist him or her in determining whether translocated animals are returning to their original point of capture.

- A qualified, USFWS- and CDFW-approved biological monitor shall be present on-site during vegetation removal and coffer dam installation. The monitor shall have the authority to stop any aspect of the project that shall result in impacts to western pond turtles and/or unauthorized take of CRLF.
- Disturbance to existing grades and vegetation shall be limited to the actual work area and necessary access routes. Placement of all roads, staging areas, and other facilities shall avoid and limit disturbance to CRLF and western pond turtles and their habitat to the maximum extent practicable. Existing ingress and egress points shall be used, and the contours of the work area shall be returned to pre-construction condition or better.
- Exclusionary fencing shall not be installed around the upstream and downstream work areas because such fencing may direct CRLF and western pond turtles from undeveloped portions of the Laguna Creek corridor towards existing paved roads and paths adjacent to the corridor, which shall be subject to increased foot and equipment traffic during the project.
- Prior to construction, the biologist or biological monitor shall conduct a training session to familiarize construction personnel with the following: CRLF and western pond turtle identification and habitat, general provisions and protections afforded by the Endangered Species Act and/or the regulatory permit conditions, measures implemented to protect the species, and review of the project boundaries. Such training shall also be provided to any new workers who did not attend the initial training session prior to their beginning work.
- To avoid attracting predators, food-related trash shall be kept in closed containers and regularly removed from the work area.

- All construction material, waste, debris, sediment, rubbish, vegetation, trash, fencing, etc. shall be removed from the site once the project is completed and transported to an authorized disposal area, as appropriate, and per all federal, State, and local laws and regulations.
- All construction-related holes shall be covered at night to prevent entrapment of CRLF and western pond turtle.
- If an injured CRLF or western pond turtle is found, the contractor shall have the USFWS- and CDFW-approved biologist determine the extent of the injury. If the injury is minor and the animal is likely to survive without treatment, the biologist shall document the injury and release the animal outside of the work area. If the injured animal would require professional treatment to survive, the biologist shall transport the animal to a location where a qualified professional can provide the needed treatment. This location shall be identified prior to the start of construction. The treated animal shall be released at an appropriate location as soon as its recovery will allow. Within three working days, the incident shall be reported to the USFWS and CDFW by providing the following information: date of injury, extent of injury, and action(s) taken. Any CRLF or western pond turtle that dies while being treated or found dead in the work area shall likewise be reported to the USFWS and/or CDFW within three working days. At that time, the USFWS and CDFW would also provide instructions regarding the disposition of the animal.

Mitigation Measure BIO-1b: Standard Best Management Practices (BMPs) and erosion control measures shall be implemented during construction to minimize potential discharge of sediment into Laguna Creek. At a minimum, measures shall include installing and maintaining silt fences immediately downstream of disturbed areas, and revegetating all disturbed ground.

Mitigation Measure BIO-1c: To avoid or minimize potential impacts to CRLF and western pond turtle due to channel dewatering, the contractor shall implement the following measures in accordance with standard CDFW requirements for stream flow diversion:

- Stream flow shall be diverted using gravity flow through temporary culverts/pipes or pumped around the work area with the use of hoses. The entire work area shall be dewatered.

- Cofferdams shall be constructed no more than 20 feet upstream or downstream of the work area(s). Flows shall be diverted only when construction of the diversion is completed. Cofferdams shall be constructed only from materials that will cause little or no siltation, such as clean gravel, sandbags (filled with clean sand), or sheet piling. Cofferdams shall be installed both upstream and downstream of the work area, in a manner adequate to present seepage into or out of the work area. The cofferdam dewatering system shall remain in place until all creek work is complete. Normal flows shall be restored to the affected stream reach immediately upon completion of work by removing the dewatering system.
- The contractor, biologist, and/or biological monitor shall check daily for stranded aquatic life as the water level in the dewatering area drops. All reasonable efforts shall be made to capture and move all native stranded aquatic life observed in the dewatered areas. Capture methods may include fish landing nets, dip nets, buckets, and/or by hand. Captured native aquatic life shall be released downstream of the dewatered area.
- No equipment shall be operated within the live stream.

Alameda Striped Racer (ASR). ASR, also called Alameda whipsnake, is federally and State listed as threatened. The site is located within the range of the Oakland/Las Trampas population. Critical Habitat (Unit 2) for ASR is located approximately 1 mile east and 1.5 miles southwest of the site. The project site is not located in a critical habitat unit.

ASR are most frequently observed in the following scrub communities: mixed chaparral, Diablan sage scrub, northern coastal scrub, and chamise-redshank chaparral. They may also be found in grasslands, open-canopy oak and oak bay woodlands, and riparian communities of various compositions in the vicinity of scrub or chaparral. Rock outcrops and talus with deep crevices and rodent burrows are important habitat features for a given site to support ASR. These features serve both as nightly retreats and winter hibernation sites and, in the case of outcrops, as prime habitat for the preferred prey of ASR, the western fence lizard.

ASR is known to occur in the general project vicinity and several occurrences have been recorded within 5 miles of the site (Table 3.D).

Table 3.D: Regional Occurrence Records of Alameda Striped Racer

Distance from Site	Location/Notes/Years
0.6 mile	Rancho Laguna 2 (Bella Vista), dead on construction site, 2018 (CNDDDB Occurrence #185)
2.3 miles	Bollinger Canyon Road, roadkill, 2012 (CNDDDB Occurrence #172)
2.4 miles	Wilder mitigation land, 2006 (CNDDDB Occurrence #95)
2.5 miles	Grizzly Creek, Walnut Creek, 2015 (CNDDDB Occurrence #170)
3.0 miles	North of Pinehurst Road and Skyline Blvd., 1999 (CNDDDB Occurrence #33)
3.0 miles	McCosker Ranch along Pinehurst Road, 2002 (CNDDDB Occurrence #60)
3.1 miles	Near Las Trampas Peak, 2004 (CNDDDB Occurrence #83)
3.2 miles	Near Las Trampas Peak, 2004 (CNDDDB Occurrence #71)
3.5 miles	Rossmoor, Walnut Creek, 1994 (CNDDDB Occurrence #35)
3.5 miles	Rossmoor, Walnut Creek, 1997 (CNDDDB Occurrence #44)
3.8 miles	Near Highway 24 and Camino Pablo Road, 1990 (CNDDDB Occurrence #27)
4.0 miles	Near Ridgewood Road, 1990 (CNDDDB Occurrence #17)
4.1 miles	Alamo, 1952 (CNDDDB Occurrence #7)
4.1 miles	Near Rocky Ridge Road, 1990 (CNDDDB Occurrence #31)
4.2 miles	Redwood Regional Park, 2008 (CNDDDB Occurrence #145)
4.5 miles	Highway 24 at Fish Ranch Road off-ramp, 2007 (CNDDDB Occurrence #146)

Source: LSA Associates, Inc. (2021)

ASR use of the project site is unlikely since the project site is surrounded by urban development and lacks chaparral, sage scrub, or rock outcrops, which are preferred by ASR. The project site is surrounded by urban development, which forms a barrier to on- or off-site movement from surrounding areas. Dispersal through day-lighted or culverted segments of Laguna Creek to the project site from open space areas is highly improbable as the creek is situated within a riparian woodland, which is not a preferred habitat used by ASR and because ASR is not an aquatic species.

San Francisco Dusky-Footed Woodrat (SFDFW). SFDFW is a subspecies of the dusky-footed woodrat, whose range extends from the southern side of the Golden Gate, San Pablo Bay and Carquinez Straits south through the Santa Cruz Mountains, Berkeley/Oakland Hills and Diablo Range to the Pajaro River, southern Santa Clara County. In the Moraga area, woodrats are most commonly found in woodland and shrub dominated plant communities including riparian corridors, where coast live oak and poison oak are present. They are also occasionally present in well-vegetated suburban yards, which are adjacent to natural habitat.

Two SFDFW houses were observed during the November 2020 field survey. These houses were observed within the understory of coast live oak trees in the southeast corner of the Hacienda de las Flores property, near the intersection of Moraga Road and Devin Drive. These SFDFW houses are outside of the project footprint and would not be impacted by the restoration project. To ensure these two houses and any other SFDFW houses that may be present within or adjacent to the project site, the following mitigation measure should be implemented to reduce the proposed project's impacts to SFDFW. Implementation of Mitigation Measure BIO-2 would reduce the proposed project's potential impacts to SFDFW to less than significant.

Mitigation Measure BIO-2:

The Town shall implement the following measure to avoid or minimize potential impacts to SFDFW:

- A qualified biologist shall conduct a pre-activity survey for SFDFW houses prior to the start of project activities. Surveys shall be conducted in the immediate work area, in any areas expected to be disturbed by project activities and in a 50-foot buffer around those areas. If SFDFW houses are present, the houses or the trees they are located in shall be flagged in the field and delineated on project site maps in order to avoid potential impacts to SFDFW houses. Exclusion buffers of a minimum of 10 feet shall be established, installed with protective fencing or flagged where appropriate, and avoided during construction activities. For SFDFW houses that cannot be avoided and require relocation, CDFW shall be contacted in order to determine the appropriate methodology.

Roosting Bats. Although roost sites for pallid bat and western red bat have not been recorded on the project site, the on-site maintenance sheds and/or trees may provide suitable roosting habitat for cavity-roosting bats, such as the pallid bat, or tree-foliage roosting bats, such as the western red bat. Pallid bats roost in caves, tunnels, buildings, and tree hollows and forage over a wide variety of habitats at low elevations. They are most commonly found in open, dry habitats with rocky areas for roosting. Western red bats roost on tree branches within or near riparian woodlands. Western red bats breed in the Central Valley, roughly from mid-May through August, and migrate to the San Francisco Bay Area in the spring from March through May and in the fall from late August through October.

Western red bats are less likely to be present from mid-May to early August, when the bats typically reside away from the San Francisco Bay region within the Central Valley. Some western red bats, especially males, may remain within the San Francisco Bay Area during the breeding season¹⁴.

The proposed project may impact pallid bat, western red bat, and other special-status or common roosting bat species, if present during the construction of the project. Implementation of the Mitigation Measure BIO-3 would reduce the proposed project's impacts to pallid bat, western red bat, and other special-status or common roosting bat species to less than significant.

Mitigation Measure BIO-3:

The Town shall implement the following measures to avoid or minimize potential impacts to roosting bats:

- A qualified biologist shall conduct a pre-construction survey for roosting pallid bat, western red bat, and other bat species at all suitable bat roosting habitat, including the structures and trees

¹⁴ Pierson, E.D., W.E. Rainey and C. Corben. 2006. Distribution and status of Western red bats (*Lasiurus blossevillii*) in California. Calif. Dept. Fish and Game, Habitat Conservation Planning Branch, Species Conservation and Recovery Program Report 2006-04, Sacramento, CA 45 pp.

proposed for removal and adjacent suitable habitat that would be subject to noise disturbance. The survey shall be conducted within 30 days prior to the beginning of construction.

- If active bat roosts are discovered or if evidence of recent occupation is established, then the biologist needs to determine if activities occurring near the roost are likely to disturb the roost, considering the type of roost (day, night, maternity, hibernation), types of construction activities, and sensitivity of the bat species. If the roost is located within an adjacent tree or structure that can be avoided, a buffer to be determined by the biologist, based on the location and sensitivity of the roost, shall be established around the roost site and maintained until the roost site is no longer active. If an active maternity roost is found in a tree or structure slated for removal, active maternity roosts shall not be removed until the young have left the roost or until the roost is no longer active. If the roost is occupied by a special-status bat species and the roost needs to be removed, CDFW shall be contacted regarding removal of the roost. If the roost is not a maternity roost and is not occupied by a special-status bat species, the roost may be removed by excluding bats from the roost. Roosts may only be removed once the bats are no longer occupying the roost, at which time, a plan approved by CDFW may be implemented for removal of the roost. The plan shall describe appropriate methods for the removal of the roost. As part of CDFW's approval, a new roost site may be required to be created on the project site. Active day roosts of tree-foliage bats may be removed upon permission of CDFW.
- If feasible, trees planned for pruning or removal as a part of the project, shall be pruned or removed during the fall to avoid the maternity roosting period of resident bats (mid-April to August season). Western red bats are less likely to be present and roosting in the trees and shrubs on and adjacent to the project site during the spring and summer, but other bats may be roosting during this period. Because bats may be present at any time, a pre-construction survey by a qualified biologist shall be required as outlined above regardless of timing of tree or structure removal and a suitable buffer zone established around detected roosts.
- Pruned limbs or cut trees shall be left on the ground in place for at least 24 hours after cutting to allow any bats that may be roosting in the trees to leave the roosts prior to chipping the branches or removing the cut material from the site. Before any

construction activities begin in the vicinity of the identified bat roosts on the project site, an approved biologist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the bats and their habitat, the specific measures that are being implemented to conserve the bat roosts for the project, and the boundaries within which the project may be accomplished. Brochures, books, and briefings may be used in the training session. A qualified biologist shall conduct the training session.

- b. Would the project 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 with Mitigation Incorporated)*

Riparian woodland associated with Laguna Creek is considered to be a sensitive plant community by CDFW. Creek restoration activities would require the removal of some native riparian trees and/or shrubs, as well as a variety of introduced species, resulting in temporary impacts to riparian habitat during restoration activities. The restored creek channel and adjacent habitat would be planted with native riparian plants. Implementation of the Mitigation Measure BIO-4 would reduce the proposed project's impacts to riparian habitat to less than significant.

Mitigation Measure BIO-4: The Town shall prepare and submit a Notification of Lake or Streambed Alteration application to the CDFW for working within the bed and bank of Laguna Creek. The application shall include a mitigation and monitoring plan for replacement of all native riparian trees and shrubs impacted during the restoration activities. Impacted riparian trees and/or shrubs shall be replaced at a minimum 3:1 ratio (# planted: # removed). All replacement plantings shall occur on site within the Laguna Creek riparian corridor.

- c. Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? (Less-Than-Significant Impact)*

Laguna Creek is subject to U.S. Army Corps of Engineers jurisdiction under the Clean Water Act as an "other water" of the U.S. No wetlands as defined by the Clean Water Act are present along this reach of Laguna Creek. The Town would obtain the appropriate federal and State permits authorizing impacts to Laguna Creek associated with the creek restoration activities.

An approximate 2-foot-wide linear swale is present between the two culvert outfalls where the creek is currently underground within the existing culvert. This ditch contains mostly wood chips and leaf litter, but also has a few sparse tall flatsedge (*Cyperus eragrosti*) and rush (*Juncus* sp.) plants, which are hydrophytic plants, suggesting that the swale conveys storm water from the upper slopes down to the southern end of where the culvert daylight into the Laguna Creek channel. This swale,

however, does not exhibit enough wetland vegetation or hydrophytic characteristics to be considered a potentially jurisdictional wetland feature.

Since the proposed project is a creek restoration project that would involve the daylighting of a currently culverted section of Laguna Creek, the project would be considered self-mitigating. If mitigation is required by the regulatory agencies due to the temporal loss of creek habitat, implementation of Mitigation Measure BIO-4 (above) would reduce temporary impacts to Laguna Creek to less than significant by planting native riparian trees and shrubs along the daylighted and impacted portions of Laguna Creek. Therefore, this impact would be less than significant.

d. Would the project 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 with Mitigation Incorporated)

Although the proposed creek dewatering may temporarily affect the local movement of aquatic species along Laguna Creek, such impacts are expected to be minor and short-term in duration. Wildlife movement through the creek for some aquatic species is already limited since barriers to upstream fish movement exist within and downstream of the project site. After project completion, native fish and wildlife species would be able to move through this reach of Laguna Creek, resulting in a beneficial effect for wildlife movement.

If conducted during the breeding season (March through July), construction activities could directly impact nesting birds by removing trees, understory vegetation, and structures that support active nests. Prolonged loud construction noise could also disturb nesting birds, resulting in nesting failure. All nesting native birds are protected under the federal Migratory Bird Treaty Act and/or California Fish and Game Code. Implementation of the Mitigation Measure BIO-5 would reduce the proposed project's impacts to nesting birds to less than significant.

Mitigation Measure BIO-5: If feasible, all vegetation removal shall be conducted during the non-breeding season (i.e., September through February) to avoid direct impacts to nesting birds. If such work is scheduled during the breeding season (February through August), a qualified wildlife biologist shall conduct a pre-construction survey of the work area(s) to determine if any birds are nesting in or in the vicinity of vegetation to be removed. The pre-construction survey shall be conducted within 15 days prior to the start of work. If active nests are found in the work area, the biologist shall determine an appropriately sized buffer around the nest in which no work shall be allowed until the young have successfully fledged. The size of the nest buffer shall be determined by the biologist, and shall be based on the nesting species, its sensitivity to disturbance, and the expected types of disturbance.

e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (Less-Than-Significant Impact)

Section 12.12 of the Town's Municipal Code requires that any "person who desires to cut down, destroy or remove a native tree, orchard tree, or tree of historic significance, located on either private or public property, shall file an application with the Planning Director on a form prescribed by him." "Trees" are defined by the Municipal Code as "live woody plants having a single trunk diameter of five inches or more measured three feet above natural grade, or, if having multiple trunks, a total diameter of 40 inches or more measured three feet above the natural grade." Since the Town is the lead agency for this project, they would obtain the necessary tree removal permits and replace trees in accordance with the Town's tree protection ordinance.

f. Would the project 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 project site is not located within the boundary of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, the 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. No impact would occur.

3.5 CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5? (Less Than Significant with Mitigation Incorporated)

For a cultural resource to be considered a historical resource (i.e., eligible for listing in the California Register of Historical Resources), it generally must be 50 years or older. Under CEQA, historical resources can include precontact (i.e., Native American) archaeological deposits, historic-period archaeological deposits, historic buildings, and historic districts. To identify cultural resources at the project site, the following tasks were completed: (1) a records search at the Northwest Information Center (NWIC) of the California Historical Resources Information System; (2) a review of historical maps and aerial photographs to assess the potential for buried precontact and historic-period archaeological deposits; and (3) a field survey of the project site by a qualified archaeologist. The Town also undertook consultation outreach with California tribal organizations pursuant to the requirements of AB 52 (refer to Section 3.18, Tribal Cultural Resources).

Records Search. On November 24, 2020, LSA requested a records search of the project site from the NWIC and received results on December 2, 2020. The NWIC is the official State repository of cultural resources records and studies in Contra Costa County, and the NAHC is the official State repository of Native American sacred site location records. The records search consisted of a review of cultural resource records and studies within the project site and a 0.25-mile radius. The records search also included a review of the Built Environment Resources Directory (BERD), the Archaeological Resources Directory, the California Inventory of Historical Resources (1976), and a review of historical maps and local inventories.

The NWIC records search resulted in the identification of one cultural resource within the project site that meets the definition of a historical resource under CEQA: P-07-001045/the Rheem Estate/Hacienda de las Flores (Hacienda) is listed in the Contra Costa County Historical Resources Inventory. The records search did not identify any other cultural resources within 0.25-miles of the project site. No previously conducted studies were identified within the project site; the closest study was done along the alignment of Moraga Road. Three others were identified within 0.25-mile of the project site.

Sacred Lands File Search. On November 20, 2020, LSA submitted a request to the NAHC to review its Sacred Lands File for the proposed project. On December 2, 2020, the NAHC responded with

negative results for sacred tribal resources within the project site. The NAHC also provided a list of 10 potentially interested tribal groups that may have information or concerns regarding tribal cultural resources within the project site.

Field Survey. A field survey of the project site was conducted on May 15, 2021. Exposed soils were inspected for precontact (e.g., stone tools, debitage, groundstone, and shell beads), historic-period materials (e.g., metal, glass, ceramics), and soil discolorations that might indicate the presence of archaeological deposits. Accessible areas were traversed by walking 5-foot (1.5-meter) interval trans. Inundated areas covered with standing water and inaccessible areas were not surveyed. Much of the project site had significant leaf and debris build up meaning that surface soils were not highly visible, and surface scraped were carried out in order to see through the vegetation. Evidence of previous disturbance in the concrete embankment extending into the southern project area from Moraga road was observed. No cultural resources were found in the project area during the survey.

Summary of Results. The NWIC records search and field survey identified one previously recorded resource, the Hacienda (P-07-001045). The Hacienda is listed in the California Inventory of Historical Resources and although it has never been formally evaluated under the California Register of Historical Resources eligibility criteria, it constitutes a historical resource for the purposes of CEQA due its association with Donald Rheem who was instrumental in financing the subdividing, planning, and development of the Rheem Valley from 1935 to 1961 and as an excellent example of the Spanish Eclectic style. Therefore, contributors of this resource include all buildings, structures, objects, landscaping, and sites that were constructed or designed by the Rheem family as part of the estate between 1937 and 1940 that can still convey the resource's significance.

Implementation of the proposed project would remove the existing culvert and restore the stream channel, returning it to a condition more consistent with its character at the time the Hacienda was constructed. In addition, the proposed project would protect the Pavilion from inundation by flood waters. The project does not propose alteration of any buildings associated with the historic resource; however, alterations to the landscaping, creek, and walkways would occur. Other improvements would be constructed adjacent to the Pavilion within the project site, including a trail with railing and overlook along the top of the creek channel, modified parking area at the Pavilion entry, and a new bridge with associated wing walls for vehicular access. Proposed improvements are intended to blend in with the existing Pavilion features and connect with the existing architectural features at the site. However, detailed design of these improvements is not available at this time.

In order to avoid significant impacts or substantial changes, the project design would adhere to the Secretary of Interior's Standards for the Treatment of Historic Properties (Standards). In general, projects that are consistent with the Standards are considered to have a less than significant impact on cultural resources for purposes of CEQA (CCR 15064.5(b)(3)). Therefore, potentially significant impacts to the Pavilion would be reduced to a less-than-significant level with implementation of Mitigation Measure CUL-1, as follows.

Mitigation Measure CUL-1: Prior to issuance of construction permits, an architectural historian who meets the Secretary of the Interior's Professional Qualification Standards (36 CFR Part 61) in Architectural History should review the proposed project design at its final design stage to assess the design's conformance with the Secretary of the Interior's Standards for Rehabilitation (Standards). Should the findings indicate that the design does not adhere to the Standards, the architectural historian should work with the project design team, the Town, and appropriate historical societies (if warranted) to redesign the proposed project to reduce any significant impacts to the character defining elements of the historical resource. The results of the review and coordination should be documented in a brief memorandum and submitted to the NWIC.

Despite the negative results of the field survey, it cannot be entirely be ruled out that archaeological historical cultural resources could be encountered during project construction at the project sites. Should archaeological historical deposits be encountered during project ground disturbance, a substantial adverse change in the significance of a historical resource would occur from its demolition, destruction, relocation, or alteration such that the significance of the resource would be materially impaired (CEQA Guidelines Section 15064.5(b)(1)). To mitigate this potential impact, the Town would be required to implement Mitigation Measure CULT-2. With implementation of Mitigation Measures CULT-1 and CULT-2, potential impacts to historical resources would be reduced to a less-than-significant level.

Mitigation Measure CULT-2: Should an archaeological deposit be encountered during project subsurface construction activities, all ground-disturbing activities within 25 feet shall be redirected and a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology contacted to assess the situation, determine if the deposit qualifies as a historical resource, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. If the deposit is found to be significant (i.e., eligible for listing in the California Register of Historical Resources), the Town shall be responsible for funding and implementing appropriate mitigation measures. Mitigation measures may include recording the archaeological deposit, data recovery and analysis, and public outreach regarding the scientific and cultural importance of the discovery. Upon completion of the selected mitigations, a report documenting methods, findings, and recommendations shall be prepared by the qualified archaeologist and submitted to the Town for review, and the final report shall be submitted to the Northwest Information Center at Sonoma State University. Significant archaeological materials shall be submitted to an appropriate local curation facility and used for future research and public interpretive displays, as appropriate.

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? (Less Than Significant with Mitigation Incorporated)

According to the CEQA Guidelines, “When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource” (CEQA Guidelines Section 15064.5(c)(1)). Those archaeological sites that do not qualify as historical resources shall be assessed to determine if these qualify as “unique archaeological resources” (California PRC Section 21083.2).

Archaeological deposits identified during project construction shall be treated by the Town—in consultation with a qualified archaeologist meeting the Secretary of the Interior’s Professional Qualifications Standards for Archeology—in accordance with Mitigation Measure CULT-2. With implementation of Mitigation Measure CULT-2, identified above, impacts to archaeological resources would be less than significant.

c. Would the project disturb any humans remains, including those interred outside of formal cemeteries? (Less-Than-Significant Impact)

Based on previous archaeological investigation and analysis, there is a low potential for the disturbance of archaeological cultural resources or human remains. However, if human remains are encountered at the project areas, State Health and Safety Code Section 7050.5 and State CEQA Guidelines Section 15064.5(e)(1) state that no further disturbance shall occur to the area of the find until the County Coroner has made a determination of origin and disposition of the human bone pursuant to PRC Section 5097.98. The County Coroner must be notified of the find immediately and shall make a determination within two working days of being notified. If the remains are determined to be Native American, the County Coroner shall notify the NAHC by phone within 24 hours, and the NAHC shall then immediately determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection and make recommendations or preferences for treatment of the remains within 48 hours of being granted access to the site. The MLD’s recommendations may include scientific removal and nondestructive analysis of human remains and items associated with Native American burials, preservation of Native American human remains and associated items in place, relinquishment of Native American human remains and associated items to the descendants for treatment, or any other culturally appropriate treatment.

Compliance with Section 7050.5 of the California Health and Safety Code and Public Resources Code Section 5097.98 regarding the treatment of human remains would ensure that potential impacts to human remains would be less than significant.

3.6 ENERGY

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

- a. *Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation? (Less-Than-Significant Impact)*

This analysis evaluates energy consumption for both construction and operation of the proposed project, including diesel fuel use for construction off-road equipment.

Construction. Construction of the proposed project would require the use of energy to fuel construction equipment and vehicles. All or most of this energy would be derived from non-renewable resources. Construction activities are not anticipated to result in an inefficient use of energy as gasoline and diesel fuel would be supplied by construction contractors who would conserve the use of their supplies to minimize their costs on the project. Energy usage on the project site during construction would be temporary in nature and would be relatively small in comparison to the State's available energy sources. As such, construction energy usage would be less than significant. In addition, implementation of Mitigation Measure AIR-1 (refer to Section 3.3) would restrict equipment idling times to 5 minutes or less and construction workers would be required to shut off idle equipment, which would increase energy efficiency on the site during project construction. Therefore, impacts would be less than significant.

Operation. Typically, energy consumption is associated with fuel used for vehicle trips and electricity and natural gas use. The proposed project would remove the existing culvert and replace it with a natural stream channel to provide flood protection and enhance aquatic habitat. The proposed project would also include associated improvements to the existing Pavilion, access pathways/trails, and other landscaping treatments to enhance existing park facilities and complement the restored channel. Once operational, the project would not result in energy use. Therefore, operational energy impacts would be less than significant.

- b. *Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? (Less-Than-Significant Impact)*

In 2002, the Legislature passed Senate Bill 1389, which required the California Energy Commission (CEC) to develop an integrated energy plan every two years for electricity, natural gas, and transportation fuels, for the California Energy Policy Report. The plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and

increase the efficient use of fuel supplies with the least environmental and energy costs. The CEC recently adopted the 2019 Integrated Energy Policy Report.¹⁵ The 2019 Integrated Energy Policy Report provides the results of the CEC's assessments of a variety of energy issues facing California. Many of these issues will require action if the State is to meet its climate, energy, air quality, and other environmental goals while maintaining energy reliability and controlling costs.

As indicated above, energy usage in the project area during construction would be relatively small in comparison to the State's available energy sources and energy impacts would be negligible at the regional level. Once operational, the proposed project would not increase energy use. Because California's energy conservation planning actions are conducted at a regional level, and because the project's total impact to regional energy supplies would be minor, the proposed project would not conflict with California's energy conservation plans as described in the 2019 Integrated Energy Policy Report. Thus, as shown above, the project would avoid or reduce the inefficient, wasteful, and unnecessary consumption of energy and not result in any irreversible or irretrievable commitments of energy. Impacts would be less than significant.

¹⁵ California Energy Commission. 2020. *2019 Integrated Energy Policy Report*. California Energy Commission. Docket # 19-IEPR-01. February

3.7 GEOLOGY AND SOILS

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

a. *Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:*

i. *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. (No Impact)*

The State of California enacted the Alquist-Priolo Earthquake Fault Zoning Act in 1972, requiring the State Geologist to delineate Earthquake Fault Zones (EFZ) along known active faults that have high potential for fault rupture. Active faults are defined as a fault that has surface displacement within the last 11,000 years.¹⁶ State regulations prohibit habitable structures from being sited within 50 feet of an active fault. The project site is not located within or adjacent to an Alquist-Priolo

¹⁶ California, State of. 2019. Department of Conservation. Alquist-Priolo Earthquake Fault Zones. Website: www.conservation.ca.gov/cgs/alquist-priolo (accessed May 10, 2021).

Earthquake Fault Zone.¹⁷ The nearest Alquist-Priolo Earthquake Fault Zone is the Hayward Fault, located approximately 4.5 miles to the west of the project site. Therefore, the project would have a less than significant impact on people and structures related to fault rupture.

ii. Strong seismic ground shaking? (Less-Than-Significant Impact)

The project site and the entire San Francisco Bay Area are located in a seismically active region subject to strong seismic ground shaking. Ground shaking is a general term referring to all aspects of motion of the earth's surface resulting from an earthquake, and is normally the major cause of damage in seismic events. The extent of ground-shaking is controlled by the magnitude and intensity of the earthquake, distance from the epicenter, and local geologic conditions. The magnitude of a seismic event is a measure of the energy released by an earthquake; it is assessed by seismographs that measure the amplitude of seismic waves. The intensity of an earthquake is a subjective measure of the perceptible effects of a seismic event at a given point. The Modified Mercalli Intensity (MMI) scale is the most commonly used scale to measure the subjective effects of earthquake intensity. It uses values ranging from I to XII.¹⁸ Major active faults in the region that could cause ground shaking at the project site include the Hayward Fault, the Mount Diablo Thrust, the Calaveras Fault, and the Pleasanton Fault.

Mapping has been compiled by the Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) for the likely shaking intensities in the Bay Area that would have a 10 percent chance of occurring in any 50-year period. A large earthquake (magnitude 6.7 or greater) on one of the major active faults in the region would generate severe (MMI 8) ground shaking at the project site.¹⁹

The most significant adverse impact associated with strong seismic shaking is potential damage to structures and improvements. No habitable structures would be constructed as part of the proposed project; however, implementation of the proposed project would increase the use of the project site and result in the construction of improvements in areas subject to seismic shaking. The risk of ground shaking impacts is reduced through adherence to the design and materials standards set forth in building codes. The Town of Moraga has adopted the 2019 Building Standards Code, which is comprised of the 2019 California Building, Residential, Green Building Standards, Electrical, Plumbing, Mechanical, and Existing Building Codes. The California Building Code (Title 24, Part 2 of the California Code of Regulations [CBC]) provides for stringent construction requirements on projects in areas of high seismic risk. The design and construction for the proposed project would be required to conform with, or exceed, current best standards for earthquake resistant construction in

¹⁷ California Geological Survey. 2019. California Earthquake Hazards Zone Application. Website: maps.conservation.ca.gov/cgs/EQZApp/app/ (accessed May 10, 2021).

¹⁸ United States Geological Survey. 2018. The Modified Mercalli Intensity Scale. Website: www.usgs.gov/natural-hazards/earthquake-hazards/science/modified-mercalli-intensity-scale?qt-science_center_objects=0#qt-science_center_objects (accessed May 10, 2021).

¹⁹ Metropolitan Transportation Commission and Association of Bay Area Governments. 2018. Probabilistic Earthquake Shaking Hazard Map. Website: mtc.maps.arcgis.com/apps/webappviewer/index.html?id=4a6f3f1259df42eab29b35dfcd086fc8 (accessed April 8, 2021).

accordance with the most recent CBC adopted by the Town and with the generally accepted standards of geotechnical practice for seismic design in Northern California.

Incorporation of seismic construction standards in accordance with the California Building Code would reduce the potential for catastrophic effects of ground shaking, such as complete structural failure, and would reduce the impact of strong seismic ground shaking to a level of less than significant. Therefore, the impact of strong seismic ground shaking is considered less than significant.

iii. Seismic-related ground failure, including liquefaction? (Less Than Significant with Mitigation Incorporated)

Liquefaction is the transformation of loose, fine-grained sediment to a fluid-like state similar to quicksand. This phenomenon occurs due to strong seismic activity and lessens the soil's ability to support a structural foundation. The primary factors affecting the possibility of liquefaction in soil are: (1) intensity and duration of earthquake shaking; (2) soil type and relative density; (3) overburden pressures; and (4) depth to groundwater. Soil most susceptible to liquefaction is clean, loose, fine-grained sands and non-plastic silts that are saturated.

The California Geological Survey (CGS) has mapped Seismic Hazard Zones that delineate areas susceptible to liquefaction and/or landslides that require proposed new developments in these areas to conduct additional investigation to determine the extent and magnitude of potential ground failure. According to mapping by CGS,²⁰ the project is located in an area that has not been evaluated for liquefaction or landslides. Mapping performed by MTC/ABAG indicates that the project site is located in an area of moderate liquefaction susceptibility.²¹ Areas to receive improvements that could be damaged by the effects of soil liquefaction should be evaluated to determine the potential settlement associated with seismic induced liquefaction. Seismic-related ground failure, including liquefaction, is considered to be a less-than-significant impact with implementation of Mitigation Measure GEO-1, which requires preparation and implementation of a design-level Geotechnical Investigation.

Mitigation Measure GEO-1: Seismic-Related Ground Failure, Including Liquefaction. A Design-level Geotechnical investigation shall be performed for proposed trail improvements. Geotechnical recommendations shall be prepared for the project under the direction of a California Registered Geotechnical Engineer, or Registered Civil Engineer experienced in geotechnical engineering. The Geotechnical recommendations shall be based on the information developed for the site and shall establish the seismic design parameters, as determined by the engineer in accordance with requirements of the

²⁰ California Geological Survey. 2019, op. cit.

²¹ Metropolitan Transportation Commission and Association of Bay Area Governments. 2006. Earthquake Liquefaction Susceptibility Map. Available online at: mtc.maps.arcgis.com/apps/webappviewer/index.html?id=4a6f3f1259df42eab29b35dfcd086fc8 (accessed May 11, 2021).

California Building Code, for improvements to the project site. The geotechnical recommendations and design plans shall identify specific measures to reduce the liquefaction potential of surface soils in areas where liquefaction would pose a risk to health and safety in accordance with Public Resources Code Section 2693 (c).

iv. Landslides? (Less-Than-Significant Impact)

Seismically induced landslides and other slope failures are common occurrences during or soon after earthquakes in areas with significant ground slopes. The project site is relatively level. No substantial natural slopes exist on the project site. However, the project site does include a segment of Laguna Creek, a pervious area, which consists of an earthen channel. As part of the proposed project, the existing culvert would be removed and replaced with a natural creek channel. The creek slopes would be bioengineered with natural boulder slope protection, which would prevent landslides from occurring within Laguna Creek that could put the new bridge or people traveling on the trail at risk. Therefore, impacts associated with landslides would be less than significant.

b. Would the project result in substantial soil erosion or the loss of topsoil? (Less-Than-Significant Impact)

The potential for soil erosion exists during the period of earthwork activities and between the time when earthwork is completed, and new vegetation is established or hardscape is installed. Initial construction activities, such as demolition of the existing culvert, grading, excavation, and removal of vegetation cover associated with construction activities, have the potential to result in erosion, runoff, and sedimentation. The increased erosion potential could result in short-term water quality impacts as identified in Section 3.10, Hydrology and Water Quality. Under the Construction General Permit, all projects that will disturb or alter more than 1 acre in the area must prepare a Stormwater Pollution and Prevention Plan (SWPPP) prior to any ground disturbance activities. The SWPPP would provide the details of the erosion control measures to be applied on the project site during the construction period, including Best Management Practices (BMPs) for erosion control that are recognized by the Regional Water Quality Control Board (RWQCB). Compliance with State and local regulations regarding stormwater during construction, including preparation and implementation of a SWPPP would ensure that the proposed project would result in less-than-significant impacts related to erosion during construction.

Implementation of the proposed project would result in a minimal increase in impervious surface of approximately 0.05 acre. An increase in impervious surface could increase the volume of runoff during a storm, which has the potential to increase soil erosion. However, because the proposed project would result in a nominal increase in impervious surface area, the volume and rate of runoff would be similar to the existing condition. All stormwater runoff would continue to drain into Laguna Creek. Implementation of the proposed project would improve the capacity of Laguna Creek to handle the minimal increase in runoff volume from the project area. The right bank upslope from the floodplain would be bioengineered with natural boulder slope protection, backfilled with native soil, and planted with cottonwood or willow poles for added stability. The left bank may contain root wads upslope from the floodplain, but would otherwise remain unarmored, to protect the banks from erosion, while allowing the low flow channel to create complex flow patterns and permit

the dimensions of the left bank and floodplains to adjust. Therefore, because the proposed project would not substantially change the volume and velocity of stormwater runoff and would incorporate protection along the creek banks, impacts related to erosion during operation would be less than significant.

c. Would the project 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 Impact)

Please refer to Section 3.7.a. The proposed project would be designed and constructed in accordance with standard engineering practices and the CBC. The project site is not anticipated to become unstable as a result of the proposed project, or potentially result in on- or off-site landslides, liquefaction, or lateral spreading. Further, implementation of Mitigation Measure GEO-1, which would require preparation of a site-specific geotechnical evaluation and implementation of proposed geotechnical recommendations, would ensure that the proposed project would not result in a geologic hazard from landslide, lateral spreading, subsidence, liquefaction or collapse. This impact would be less than significant.

d. Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property? (Less-Than-Significant Impact)

Expansion and contraction of volume can occur when expansive soils undergo alternating cycles of wetting (swelling) and drying (shrinking). During these cycles, the volume of the soil changes markedly. Expansive soils are common throughout California and can cause damage to foundations and slabs unless properly treated during construction. According to the Natural Resources Conservation Service web soil survey,²² the predominant soil type on the project site is Cropley clay, 2 to 5 percent slopes. The shrink-swell potential for these soil types is high.²³

The proposed project would be designed and constructed using standard construction methods and in compliance with the CBC. Adherence to the CBC requirements and implementation of site-specific recommendations included in the geotechnical investigation, as required in Mitigation Measure GEO-1, would ensure that geotechnical design of the proposed project would reduce potential impacts related to expansive soils. Therefore, expansive soils would not pose a risk to life or property, and this impact would be less than significant.

²² United States Department of Agriculture Soil Conservation Service. 2019. Web Soil Survey. Available online at: websoilsurvey.sc.egov.usda.gov/App/HomePage.htm (accessed May 11, 2021).

²³ United States Department of Agriculture Soil Conservation Service. 1977. Soil Survey of Contra Costa County. Available online at: www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/california/CA013/0/contracosta.pdf (accessed May 11, 2021).

- e. *Would the project 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? (No Impact)*

Septic tanks and alternative wastewater disposal systems would not be installed on the project site. Therefore, implementation of the project would not result in impacts to soils associated with the use of such wastewater treatment systems. No impact would occur.

- f. *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? (Less Than Significant with Mitigation Incorporated)*

The proposed project would not require deep excavation or trenching that would likely encounter paleontological resources. However, in the event that fossil remains are encountered, impacts to paleontological resources could occur. Implementation of Mitigation Measure GEO-2 would reduce potential impacts to paleontological resources to less than significant.

Mitigation Measure GEO-2: If fossil remains or paleontologically sensitive bedrock is exposed during project construction, all ground-disturbing activities within 25 feet shall be redirected and a qualified paleontologist shall be contacted to review the find. The project team (the WCW and the paleontologist) shall develop and implement a plan for impact avoidance. Should avoidance be infeasible due to engineering requirements, the project team shall develop and implement a plan to offset the loss of paleontological data through the implementation of a data recovery project, including paleontological recovery. If determined to be a unique paleontological resource, the potentially significant impacts caused by construction may be mitigated through monitoring during construction activity (beyond the area of the initial find), and, if warranted by potential finds, recovery of fossils; preservation, stabilization, and identification of collected resources; curation of resources into a museum repository; and preparation of a final report documenting the monitoring methods and results, to be prepared by the qualified paleontologist and submitted to an appropriate repository such as the University of California (Berkeley) Museum of Paleontology (UCMP).

3.8 GREENHOUSE GAS EMISSIONS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (Less-Than-Significant Impact)

Greenhouse gas emissions (GHGs) are present in the atmosphere naturally, and are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. However, over the last 200 years, human activities have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere, and enhancing the natural greenhouse effect, which is believed to be causing global climate change. The gases that are widely seen as the principal contributors to human-induced global climate change are:

- Carbon dioxide (CO₂)
- Methane (CH₄)
- Nitrous oxide (N₂O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF₆)

While GHGs produced by human activities include naturally occurring GHGs such as CO₂, CH₄, and N₂O, some gases, such as HFCs, PFCs, and SF₆, are completely new to the atmosphere. Certain other gases, such as water vapor, are short-lived in the atmosphere compared to those GHGs that remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is generally excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation. For the purposes of this analysis, the term "GHGs" will refer collectively to the six gases identified in the bulleted list provided above.

These gases vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere ("atmospheric

lifetime”). The GWP of each gas is measured relative to carbon dioxide, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the heat trapped by one unit mass of CO₂ over a specified time period. GHG emissions are typically measured in terms of pounds or tons of “CO₂ equivalents” (CO₂e). For example, sulfur hexafluoride is 22,800 times more potent at contributing to global warming than carbon dioxide.

a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (Less-Than-Significant Impact)

This section describes the proposed project’s construction- and operational-related GHG emissions and contribution to global climate change. The BAAQMD has not addressed emission thresholds for construction in their CEQA Guidelines; however, the BAAQMD encourages quantification and disclosure. Thus, construction emissions are discussed in this section.

Construction Activities. Construction of the proposed project would produce combustion emissions from various sources. During demolition activities, GHGs would be emitted through the operation of construction equipment and from worker vehicles, which typically use fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO₂, CH₄, and N₂O. Furthermore, CH₄ is emitted during the fueling of heavy equipment.

The BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. However, lead agencies are encouraged to quantify and disclose GHG emissions that would occur during construction. Using RoadMod, it is estimated that construction of the proposed project would generate approximately 472.8 metric tons of CO₂e. Although not required to reduce a significant impact, implementation of Mitigation Measure AIR-1 would reduce GHG emissions by reducing the amount of construction vehicle idling and by requiring the use of properly maintained equipment. Therefore, project construction impacts associated with GHG emissions would be considered less than significant.

Operational Emissions. Long-term GHG emission impacts are associated with stationary sources and mobile sources. Stationary source emissions result from the consumption of natural gas and electricity. Mobile source emissions result from vehicle trips and result in GHG emissions affecting the entire air basin. As discussed above, the proposed project would remove the existing culvert and replace it with a natural stream channel to provide flood protection and enhance aquatic habitat. The proposed project would also include associated improvements to the existing Pavilion, access pathways/trails, and other landscaping treatments to enhance existing park facilities and complement the restored channel. Once operational, the project would not result in an increase in the generation of vehicle trips or vehicle miles traveled that would GHG emissions. The project would not be a source of stationary source emissions. Therefore, operation of the proposed project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment and impacts would be less than significant.

b. Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? (Less-Than-Significant Impact)

The Town of Moraga adopted a Climate Action Plan (CAP) in 2012 to develop GHG reduction goals and strategies aimed at reducing GHG emissions 15 percent below 2005 levels by 2020. The CAP's GHG reduction goals and strategies relate to land use and transportation, municipal operations, residential and commercial energy use, solid waste, and water and wastewater. However, these measures are intended for land use development projects and municipal operations and wouldn't be applicable to the proposed project. The project would daylight and restore the reach of Laguna Creek within the Hacienda de las Flores Park and would not conflict with any applicable plans, policies or regulations adopted for the purpose of reduction the emissions of GHGs.

3.9 HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? (Less-Than-Significant impact)

Hazardous substances include chemicals regulated under both the United States Department of Transportation²⁴ and the U.S. Environmental Protection Agency (USEPA)²⁵ "Hazardous Materials" regulations. Hazardous waste requires specific handling and disposal procedures because of potential damage to public health and the environment. The proposed project would be located within an existing community park. There is no indication of current or historical hazardous materials use, storage, disposal, or release at the project site.

Exposure to hazardous materials during the construction of the project could result from the improper handling or use of hazardous substances or an inadvertent release resulting from an

²⁴ U.S. Department of Transportation. 2017. Hazardous Materials Regulations. Available online at: www.phmsa.dot.gov/standards-rulemaking/hazmat/hazardous-materials-regulations (accessed July 6, 2020).

²⁵ U.S. Environmental Protection Agency. 2012. Hazardous Waste Regulations. Available online at: www.epa.gov/osw/lawsregs/regs-haz.htm (accessed September 6, 2017).

unforeseen event (e.g., fire, flood, or earthquake). The severity of any such exposure is dependent upon the type, amount, and characteristic of the hazardous material involved; the timing, location, and nature of the event; and the sensitivity of the individual or environment affected.

Project construction would likely require the use of limited quantities of hazardous materials, such as fuels, oils, lubricants, and solvents. The small quantities of hazardous materials that would be transported, used, or disposed of would be well below reportable quantities. The improper use, storage handling, transport, or disposal of hazardous materials during construction could result in accidental release exposing construction workers, the public and the environment, including soil and/or ground or surface water to adverse effects. Construction activities would be conducted with standard construction practices and in accordance with all applicable Cal-OSHA and other safety regulations to minimize the risk to the public. Compliance with federal, State, and local hazardous materials laws and regulations would minimize the risk to the public presented by these potential hazards during construction of the project. Transportation of any hazardous materials generated by demolition or excavation is regulated by the federal Department of Transportation and the California Department of Transportation (Caltrans). As such, transportation of hazardous materials off-site must be handled by licensed hazardous waste haulers.

The proposed project involves removal of an existing culvert and creation of a natural stream channel along a reach of Laguna Creek. After project construction, no routine transport or disposal of hazardous materials would be associated with the proposed project.

Therefore, implementation of the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. This impact is considered less than significant.

b. Would the project 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 Impact)

The proposed project involves removal of an existing culvert and creation of a natural stream channel along a reach of Laguna Creek. After project construction, no hazardous materials would be associated with the proposed project.

Hazardous materials most likely to be used during construction include typical construction materials such as gasoline, diesel, motor oil, lubricants, solvents, and adhesives. Such materials would be kept at construction staging areas and would be secured when not in use. In the unlikely event of a spill, fuels would be controlled and disposed of in accordance with applicable regulations. Drips and small spills would be the most likely potential hazardous materials releases to occur; however, any release that occurs in close proximity to a stream or drainage channel could have a significant impact on the environment, if not properly controlled. However, the Town would be required to prepare and implement a SWPPP for the proposed project in accordance with the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (NPDES General Construction Permit)(Order No. 2009-0009-DWQ, NPDES No. CAS000002) (SWRCB 2009) permitting requirements, which would reduce the potential for hazardous materials releases to occur during

construction, and would reduce the potential for spills to impact sensitive habitat or human health, to a less-than-significant level. SWPPPs are required for construction sites over one acre that do not qualify for a waiver. Therefore, development of the proposed project would not create a significant hazard to the public or environment. This impact would be less than significant.

c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? (Less-Than-Significant Impact)

No schools are located within 0.25 miles of the project site. The closest schools to the project site are Donald L. Rheem Elementary School, located approximately 0.45 mile to the northwest and Las Peralas Elementary School, located approximately 0.65 mile to the southwest. In addition, the proposed project would not routinely emit hazardous emissions, and handling of hazardous or acutely hazardous materials, substances, or waste on the project site (if any) would be temporary and cease upon project completion. Therefore, the proposed project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school. This impact would be less than significant.

d. Would the project 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)

The project site is not listed on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5²⁶ and no listed sites are located in proximity to the proposed project site.²⁷ Therefore, no significant hazard to the public or environment would be associated with a listed site. No impact would occur.

e. Would the project be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area? (No Impact)

The project site is not located within an airport land use plan, or within 2 miles of a public airport or public use airport. The closest airport to the project site is the Oakland International Airport, located approximately 10.5 miles to the southwest. Due to the distance from the Oakland International Airport, the proposed project would not result in a hazard for people residing or working in the project area. No impact would occur.

²⁶ California Environmental Protection Agency. 2020. Cortese List Data Resources. Website: calepa.ca.gov/sitecleanup/corteselist (accessed May 13, 2021).

²⁷ State Water Resources Control Board. 2021. GeoTracker. Website: geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=2100+Donald+Drive%2C+Moraga%2C+CA# (accessed May 13, 2021).

f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? (Less-Than-Significant Impact)

The Town of Moraga has adopted an Emergency Operations Plan,²⁸ which outlines the Town's emergency planning, organization and response policies and procedures for emergencies and disasters. The Town of Moraga has been divided into 23 separate evacuation zones, which allows emergency responders to notify a specific geographical area of an emergency, critical incident, or the need to evacuate using the Contra Costa County Community Warning System. According to the Town of Moraga Public Safety Zone map,²⁹ the project site is located with zone MOR-E006. The project site is located along Moraga Road, which is a major north-south route through the Town. However, the proposed project would not negatively alter or obstruct any roadways in the project vicinity, including Moraga Road, nor would it alter the current use of the project site. Therefore, implementation of the proposed project would not interfere with an adopted emergency response plan or emergency evacuation plan. This impact would be less than significant.

g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? (Less-Than-Significant Impact)

The project site is located within a developed urban area and according to the California Department of Fire and Forestry Protection (CalFire), the project site is not located in a Very High Fire Hazard Severity Zone.³⁰ Therefore, the proposed project would not expose people or structures to a significant loss, injury or death involving wildland fires and this impact would be less than significant.

²⁸ Moraga, Town of. 2018. *Town of Moraga Emergency Operations Plan*. August.

²⁹ Moraga, Town of. 2020. Town of Moraga Public Safety Zone Map. Available online at: www.moraga.ca.us/DocumentCenter/View/5369/emergency_plan_zones_revised?bidId= (accessed May 13, 2021).

³⁰ CAL FIRE. 2020. California Fire Hazard Severity Zone Viewer. Website: gis.data.ca.gov/datasets/789d5286736248f69c4515c04f58f414 (accessed May 6, 2021).

3.10 HYDROLOGY AND WATER QUALITY

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

Laguna Creek is a perennial stream in Contra Costa County that generally flows in a southeast direction toward the Upper San Leandro Reservoir. The project reach to be restored is located approximately 2 miles upstream from the confluence with San Leandro Reservoir and has a watershed area of approximately 1.9 square miles. The project reach drains approximately 1,240 acres.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) No. 06013C0407F (June 16, 2002), the project site is located within Zone AE of the Laguna Creek floodway.³¹ Areas designated as Zone AE include the channel of the stream and any adjacent floodplain areas that must be kept free of encroachment so the 100-year flood can be carried without substantial increase in floodplain elevation. In addition, areas designated as Zone AE have a defined base flood elevation. The Laguna Creek floodway within the project area has a base flood elevation of 551 to 560 feet.

³¹ Federal Emergency Management Agency. FEMA Flood Map Service Center. Website: msc.fema.gov/portal/home (accessed May 13, 2021).

As outlined in Section 1.0 Project Information, the proposed project would remove the existing culvert and daylight and restore an existing reach of Laguna Creek within the Hacienda to mitigate flooding and improve habitat. Laguna Creek between Donald Drive and Devin Drive (project site) has historically meandered through the grounds of the Hacienda as a natural channel. To accommodate construction of the Pavilion on the southwest side of Laguna Creek, the creek was realigned to include a 90-degree bend when unnamed tributary discharges into Laguna Creek. Just downstream of this confluence, Laguna Creek was subsequently buried in the undersized 242-foot long, 8-foot diameter CMP culvert. These conditions cause Laguna Creek to overtop the right bank and inundate the Pavilion when flows exceed approximately 1,110 cubic feet per second (cfs), which is equivalent to the Contra Costa County Flood Control and Water Conservation District's 10-year event.

The proposed restoration has been designed based on the findings of the Hydraulic Analyses³² and the Geomorphic Assessment Report³³ prepared for the project reach. Due to multiple site constraints, including the existing 120-square foot box culvert under Devin Drive, design discharges for the proposed project utilized the 100-year storm flow estimated by the Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS), which is 1,300 cfs with a resulting volume of approximately 500 acre-feet over a 24-hour storm event.

The proposed channel geometry (e.g., bottom width and bank slopes) has been determined based on the Geomorphic Assessment Report, which shows that the proposed channel must be 12.3 feet wide at the bottom with floodplain width of 21 feet for a total bank full width of 38.5 feet. However, due to site constraints, the channel geometry is reduced from 38.5 feet to a varying width ranging from 20 feet to 23 feet. Using the channel geometry developed through the geomorphology analyses and site constraints, a hydraulic model was created using the U.S. Army Corps of Engineers HEC-RAS hydraulic modeling software. The results of the hydraulic modeling demonstrate that the proposed channel can carry the FEMA 100-year flow rate of 1,300 cfs with a minimum freeboard of 12 inches to the top of bank.

a. Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality? (Less-Than-Significant Impact)

The project site is located within the Upper San Leandro/Moraga Creek Watershed, which comprises the upper portion of the larger San Leandro Creek watershed located in both Contra Costa and Alameda Counties. The portion of the watershed within Contra Costa County is 20.6 square miles. This watershed contains protected watershed lands of EBMUD that buffer Upper San Leandro Reservoir. As described above, Laguna Creek drains to San Leandro Reservoir.

Construction. Pollutants of concern during construction include sediment, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. Each of these pollutants on its own or in combination with other pollutants can have a detrimental effect on water quality.

³² BKF Engineers. 2020. Laguna Creek Restoration and Flood Protection Project, Hydraulic Analyses. March 18.

³³ Restoration Design Group. 2020. *Laguna Creek Restoration and Flood Protection Geomorphic Assessment Report*. December 18.

During construction activities, excavated soil would be exposed, and there would be an increased potential for soil erosion and sedimentation compared to existing conditions. In addition, chemicals, liquid products, petroleum products (such as solvents, and fuels), and concrete-related waste may be spilled or leaked during construction. Any of these pollutants have the potential to be transported via storm water runoff into receiving waters.

Because the project would disturb greater than 1 acre of soil, the project is subject to the requirements of the State Water Resources Control Board's NPDES General Permit for Storm Water Discharge Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, as amended by Orders No. 2010-0014-DWQ and 2012-0006-DWQ, NPDES No. CAS000002) (Construction General Permit). Under the Construction General Permit, the Construction Contractor would be required to prepare a SWPPP and implement construction BMPs detailed in the SWPPP during construction activities. Construction BMPs would include, but not be limited to, erosion and sediment control, designed to minimize erosion and retain sediment on site, and good housekeeping practices to prevent spills, leaks, and discharge of construction debris and waste into receiving waters.

Construction would be conducted during the dry season when flows are expected to be minimal. However, any water present in Laguna Creek during construction would be diverted around the construction zone by installing temporary cofferdams and rerouting water around the entire work area. Cofferdams would be constructed no more than 20 feet upstream and, if necessary, downstream of the project area. Flows would be diverted only when construction of the diversion is complete. Cofferdams would be built only from materials that would cause little or no siltation (e.g., sandbags filled with clean sand, haybales with visqueen, or other agency-approved methods). Cofferdam construction would be adequate to prevent seepage into or from the work area. The cofferdam dewatering system would remain in place until all work on the project is complete. Cofferdams, pumps, and any related materials would be removed upon completion of restoration work. All dewatering activities would be conducted consistent with RWQCB requirements and as such, would not result in a violation of water quality standards or waste discharge requirements.

Compliance with the requirements of the Construction General Permit would ensure that the proposed project would result in less-than-significant impacts to water quality during construction.

Operation. Implementation of the proposed project would restore the natural stream channel within the existing park and provide other site improvements, including a trail connection along the restored stream bank. In addition to increased flood protection, the proposed project would create approximately 1,500 square feet of aquatic habitat, 2,750 square feet of floodplain habitat, and 22,250 square feet of riparian woodland habitat. Implementation of the proposed project would improve water quality, resulting in a beneficial environmental effect. Therefore, long-term operation of the project would not violate any water quality standards or waste discharge requirements.

- b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? (Less-Than-Significant Impact)*

The proposed project is not located within a California Department of Water Resources (DWR) recognized Groundwater Basin and does not contain a recognized groundwater aquifer of any size or depth.³⁴ Implementation of the proposed project would not significantly affect groundwater supplies and groundwater recharge and would not cause a net deficit in aquifer volume or a lowering of the local groundwater level. The project site would be dewatered during construction using an upstream coffer diversion dam. Flows would be routed by gravity around the project site and back to the creek. Dewatering would be conducted in compliance with the permit conditions of the RWQCB water quality certification and CDFG Streambed Alteration Agreement. This impact would be less than significant.

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

- i. Result in substantial erosion or siltation on- or off-site; (Less-Than-Significant Impact)*

During construction activities, soil would be exposed and disturbed, and drainage patterns would be temporarily altered during grading and other construction activities, resulting in an increased potential for soil erosion and siltation compared to existing conditions. Additionally, during a storm event, soil erosion could occur at an accelerated rate. As discussed above in Section 3.10.a above, the Construction General Permit requires preparation of a SWPPP and implementation of construction BMPs to reduce impacts to water quality during construction, including those impacts associated with soil erosion and siltation. Therefore, adherence to the requirements of the Construction General Permit would ensure that construction of the project would result in a less than significant impact related to this topic.

Implementation of the proposed project would remove the existing culvert and restore the natural stream channel to provide flood protection and enhance riparian habitat. Following implementation, downstream erosion and siltation would be reduced, resulting in a beneficial environmental effect.

- ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; (Less-Than-Significant Impact)*

Construction activities would temporarily alter on-site drainage patterns and compact soil, which can increase the volume and velocity of storm water runoff. However, construction activities would be temporary, and the increase in runoff would not be substantial. As discussed in Section 3.10.a above, the Construction General Permit requires the preparation of a SWPPP to identify construction BMPs to be implemented as part of the project to reduce impacts to water quality

³⁴ California Department of Water Resources. 2021. Groundwater Basin Boundary Assessment Tool Website: gis.water.ca.gov/app/bbat/ (accessed May 13, 2021).

during construction, including those impacts associated with flooding. Therefore, adherence to the Construction General Permit would ensure that construction activities would result in a less than significant impact.

Implementation of the proposed project would remove the existing culvert and restore the natural stream channel to provide flood protection and enhance riparian habitat. Following implementation, the channel would have greater capacity of accommodate stormwater runoff and prevent on-site and off-site flooding, resulting in a beneficial environmental effect.

iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (Less-Than-Significant Impact)

As discussed above, construction activities could alter drainage patterns during grading and other construction activities, and spill, leak, or transport construction-related pollutants such as liquid and petroleum products and concrete waste via stormwater runoff into adjacent drainages and downstream receiving waters. The proposed project would be required to comply with the requirements set forth in the Construction General Permit, which requires the preparation of a SWPPP and implementation of construction BMPs to control stormwater runoff. Compliance with these regulatory requirements would ensure that impacts related to the creation or contribution of runoff that would exceed the capacity of the storm water drainage system or provide substantial additional sources of polluted runoff would be less than significant.

Implementation of proposed improvements would not result in a significant increase in impervious surface area or an associated increase in the volume and rate of runoff during a storm. Implementation of the proposed project would remove the existing culvert and restore the natural stream channel to provide flood protection and enhance riparian habitat. Following implementation, the channel would have greater capacity of accommodate stormwater runoff to prevent overflow of the stormwater drainage system and reduce polluted runoff, resulting in a beneficial environmental effect. Therefore, the proposed project would not create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems.

iv. Impede or redirect flood flows? (No Impact)

As described above, the project site is located within a 100-year flood hazard zone as mapped by FEMA. The proposed project would remove the existing culvert and restore the natural stream channel to better accommodate flood flows. The proposed project would include installation of a new bridge over the channel to maintain vehicular access. The new bridge would not impede or redirect flood flows. As described in the Hydraulic Analyses, the proposed wingwalls would be extended in order to contain the 100-year flood flow with 12 inches of freeboard, which would improve flood conditions within the project site. No impact would occur.

d. In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation? (No Impact)

As described above, the project site is located within a 100-year flood hazard zone as mapped by FEMA. The proposed project would remove the existing culvert and restore the natural stream channel to accommodate the 100-year flood flow and enhance riparian habitat. Therefore, implementation of the proposed project would improve flood conditions within the project area.

Dam failure is defined as the structural collapse of a dam that releases the water stored in a reservoir behind the dam. A dam failure is usually the result of the age of the structure, inadequate spillway capacity, or structural damage caused by an earthquake or flood. According to Contra Costa County Hazard Mitigation Plan, approximately 27 dams are located in in Contra Costa County, with another six dams outside the County that have inundation areas within the County. However, less than 3 percent of the Town of Moraga's population lies within a dam inundation zone.³⁵

The project site is not located within a mapped tsunami area for Contra Costa County³⁶ nor is the project site located in close proximity to San Francisco Bay.

The proposed project would remove the existing culvert and restore the natural stream channel to mitigated flooding at the project site. No habitable structures would be constructed as part of the proposed project. While implementation of the proposed project could increase use of the project site, such use would be intermittent and temporary, and the proposed project would improve flood conditions by expanding the capacity of the stream channel to accommodate flood flows. Therefore, implementation of the proposed project would not exacerbate the potential for release of pollutants due to project inundation. No impact would occur.

e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? (No Impact)

The proposed project would not conflict with the Regional Water Quality Control Board's Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan)³⁷ or the California Sustainable Groundwater Management Act (SGMA), which took effect on January 1, 2015. SGMA established a framework of priorities and requirements to facilitate sustainable groundwater management

³⁵ TetraTech. 2018. *Contra Costa County Hazard Mitigation Plan*. Available online at: 64.166.146.245/docs/2018/CCCFPD/20180612_1115/33997_Attachment%20-%20Contra%20Costa%20County%20Draft%20LHMP%20Final_Vol1.pdf (accessed May 13, 2021). January.

³⁶ California, State of. 2009. California Emergency Management Agency. *Contra Costa County Tsunami Inundation Maps*. Available online at: www.conservation.ca.gov/cgs/tsunami/maps/contra-costa (accessed May 13, 2021).

³⁷ California Regional Water Quality Control Board San Francisco Bay Region. 2019. *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)*. Available online at; www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/basinplan/web/docs/ADA_compliant/BP_all_chapters.pdf (accessed May 13, 2021). November.

throughout the State.³⁸ The intent of SGMA is for groundwater to be managed by local public agencies (e.g., water districts, irrigation districts, etc.) and newly formed Groundwater Sustainability Agencies (GSAs) to ensure a groundwater basin is operated within its sustainable yield (no long term overdraft) through the development and implementation of Groundwater Sustainability Plans (GSPs). As described above, the project site is not located within a designated groundwater basin and is not located within a Medium or High Priority groundwater basin based on the Groundwater Basin Prioritization established by the DWR³⁹; therefore no GSP applies to the project site.

The proposed project would not conflict with the GSP for this area, given the lack of useable groundwater and the fact that the proposed project would not include any on-site groundwater utilization, nor would it significantly reduce groundwater recharge. Therefore, no impact related to groundwater sustainability or conflict with a GSP would occur.

³⁸ California, State of. 2021. Department of Water Resources. *Sustainable Groundwater Management Act*. Website: water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management (accessed May 13, 2021).

³⁹ California Department of Water Resources. 2020. SGMA Basin Prioritization Dashboard. Available online at: gis.water.ca.gov/app/bp-dashboard/final (accessed July 3, 2020).

3.11 LAND USE AND PLANNING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a. Would the project physically divide an established community? (Less-Than-Significant Impact)

The physical division of an established community typically refers to the construction of a feature (such as an interstate highway or railroad tracks) or removal of a means of access (such as a local road or bridge) that would impair mobility within an existing community, or between a community and outlying areas. For instance, the construction of an interstate highway through an existing community may constrain travel from one side of the community to another; similarly, such construction may also impair travel to areas outside of the community.

The project site is located within an existing community park and is surrounded by residential uses. The proposed project would remove an existing culvert and restore the natural stream channel. The proposed project would not result in the realignment or closure of any existing roads. Therefore, the proposed project would not result in the physical division of an established community or adversely affect the continuity of land uses in the vicinity, and this impact would be less than significant.

b. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? (Less-Than-Significant Impact)

The project site is located within an existing park in the Town of Moraga and is subject to the land use and zoning designations of the Town of Moraga General Plan (2002) and the Town of Moraga zoning ordinance (Title 8, Planning and Zoning, of the Town of Moraga Municipal Code [2020]).

Following is an evaluation of the proposed project's consistency with the applicable goals and policies of the General Plan and Zoning Ordinance. In reviewing this section, it is important to understand that the determination of whether a project is consistent with a specific policy can be subjective, and that consistency determinations are best made with a broad understanding of the often-competing policy objectives in a planning document. As a result, policy consistency determinations are ultimately made by the local decision-making body. As previously discussed, the Town of Moraga is the lead agency for environmental review. The Town Council would determine the proposed project's consistency with the Town's applicable plans and policies, as part of the project approval. The analysis in this chapter is intended to provide decision-makers with a list of the goals and policies that are pertinent to the proposed project and the project site, and a recommendation regarding whether or not the proposed project would directly conflict with relevant planning directives. These recommendations are intended to supplement decision-makers'

own understanding of the various policy considerations. A conflict with an applicable policy is not itself a significant impact unless it results in a significant environmental impact, as described below.

Per CEQA Guidelines, policy conflicts do not, in and of themselves, constitute significant environmental impacts. Policy conflicts are considered to be environmental impacts only when they would result in direct physical impacts or where those conflicts relate to avoiding or mitigating environmental impacts. As such, associated physical environmental impacts are discussed in this Initial Study/Mitigated Negative Declaration (IS/MND) under specific topical sections.

General Plan. The Town of Moraga General Plan designates the site as Parks. The proposed project would be consistent with the following applicable General Plan policies as discussed below.

- **LU1.14 Residual Parcels as Open Space.** Except in MOSO Open Space, residual parcels characterized by constraints such as geologic hazards, restricted access, an established riparian habitat, an historically significant feature or visibility from a scenic corridor shall be designated Non-MOSO Open Space. Residual parcels within designated MOSO Open Space shall remain designated MOSO Open Space as required by the Moraga Open Space Ordinance.
- **LU1.15 Development on Residual Parcels.** Permit the development of residual parcels only when it is found that such development will: 1) not have an adverse visual impact and is compatible with existing development; 2) provide properly sited open space; 3) generally provide for lots that are larger than the average lot size of adjacent subdivisions with setbacks from property lines greater than those in adjacent subdivisions; and 4) respect the natural features and development patterns of surrounding areas.
- **CD1.2 Site Planning, Building Design and Landscaping.** Retain natural topographic features and scenic qualities through sensitive site planning, architectural design and landscaping. Design buildings and other improvements to retain a low visual profile and provide dense landscaping to blend structures with the natural setting.
- **CD1.3 View Protection.** Protect important elements of the natural setting to maintain the Town's semi-rural character. Give particular attention to viewsheds along the Town's scenic corridors, protecting ridgelines, hillside areas, mature native tree groupings, and other significant natural features. Consideration should be given to views both from within the Town and from adjacent jurisdictions. Likewise, the Town should work with adjacent jurisdictions to protect views from Moraga to adjacent areas.
- **CD1.4 Canyon and Valley Areas.** Protect the scenic and environmental qualities of canyon and valley areas to retain the Town's semi-rural character. Preserve both close-up and distant views of the natural hillside landscape from valley areas and preserve significant linear open spaces in major canyons and grassland valleys with floodplain zones as the visual focus.
- **CD1.6 Vegetation.** Emphasize and complement existing mature tree groupings by planting additional trees of similar species at Town entries, along major street corridors, in and around commercial centers, in areas of new development, and along drainageways. Encourage the use of native, fire-resistive, and drought-tolerant species.

- **CD2.1 Public Places as Focal Points.** Provide and maintain public parks and facilities that serve as community focal points, gathering places, and activity centers, with pedestrian and bicycle path connections to residential neighborhoods and commercial centers. Provide public views and inviting pedestrian entries into public places from adjacent streets and neighborhoods.
- **CD2.5 Connections.** Designate pedestrian and bicycle routes that connect selected public places with each other and with residential neighborhoods, schools, and commercial centers.
- **CD3.1 Designation of Scenic Corridors.** Designate the following routes as the Town's 'Scenic Corridors':
 - a) St. Mary's Road
 - b) Canyon Road
 - c) Moraga Way
 - d) Moraga Road
 - e) Rheem Boulevard
 - f) Camino Pablo
 - g) Bollinger Canyon Road
- **CD3.2 Visual Character.** Improve the visual character along Scenic Corridors with lighting, landscaping and signage.
- **CD3.4 Moraga Road.** Improve the design quality and consistency of Moraga Road as the Town's primary boulevard linking the two major commercial centers.
- **CD3.5 Landscaping and Amenities.** Use additional street tree planting, berms, fencing and ornamental landscaping to enhance the visual continuity along the Town's Scenic Corridors. Require appropriate landscaping for both public and private developments located on designated Scenic Corridors, including pedestrian lighting and street trees within existing commercial areas. Encourage use of native and drought-tolerant species and, where applicable, preservation of orchard trees.
- **CD7.1 Designation of Historic Resources.** Identify and protect buildings, sites and other resources in the community that give residents a tie with the past, which may include:
 - a) Hacienda de las Flores
 - b) Older buildings at Saint Mary's College
 - c) Trees with historical significance

d) Moraga Ranch

e) Moraga Barn

- **CD7.2 Historic Preservation.** Promote the preservation and conservation of historic buildings and sites, providing incentives as appropriate for their retention and rehabilitation.
- **CD7.4 'Spanish Heritage' Districts.** Designate areas with significant 'Spanish Heritage' architecture as 'Spanish Heritage Districts,' including Saint Mary's College and the Hacienda de las Flores. In these areas, encourage the use of basic elements of 'Spanish Heritage' architecture, with flexibility for invention, variety, and incorporation of contemporary design elements. Examples of architectural elements that may be encouraged in 'Spanish Heritage' Districts include:
 - a) simple white stucco walls
 - b) red clay tile roofs
 - c) porches across the building front or side, with or without arches
 - d) arches as an architectural feature over driveways and entrances
 - e) buildings adapted to topography, for example through use of terraced gardens and porches
 - f) bay windows
 - g) garden walls
 - h) lattices over carports and porches
 - i) distinctive rooflines with low pitches
 - j) balconies and verandas
 - k) covered walkways and passages (arcades, colonnades)
- **CD7.5 Landscaping in Historic Areas.** Use landscaping to enhance the historic character of designated buildings, sites and districts, emphasizing the use of native and drought tolerant species.
- **C4.1 Pedestrian Circulation.** Provide a safe, continuous and connected system of pedestrian pathways through the Town, including sidewalks, paths, trails and appropriate crosswalks along all principal streets, to link residential neighborhoods, commercial areas, community facilities such as schools and parks, and other important destinations. Link this network as appropriate with the regional trails system.

- **C4.2 Bicycle Circulation.** Develop a complete bicycle system with direct, continuous, interconnected pathways between residential and commercial areas, community facilities, commuter corridors and transit hubs.
- **OS1.4 Private Ownership and Use of Open Space Areas.** Areas designated on the General Plan Diagram as MOSO Open Space or Non-MOSO Open Space may be retained in private ownership, may be used for such purposes as are found to be compatible with the corresponding open space designation and may or may not be accessible to the general public.
- **OS1.11 Open Space Access and Recreational Use.** Where appropriate and consistent with other General Plan goals and policies, areas with a MOSO Open Space or Non-MOSO Open Space designation on the General Plan Diagram should be made available to the public for recreational use.
- **OS2.2 Preservation of Riparian Environments.** Preserve creeks, streams and other waterways in their natural state whenever possible.
- **OS2.3 Natural Carrying Capacity.** Require that land development be consistent with the natural carrying capacity of creeks, streams and other waterways to preserve their natural environment.
- **OS2.7 Reintroduction of Native Plant Species.** Consider reintroduction into the natural environment of plant species that are indigenous to the area and encourage programs to manage, reduce or eliminate the use and proliferation of nonnative, invasive species. Encourage the use of native plant species in new landscaping plans.
- **OS2.8 Tree Preservation.** Preserve and protect trees wherever they are located in the community as they contribute to the beauty and environmental quality of the Town.
- **OS3.5 Watercourse Preservation.** Whenever possible, preserve and protect natural watercourse areas that will reflect a replica of flora and fauna of early historical conditions.
- **PS5.5 Streambank Erosion and Flooding Potential.** Reduce the potential for future streambank erosion and flooding by requiring appropriate mitigation measures.
- **PS5.7 Flood Control.** Utilize flood control measures where appropriate to avoid damage to sensitive and critical slope areas, coordinating with the County Flood Control and Water Conservation District to evaluate watersheds and design flood control projects.
- **FS3.6 Access for People of All Abilities.** Design and manage park and recreation facilities, including trail facilities, so that people of all abilities can access and enjoy Moraga's recreational opportunities, consistent with the requirements of the Americans with Disabilities Act (ADA).
- **FS3.7 Parking at Parks and Recreation Facilities.** Strive to ensure adequate parking at all parks and recreation facilities.

- **FS3.8 Hacienda de las Flores.** Continue to use Hacienda de las Flores as a recreation center, botanical garden and historical complex.
- **FS3.20 Trails Master Plan.** Implement the Moraga Trails Master Plan through ownership and easements to establish and maintain a comprehensive trails network in the Town. Adjust the plan as necessary to take advantage of any new trail opportunities that may arise.

The proposed project would involve the restoration of the Laguna Creek channel to provide flood protection, enhance the riparian habitat, and improve an existing community facility. The proposed restoration project would not affect current operation of the existing park, but would provide a new trail connection and improve circulation within the site. The proposed project would be compatible with the residential uses located within the vicinity of the site.

Zoning Ordinance. The project site is located within Non-MOSO Open Space zoning district. The purpose of the Non-MOSO Open Space district is to identify and regulate when appropriate, lands that are in public ownership or are subject to an open space easement, development rights dedication or other enforceable restriction that regulates the use of the property from being utilized as other lands in private ownership. The district may also be used to identify and regulate residual parcels and those non-MOSO open space lands that have low development capability and are characterized by such factors as steep slopes, unstable soils, fault zones or high visibility.

Permitted uses in the Non-MOSO Open Space district include agricultural uses and associated accessory structures. Uses permitted with a conditional use permit include single-family residential dwelling, public or private park or non-profit recreational facility, playground, trail, and related facility; public or private school; and related accessory uses and structures.

The proposed project would remove an existing culvert and restore the natural stream channel through an existing park. The proposed project would also implement improvements within the existing park site, including a new bridge access and trail connection, which are permitted under the Town's zoning ordinance with a Conditional Use Permit. Further, the proposed project would contribute to implementing the Town's General Plan goals and policies related to the provision of parks and recreation facilities, enhancement of natural features, and preservation of historic resources.

Additional relevant policies relate to the protection of natural resources, water quality, cultural resources, visual resources, air quality, public safety from natural and human-caused hazards, provision of public services, noise and traffic. Many of the project impacts related to these topics are less than significant or are limited to the short-term construction phase of the project as described in the relevant sections of this document. With implementation of the mitigation measures contained in this document, the proposed project is consistent with all the relevant regulations and policies contained in these documents. This impact would be less than significant.

3.12 MINERAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? (No Impact)

Minerals are any naturally occurring chemical element or compound, or groups of elements and compounds, formed from inorganic processes and organic substances including, but not limited to, coal, peat and oil bearing rock, but excluding geothermal resources, natural gas and petroleum. Rock, sand, gravel and earth are also considered minerals by the Department of Conservation when extracted by surface mining operations.

The State Mining and Reclamation Act of 1975 (SMARA) identifies and protects California's mineral resources. State mineral resource zone (MRZ) maps do not exist for the bulk of Contra Costa County. According to the Contra Costa County General Plan, the most important mineral resources that are currently mined in the County include crushed rock on the north side of Mount Diablo, in the Concord area; shale in the Port Costa area; and sand and sandstone deposits, mined in several locations in the southeast portion of the County.⁴⁰ None of these mining locations are located in the vicinity of the proposed project. Therefore, the project would not result in the loss of available of a known mineral resources that would be of value of the region and residents of the state. No impact would occur.

b. Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? (No Impact)

Please refer to Section 3.11.a. The proposed project would not result in the loss of availability of any known locally important mineral resource recovery site. Therefore, no impact related to the availability of a mineral resources recovery site would occur.

⁴⁰ Contra Costa, County of. 2005. *Contra Costa County General Plan 2005-2020. Conservation Element*. January 18. Available online at: www.contracosta.ca.gov/4732/General-Plan (accessed May 5, 2021)

3.13 NOISE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:				
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- a. *Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, or sleep. Several noise measurement scales exist that are used to describe noise in a particular location. A decibel (dB) is a unit of measurement that indicates the relative intensity of a sound. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense, and 30 dB is 1,000 times more intense. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness; and similarly, each 10 dB decrease in sound level is perceived as half as loud. Sound intensity is normally measured through the A-weighted sound level (dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. The A-weighted sound level is the basis for 24-hour sound measurements that better represent human sensitivity to sound at night.

As noise spreads from a source, it loses energy so that the farther away the noise receiver is from the noise source, the lower the perceived noise level would be. Geometric spreading causes the sound level to attenuate or be reduced, resulting in a 6 dB reduction in the noise level for each doubling of distance from a single point source of noise to the noise sensitive receptor of concern.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level (L_{eq}) is the total sound energy of time varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq} , the community noise equivalent level (CNEL), and the day-night average level (L_{dn}) based on A-weighted decibels (dBA). CNEL is the time varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined

as sleeping hours). L_{dn} is similar to the CNEL scale, but without the adjustment for events occurring during the evening relaxation hours. CNEL and L_{dn} are within one dBA of each other and are normally exchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours.

A project would have a significant noise effect if it would substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of applicable regulatory agencies, including, as appropriate, the Town of Moraga.

The Town of Moraga addresses noise in the Open Space and Conservation Element of the General Plan. The Open Space and Conservation Element includes goals and implementing programs that work to maintain a peaceful and tranquil community. The Town of Moraga also addresses Noise in Chapter 7.12 – Noise Control of the Municipal Code. The Municipal Code stipulates that when within 500 feet of a residential zone, construction is limited to between the hours of 8:00 a.m. and 5:00 p.m. daily.

- a. *Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (Less-Than-Significant with Mitigation Incorporated)*

The following section addresses the short-term construction and long-term operational noise impacts of the proposed project.

Short-Term (Construction) Noise Impacts. Project construction would result in short-term noise impacts on the surrounding sensitive receptors. Maximum construction noise would be short-term, generally intermittent depending on the construction phase, and variable depending on receiver distance from the active construction zone. The duration of noise impacts generally would be from one day to several days depending on the phase of construction. The level and types of noise impacts that would occur during construction are described below.

Short-term noise impacts would occur during grading and site preparation activities. Table 3.E lists typical construction equipment noise levels (L_{max}) recommended for noise impact assessments, based on a distance of 50 feet between the equipment and a noise receptor, obtained from the Federal Highway Administration (FHWA) Roadway Construction Noise Model. Construction-related short-term noise levels would be higher than existing ambient noise levels currently in the project area but would no longer occur once construction of the project is completed.

Two types of short-term noise impacts could occur during construction of the proposed project. The first type involves construction crew commutes and the transport of construction equipment and materials to the site, which would incrementally increase noise levels on roads leading to the site. As shown in Table 3.E, there would be a relatively high single-event noise exposure potential at a maximum level of 84 dBA L_{max} with trucks passing at 50 feet.

The second type of short-term noise impact is related to noise generated during grading and construction on the project site. Construction is performed in discrete steps, or phases, each with its

own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on site. Therefore, the noise levels vary as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase.

Table 3.E lists maximum noise levels recommended for noise impact assessments for typical construction equipment, based on a distance of 50 feet between the equipment and a noise receptor.

Table 3.E: Typical Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor (%)	Maximum Noise Level (L_{max}) at 50 Feet ¹
Backhoes	40	80
Compactor (ground)	20	80
Compressor	40	80
Cranes	16	85
Dozers	40	85
Dump Trucks	40	84
Excavators	40	85
Flat Bed Trucks	40	84
Forklift	20	85
Front-end Loaders	40	80
Graders	40	85
Impact Pile Drivers	20	95
Jackhammers	20	85
Pick-up Truck	40	55
Pneumatic Tools	50	85
Pumps	50	77
Rock Drills	20	85
Rollers	20	85
Scrapers	40	85
Tractors	40	84
Welder	40	73

Source: Roadway Construction Noise Model (FHWA 2006).

Note: Noise levels reported in this table are rounded to the nearest whole number.

¹ Maximum noise levels were developed based on Spec 721.560 from the Central Artery/Tunnel (CA/T) program to be consistent with the City of Boston's Noise Code for the "Big Dig" project.

L_{max} = maximum instantaneous sound level

Typical maximum noise levels range up to 87 dBA L_{max} at 50 feet during the noisiest construction phases. The site preparation phase, including excavation and grading of the site, tends to generate the highest noise levels because earthmoving machinery is the noisiest construction equipment. Earthmoving equipment includes excavating machinery such as backfillers, bulldozers, draglines, and front loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings.

As discussed in the Project Description, the contractor would employ the use of heavy construction machinery, likely including the following: excavator and/or backhoe, bobtail or larger truck to off-haul spoils, dump trucks, pick-up trucks, a medium sized crane, and an air compressor/generator. Therefore, this analysis assumes that a backhoe, dump truck, pick-up truck, crane, and air compressor would be operating simultaneously during construction of the proposed project. Based on the typical construction equipment noise levels shown in Table 3.E, noise levels associated with these pieces of construction equipment operating simultaneously would be approximately 80 dBA L_{max} at 50 feet.

The closest sensitive receptors include residential uses located adjacent to the project boundary. As these surrounding residences would be adjacent to the construction area, these residences would be subject to short term construction noise exceeding 80 dBA L_{max} . However, construction equipment would operate at various locations within the 2.41-acre project site and, due to the linear nature of the project, construction activities at any one receptor location would occur for a limited duration. Construction noise is permitted by the Town of Moraga when construction occurs between the hours of 8:00 a.m. and 5:00 p.m. daily. In addition, Mitigation Measure NOI-1 would be required to limit construction activities to daytime hours and would reduce potential construction period noise impacts for sensitive receptors to less-than-significant levels.

- Mitigation Measure NOI-1:** The project contractor shall implement the following measures during construction of the proposed project:
- Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.
 - Place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the active project site.
 - Locate equipment staging in areas that would create the greatest possible distance between construction-related noise sources and noise-sensitive receptors nearest the active project site during all construction activities.
 - Ensure that all general construction related activities are restricted to between the hours of 8:00 a.m. and 5:00 p.m.
 - Designate a "disturbance coordinator" at the Town of Moraga who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to correct the problem.

Implementation of Mitigation Measure NOI-1 would limit construction hours and require the construction contractor to implement noise-reducing measures during construction, which would reduce short-term construction noise impacts to a less-than-significant level.

Operational Noise Impacts. A characteristic of sound is that a doubling of a noise source is required in order to result in a perceptible (3 dBA or greater) increase in the resulting noise level. The proposed project would remove the existing culvert and replace it with a natural stream channel to provide flood protection and enhance aquatic habitat. The proposed project would also include associated improvements to the existing Pavilion, access pathways/trails, and other landscaping treatments to enhance existing park facilities and complement the restored channel. Once operational, the project would not generate new vehicle trips and therefore would not result in a doubling of traffic volumes along any roadway segment in the project vicinity and would not result in a perceptible increase in traffic noise levels at receptors in the project vicinity. Operation of the proposed project would not result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, since the project is not expected to generate substantial vehicular traffic or other operational noise. Therefore, the proposed project would not result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance. This impact would be less than significant.

b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels? (Less-Than-Significant Impact)

Common sources of groundborne vibration and noise include trains and construction activities such as blasting, pile driving, and operating heavy earthmoving equipment. Construction of the proposed project would involve site preparation, and construction activities but would not involve the use of construction equipment that would result in substantial groundborne vibration or groundborne noise on properties adjacent to the project site. No pile driving, blasting, or significant grading activities are proposed. Furthermore, operation of the proposed project would not generate substantial groundborne noise and vibration. Therefore, the project would not result in the exposure of persons to or generation of excessive groundborne noise and vibration impacts are considered less than significant, and no mitigation is required.

c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? (No Impact)

The proposed project is not located within 2 miles of a public or public use airport. Aircraft noise is occasionally audible at the project site; however, no portion of the project site lies within the 60 dBA CNEL noise contours of any public airport nor does any portion of the project site lie within 2 miles of any private airfield or heliport. Therefore, the proposed project would not result in the exposure of people residing or working in the project area to excessive noise levels. There would be no impact.

3.14 POPULATION AND HOUSING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- a. Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? (No Impact)*

The proposed project restores the Laguna Creek stream channel to prevent flooding and enhance riparian habitat. No new housing, commercial or industrial space would be developed as part of the proposed project. The proposed project would not result in the conversion of adjacent land uses, or provide access to previously inaccessible areas. It would not provide additional major infrastructure or increase the capacity of the existing water system. Therefore, the proposed project would not directly or indirectly induce substantial population growth. No impact would occur.

- b. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? (No Impact)*

The proposed project would be located within an existing park, which does not contain housing. Therefore, the proposed project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. No impact would occur.

3.15 PUBLIC SERVICES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i. Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii. Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv. Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
v. Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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

i. Fire protection? (Less-Than-Significant Impact)

The Moraga-Orinda Fire District provides fire protection, rescue, and emergency medical services to the City of Orinda, Town of Moraga, and some unincorporated areas of the County. The closest fire station to the project site is Fire Station 42, which is located just north of the project site at 555 Moraga Road.

Implementation of the proposed project would restore the natural stream channel within the existing park and provide other site improvements, including a trail connection along the restored stream bank. Use of the site could increase as a result of proposed improvements. However, the potential increase in use is not anticipated to be substantial. Because proposed improvements would be for flood control, habitat restoration, and recreation, and would not include housing units or other structures, the incremental increase in demand for fire protection services would not be significant and would not exceed the physical and financial capabilities of the Moraga-Orinda Fire District, resulting in the need for new or expanded fire services. In addition, proposed improvements would be located within a park facility, which would be clearly marked and signed to aid in access and timely response in medical emergencies. Therefore, impacts to fire protection would be less than significant.

ii. Police protection? (Less-Than-Significant Impact)

The Moraga Police Department provides law enforcement to the Town of Moraga. The Moraga Police Department is located at 329 Rheem Boulevard, which is located approximately 0.7-mile to the north of the project site.

Implementation of the proposed project would restore the natural stream channel within the existing park and provide other site improvements, including a trail connection along the restored stream bank. Use of the site could increase as a result of proposed improvements. However, the potential increase in use is not anticipated to be substantial. Because proposed improvements would be for flood control, habitat restoration, and recreation, and would not include housing units or other structures, the incremental increase in demand for police protection services would not be significant and would not exceed the physical and financial capabilities of the Moraga Police Department, resulting in the need for new or expanded police protection services. Therefore, impacts to police protection would be less than significant.

iii. Schools? (No Impact)

The project site is served by the Moraga School District, which operates three elementary, and one intermediate school. Implementation of the proposed project would not result in any local or regional population increase. Therefore, the project would not require construction of new schools, or result in schools exceeding their capacities. No impact would occur.

iv. Parks? (Less-Than-Significant Impact)

Implementation of the proposed project would improve the stream channel within an existing park. In addition, implementation of the proposed project would construct/enhance a trail connection along the top of the restored streambank. By providing this trail connection, there is a potential that use of the site would slightly increase. However, the slight increase in the use of the trail would not be substantial and would not require the construction of other recreation facilities. Therefore, the proposed project would not result in substantial adverse physical impacts associated with new parks or the need for new parks, which could cause environmental impacts. This impact would be less than significant.

v. Other public facilities? (Less-Than-Significant Impact)

Other public facilities would include facilities such as libraries, post offices, meeting rooms, or hospitals. The proposed project would improve the project site by restoring the stream channel and providing other improvements, including enhancements to the existing Pavilion, which is a community facility. Implementation of these improvements could result in a slight increase in use of the Pavilion. However, the slight increase in the use of the site would not be substantial and would not require the construction of other public facilities. Therefore, the proposed project would not result in substantial adverse physical impacts associated with the provision of other public facilities. This impact would be less than significant.

3.16 RECREATION

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? (Less-Than-Significant Impact)

The Town of Moraga Parks and Recreation Commission is responsible for reviewing the Master Plan for the parks and trails and making any necessary recommendations to the Town Council. The Town currently manages 307.5 acres of existing parkland, numerous recreation facilities, and approximately 2 miles of pedestrian and multi-use trail. In addition, a portion of the Lafayette-Moraga Regional Trail runs through the Town of Moraga and is maintained by the East Bay Regional Park District. The Lafayette-Moraga Regional Trail is a 7.65-mile multi-use trail connecting the City of Lafayette to the Town of Moraga. The trail starts at a staging area at Olympic Boulevard and Pleasant Hill Road in the City of Lafayette and ends at EMBUD's Valle Vista staging area outside of the Town of Moraga.

As described in Section 3.15.iv., implementation of the proposed project would improve the stream channel within an existing park. In addition, implementation of the proposed project would construct/enhance a trail connection along the top of the restored streambank. By providing this trail connection, there is a potential that use of the site would slightly increase. However, the slight increase in the use of the trail would not be substantial, such that substantial physical deterioration of the facility would occur or be accelerated. This impact would be less than significant.

b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? (Less-Than-Significant Impact)

Refer to Section 3.15.a. The proposed project would improve the project site by restoring the existing stream channel and enhancing public access to the existing park. Overall, the proposed project would result in beneficial effects to the environment by providing flood protection, preventing bank erosion, and enhancing riparian habitat. Potential adverse effects on the environment related to construction activities associated with the proposed project have been evaluated in this IS/MND. Implementation of the mitigation measures contained in this IS/MND would reduce potential impacts to less than significant.

3.17 TRANSPORTATION

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

a. Would the project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? (Less-Than-Significant Impact)

The proposed project would provide a trail connection along the top of the restored stream channel and continued vehicular access to the site via a new bridge over Laguna Creek. Primary vehicle access to the site is provided from Moraga Road and Donald Drive.

The proposed project consists of removal of an existing culvert and restoration of a reach of Laguna Creek within the Hacienda, an existing community park. Following construction, the proposed project would have negligible impacts on the area's transportation system as no inspection or maintenance activities would be required once the restoration project is complete. The Hacienda would continue to operate as it currently does. No new traffic would be generated as a result of operation of the proposed project.

A small increase in traffic would occur in the project area during the construction phase of the proposed project from construction vehicles and construction workers accessing the site. However, these impacts would be short-term, occurring only during the construction period and are not expected to exceed a level of service standard for roads or highways in Contra Costa County.

The project would be consistent with the Town's General Plan, including policies that promote the preservation of historic resources, and the provision of park facilities and facilities that allow for alternative transportation modes. Therefore, the proposed project would not conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. This impact is less than significant.

b. Would the project conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b)? (Less-Than-Significant Impact)

With the current CEQA Guidelines, transportation impacts are to be evaluated based on a project's effect on vehicle miles traveled (VMT). The Contra Costa County Transportation Analysis Guidelines

provide screening criteria to determine if a proposed project should be expected to prepare a detailed VMT analysis.⁴¹ Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, the following types of projects should be expected to cause a less-than-significant impact under CEQA and would not require further VMT analysis. Among the examples provided is the following:

- Public facilities (e.g. emergency services, passive parks (low-intensity recreation, open space), libraries, community centers, public utilities) and government buildings.

The proposed project is consistent with the category identified above. Therefore, consistent with the County's Guidelines, the proposed is unlikely to result in a substantial or measurable increase in VMT, and the transportation impact for the purposes of CEQA would be less than significant.

c. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? (Less-Than-Significant Impact)

The proposed project involves restoration of the creek channel and associated improvements (e.g., vehicular bridge, trail connection, parking lot improvements). Implementation of the proposed project would not significantly alter public roadways or access to the site from public roadways, except to provide a new vehicular bridge to maintain access to the site. Implementation of the proposed project would result in a beneficial effect by reducing the potential for flood hazards at the site. Therefore, the proposed project would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or introduce an incompatible use (e.g., farm equipment). This impact would be less than significant.

d. Would the project result in inadequate emergency access? (Less-Than-Significant Impact)

The proposed restoration and improvements project would be conducted on the project site and would have no impact on emergency access to adjacent properties. Replacement of the existing vehicular bridge would facilitate emergency access to the project site. Implementation of the proposed project would improve circulation around the existing Pavilion and provide a new trail connection allowing for easier ingress and egress for emergency vehicles, pedestrians, and bicyclists during an emergency. Therefore, the project's impact would be less than significant.

⁴¹ Contra Costa County. 2020. Conservation and Development Department and Public Works Department. *Contra Costa County Transportation Analysis Guidelines*. Available online at: www.contracosta.ca.gov/DocumentCenter/View/67487/FINAL-CCC-Transportation-Analysis-Guidelines?bidId= (accessed June 25, 2020). Adopted June 23.

3.18 TRIBAL CULTURAL RESOURCES

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

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

- i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)? Or*
- ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. **(Less Than Significant with Mitigation Incorporated)***

AB 52, which became law on January 1, 2015, provides for consultation with California Native American tribes during the CEQA environmental review process, and equates significant impacts to “tribal cultural resources” with significant environmental impacts. PRC Section 21074 states that “tribal cultural resources” are:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe and are one of the following:

- Included or determined to be eligible for inclusion in the California Register of Historical Resources.
- Included in a local register of historical resources as defined in subdivision (k) of PRC Section 5020.1.
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

A “historical resource” (PRC Section 21084.1), a “unique archaeological resource” (PRC Section 21083.2(g)), or a “nonunique archaeological resource” (PRC Section 21083.2 (h)) may also be a tribal cultural resource if it is included or determined to be eligible for inclusion in the California Register.

The consultation provisions of the law require that a public agency consult with local Native American tribes that have requested placement on that agency’s notification list for CEQA projects. Within 14 days of determining that a project application is complete, or a decision by a public agency to undertake a project, the lead agency must notify tribes of the opportunity to consult on the project, should a tribe have previously requested to be on the agency’s notification list. California Native American tribes must be recognized by the California Native American Heritage Commission as traditionally and culturally affiliated with the project site and must have previously requested that the lead agency notify them of projects. Tribes have 30 days following notification of a project to request consultation with the lead agency.

The purpose of consultation is to inform the lead agency in its identification and determination of the significance of tribal cultural resources. If a project is determined to result in a significant impact on an identified tribal cultural resource, the consultation process must occur and conclude prior to adoption of a Negative Declaration or Mitigated Negative Declaration, or certification of an Environmental Impact Report (PRC Sections 21080.3.1, 21080.3.2, 21082.3).

As described in Section 3.5, Cultural Resources, the Town sent letters describing the project and maps depicting the project site in May 2021 to tribes eligible to consult with the Town. To date, the Town has received no request for consultation; however, tribal consultation is still ongoing.

As discussed in Section 3.5, Cultural Resources, the NWIC records search and the archaeological survey completed for the project did not identify evidence of Native American archaeological deposits or ancestral remains. The proposed project would not impact known tribal cultural resources that are listed or eligible for listing in the California Register of Historical Resources or a local register of historical resources, nor has the Town identified a tribal cultural resource at the project sites. As noted in Section 3.5, Cultural Resources, implementation of Mitigation Measure CULT-1 would ensure that potential impacts related to previously undiscovered historic or archaeological resources and human remains, including tribal cultural resources, would be less than significant.

3.19 UTILITIES AND SERVICE SYSTEMS

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

- a. *Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? (Less-Than-Significant Impact)*

A variety of local and regional purveyors in this area provide and maintain utility and service system facilities associated with electricity, water, stormwater, wastewater, solid waste, communications and natural gas.

Water Supply. The East Bay Municipal Utility District (EBMUD) provides water service to approximately 1.4 million people in a 332-square-mile area extending from Crockett on the north, southward to San Lorenzo (encompassing the major cities of Oakland and Berkeley), eastward from San Francisco to Walnut Creek, and south through the San Ramon Valley.⁴²

The EBMUD's Water Supply Management Plan 2040 (WSMP 2040) estimates water supply needs for the EBMUD to the year 2040 and proposes a program of policy and project initiatives to meet dry-year water needs through 2040. The WSMP 2040 takes into account demand increases and identifies and recommends solutions to meet dry-year water needs through 2040 for the EBMUD service area. EBMUD's primary source of water has been the Mokelumne River from which EBMUD has water

⁴² East Bay Municipal Utility District. 2021. Service Area. Website: www.ebmud.com/about-us/who-we-are/service-area/ (accessed May 17, 2021).

rights that allow for delivery of up to a maximum of 325 mgd.⁴³ A secondary source of water is runoff from local watersheds at EBMUD terminal reservoirs in the East Bay area; much of this runoff is stored in these terminal reservoirs for system use. Average local supply put to beneficial use is 15-25 MGD during normal hydrologic years and is near zero during drought conditions.⁴⁴ EBMUD is also using water recycling as one way to help reduce the need for additional potable water supplies and the severity of water rationing during droughts.

The project would not result in the construction of new water supply facilities or expansion of such facilities. During construction, water would be required primarily for dust suppression. Water use would cease when construction is complete. Sufficient water supplies are available to provide for the project's minimal water needs during the construction phase of the project.

The proposed project would restore the stream channel. Since native landscaping is proposed, which would mimic the existing condition, irrigation systems would not be required. Total water demand for the proposed project would be similar to existing conditions. Therefore, the proposed project would not require the construction of new or expanded water infrastructure.

Wastewater. CCCSD provides wastewater collection, treatment, and disposal services; recycled water production and distribution; and household hazardous waste collection for nearly half a million residents and more than 3,000 businesses within a 145-square mile service area that includes Alamo, Danville, Lafayette, Moraga, Orinda, Pleasant Hill, Walnut Creek; portions of Martinez and San Ramon; and unincorporated communities within central Contra Costa County.⁴⁵

The proposed project would remove the existing culvert and restore the stream channel. No wastewater would be generated as a result of construction or operation of the proposed project. Therefore, the proposed project would not require or result in the relocation or construction of new or expanded wastewater treatment facilities.

As outlined in Section 1.0, Project Information, the upstream pool is created by the backwater from a concrete spillway that protects a CCCSD sewer line, which would be relocated. Relocation of the existing sewer line would be conducted in coordination with CCCSD to ensure that no interruption in service occurs and that the proposed relocation would not have an adverse physical effect on the environment. Therefore, this impact would be less than significant.

Stormwater. The implementation of drainage facilities in the project area falls under the jurisdiction of the Town of Moraga. In addition, the Contra Costa County Flood Control and Water Conservation District has adopted plans, which serve all of Contra Costa County, including the Town.

⁴³ East Bay Municipal Utility District. 2012. Water Supply Management Program 2040. Available online at: www.ebmud.com/water/about-your-water/water-supply/water-supply-management-program-2040/ (accessed December 12, 2020).

⁴⁴ Ibid.

⁴⁵ Central Contra Costa Sanitary District. Who We Are. Website: www.centalsan.org/who-we-are (accessed May 17, 2021)

As described in Section 3.10, Hydrology and Water Quality, implementation of the proposed project would remove the existing culvert and restore the natural stream channel to provide flood protection and enhance riparian habitat. Following implementation, the channel would have greater capacity of accommodate stormwater runoff. Implementation of the proposed project would not significantly affect the amount of on-site runoff and; therefore, would not require the expansion of stormwater facilities. No additional stormwater drainage facilities would be required. This impact would be less than significant.

Gas, Electricity and Telecommunications. Pacific Gas & Electric (PG&E) provides natural gas and electricity in the project area. Pacific Bell is the primary provider of residential and commercial telephone service in the City of San Pablo. AT&T and Comcast/Xfinity provide or host a variety of telecommunication services in the Town.

The proposed project would remove the existing culvert and restore the stream channel. No change to existing natural gas or telecommunications usage at any of the project site are anticipated, as operation of existing facilities would be similar to current operation and the stream channel would require no electricity or similar facilities. Therefore, the proposed project would not require or result in the relocation or construction of new or expanded gas, electricity or telecommunications facilities and no impact would occur.

b. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? (Less-Than-Significant Impact)

The project would not result in an increase in the amount of water that is currently distributed to the site. New or expanded water supply entitlements would not be required to serve the project. The project would require potable or reclaimed water for dust suppression during project construction. However, the amount of water required would be relatively small and would only be needed during the construction period. Once complete, no water would be required for the proposed project. Therefore, a less than significant impact related to water supplies would occur as a result of implementation of the project.

c. Would the project 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? (No Impact)

Refer to Section 3.19.a above. Implementation of the project would not result in a change in the wastewater treatment needed. No impact related to wastewater treatment would occur.

d. Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? (Less-Than-Significant Impact)

The project site is located within the Central Contra Costa Solid Waste Authority (CCCSWA) service area. CCCSWA owns and operates 15 solid waste facilities and disposal sites throughout the service area in Contra Costa County.

Construction of the proposed project would require demolition of the existing culvert and restoration of the creek channel, including construction of a new bridge. Waste generated during demolition and construction activities would need to be disposed of in local or regional facilities. Waste generated from construction would include: non-hazardous metal waste, non-hazardous non-metal waste (organic waste [vegetation], soil, and refuse from construction workers), and paving materials (asphalt, concrete). Non-hazardous metal and non-metal waste would be hauled to local disposal centers for recycling or taken to landfills. As outlined in Section 1.0, Project Information, soils excavated as part of project implementation would be taken to a site at Moraga Commons Park for disposal/stockpiling. Materials from excavation activities would be reused to the maximum extent possible. A majority of the debris generated during demolition and construction activities would be recycled at any of the six construction and demolition debris recycling and disposal locations within Contra Costa County. The two closest facilities are the Acme Landfill and Contra Costa Transfer and Recovery located in the City of Martinez, approximately 20 miles north of the project site. In addition, these facilities would dispose of any demolition or construction materials that cannot be recycled. The disposal demand would be reasonable relative to the solid waste disposal capacities of these facilities.

As the project would restore the creek channel, waste collected during operation of the proposed project would be limited to trash from trail users and/or visitors to the Pavilion and would be similar to existing conditions. The proposed project would not generate a substantial amount of waste during operation that would exceed the capacity of the Acme Landfill or Contra Costa Transfer and Recovery facility. Therefore, implementation of the proposed project would result in a less than significant impact to solid waste and landfill facilities.

e. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste? (Less-Than-Significant Impact)

The California Integrated Waste Management Act (AB 939) changed the focus of solid waste management from landfill to diversion strategies such as source reduction, recycling, and composting. The purpose of the diversion strategies is to reduce dependence on landfills for solid waste disposal. AB 939 established mandatory diversion goals of 25 percent by 1995 and 50 percent by 2000, and to maintain the 50 percent diversion rate thereafter. The Town has created a Waste Tracking system to track the Town's diversion rate, carbon footprint, and materials that are recycled, reused, and disposed of. According to the Town's Waste Tracking system, the Town has achieved a 50.32 percent recovery rate for construction and demolition debris since 2011, meeting the State's mandate.⁴⁶ As described above, the project would recycle/reuse as much of the construction-related debris, as possible, and would produce negligible solid waste during project operation. The proposed project would comply with existing or future statutes and regulations, including waste diversion programs mandated by federal, State, and local law. Therefore, impacts related to federal, State, and local statutes and regulations related to solid wastes would be less than significant.

⁴⁶ Green Halo Systems and Town of Moraga. 2021. Town of Moraga Construction & Demolition Waste Diversion Central. Website: moraga.wastetracking.com (accessed May 17, 2021).

3.20 WILDFIRE

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

a. Would the project substantially impair an adopted emergency response plan or emergency evacuation plan? (Less-Than-Significant Impact)

The project site is in an urban area and is not located in a State Responsibility Area for fire hazards, as mapped by CAL FIRE.⁴⁷ Additionally, as noted in Section 3.9, Hazards and Hazardous Materials, the project site is not located within an area identified by the California Department of Forestry and Fire Protection as a community at risk for wildland fire (Section 3.9.g). Due to the nature of the proposed project, no impairment or interference with emergency response or emergency evacuation plans would occur (Section 3.9.f). Therefore, this impact would be less than significant.

b. Would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire? (Less-Than-Significant Impact)

The proposed project involves restoration of the creek channel and associated improvements (e.g., vehicular bridge, trail connection, parking lot improvements) within an existing community park. As part of the proposed project, the streambanks would be revegetated with regionally-appropriate riparian vegetation. As noted in Section 3.9, Hazards and Hazardous Materials, the proposed project does not involve construction of residential or commercial structures or any other structures for human occupation (Section 3.9.g) and people would use the site for a limited duration of time. Therefore, the proposed project would not exacerbate wildfire risks, and this impact would be less than significant.

⁴⁷ CAL FIRE. 2020, op. cit.

- c. *Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment? (Less-Than-Significant Impact)*

As noted above, the proposed project would include restoration of the creek channel and associated improvements (e.g., vehicular bridge, trail connection, parking lot improvements) within an existing community park. The proposed project would not require fuel breaks, emergency water sources, power lines, or other utilities to be installed that may exacerbate fire risk or result in impacts to the environment. Therefore, this impact would be less than significant.

- d. *Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes? (No Impact)*

The project site is generally level and is not located within a State responsibility area for fire service or a very high fire hazard severity zone. As noted in Section 3.10, Hydrology and Water Quality, the proposed project would remove the existing culvert and restore the natural stream channel to accommodate a 100-year flood event. Restored stream channels would be revegetated to minimize the potential for erosion/scour along the creek banks. The proposed project would result in a beneficial effect related to flood hazards and stormwater runoff. Therefore, the proposed project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides as a result of runoff, post-fire slope instability or drainage changes. No impact would occur.

3.21 MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- a. *Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? (Less Than Significant with Mitigation Incorporated)*

Implementation of the mitigation measures recommended in this Initial Study would ensure that the construction and operation of the proposed project would not substantially degrade the quality of the environment; reduce the habitat, population, or range of a plant or animal species; or eliminate important examples of California history or prehistory. The proposed project has been designed to minimize impacts to both biological and cultural resources. Section 3.4, Biological Resources, includes mitigation measures to minimize impacts to special-status species, nesting birds, sensitive communities (e.g., riparian habitat) and jurisdictional waters. Additionally, Section 3.5, Cultural Resources, includes mitigation measures to minimize impacts to known cultural resources within the project site. With implementation of these mitigation measures, the proposed project would result in less-than-significant impacts to the quality of the environment. No additional mitigation is required.

- b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? (Less-Than-Significant Impact)*

The CEQA Guidelines require a discussion of significant environmental impacts that would result from project-related actions in combination with "closely related past, present, and probably future projects: located in the immediate vicinity (CEQA Guidelines Section 15130[b][1][A]). Cumulative environmental impacts are those impacts that by themselves are not significant, but when considered with impacts occurring from other projects in the vicinity would result in a cumulative impact. Related projects considered to have the potential of creating cumulative impacts in association with the proposed project consist of projects that are reasonably foreseeable and that would be constructed or operated during the life of the proposed project.

The proposed project would be located in a highly developed urban area that is largely built out. No other projects have been approved or are currently under review in the project vicinity and could be under construction concurrently with the proposed project. As described in this IS/MND, impacts associated with the proposed project would be largely temporary, construction-related and would be reduced to less than significant with implementation of the mitigation measures contained herein. Therefore, the proposed project would not make a considerable contribution towards a cumulative impact related to construction impacts. The proposed project would restore the creek channel to provide increased flood protection and enhance habitat, resulting in a beneficial environmental effect. It would not result in individual operation period impacts or make a considerable contribution to permanent operation-period impacts of other projects in the vicinity or the region.

- c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? (Less Than Significant with Mitigation Incorporated)*

As described in this IS/MND, any potential environmental impacts from the project would be reduced to less than significant with the implementation of the recommended mitigation measures. With implementation of measures both incorporated into the project design and recommended as mitigations to reduce the impacts associated with air quality, biological resources, cultural resources, geology and soils, and noise the project would not result in substantial adverse effects on human beings.

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APPENDIX A

AIR QUALITY MODELING RESULTS

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Road Construction Emissions Model Data Entry Worksheet		Version 9.0.0			
<p><small>Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.</small></p> <p><small>The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.</small></p> <p><small>Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.</small></p>				<p>To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.</p>	
Input Type					
Project Name	Laguna Creek Restoration and Flood Control Project				
Construction Start Year	2022	Enter a Year between 2014 and 2040 (inclusive)			
Project Type	2	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction			
Project Construction Time	6.00	months			
Working Days per Month	22.00	days (assume 22 if unknown)			
Predominant Soil/Site Type: Enter 1, 2, or 3 <small>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)</small>	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)			
Project Length	0.13	miles			
Total Project Area	2.41	acres			
Maximum Area Disturbed/Day	2.41	acres			
Water Trucks Used?	1	1. Yes 2. No			
Material Hauling Quantity Input					
Material Type	Phase	Haul Truck Capacity (yd ³) (assume 20 if unknown)	Import Volume (yd ³ /day)	Export Volume (yd ³ /day)	
Soil	Grubbing/Land Clearing				
	Grading/Excavation	20.00		112.50	
	Drainage/Utilities/Sub-Grade				
	Paving				
Asphalt	Grubbing/Land Clearing				
	Grading/Excavation				
	Drainage/Utilities/Sub-Grade				
	Paving				
Mitigation Options					
On-road Fleet Emissions Mitigation					
Off-road Equipment Emissions Mitigation					
		<p>Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer</p> <p>Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation).</p> <p>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard</p>			

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.60		1/1/2022
Grading/Excavation		2.40		1/20/2022
Drainage/Utilities/Sub-Grade		2.10		4/3/2022
Paving		0.90		6/6/2022
Totals (Months)		6		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT				
User Input										
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00					
Miles/round trip: Grading/Excavation		30.00		6	180.00					
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00					
Miles/round trip: Paving		30.00		0	0.00					
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.02	0.17	1.27	0.04	0.02	0.01	693.89	0.00	0.11	726.41
Tons per const. Period - Grading/Excavation	0.00	0.00	0.03	0.00	0.00	0.00	18.32	0.00	0.00	19.18
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.03	0.00	0.00	0.00	18.32	0.00	0.00	19.18

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions		User Override of	Program Estimate of	User Override of Truck	Default Values	Calculated
User Input	Miles/Round Trip	Miles/Round Trip	Round Trips/Day	Round Trips/Day	Daily VMT	
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00	
Miles/round trip: Grading/Excavation		30.00		0	0.00	
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00	
Miles/round trip: Paving		30.00		0	0.00	

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions		User Override of Worker									
User Input		Commute Default Values		Default Values							
Miles/ one-way trip			20		Calculated		Calculated				
One-way trips/day			2		Daily Trips		Daily VMT				
No. of employees: Grubbing/Land Clearing		24	5		48		960.00				
No. of employees: Grading/Excavation		24	20		48		960.00				
No. of employees: Drainage/Utilities/Sub-Grade		24	14		48		960.00				
No. of employees: Paving		24	10		48		960.00				
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grading/Excavation (grams/mile)		0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Draining/Utilities/Sub-Grade (grams/mile)		0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Paving (grams/mile)		0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grubbing/Land Clearing (grams/trip)		1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Grading/Excavation (grams/trip)		1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Draining/Utilities/Sub-Grade (grams/trip)		1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Paving (grams/trip)		1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.15	2.42	0.21	0.10	0.04	0.01	703.18	0.02	0.02	709.18
Tons per const. Period - Grubbing/Land Clearing		0.00	0.02	0.00	0.00	0.00	0.00	4.64	0.00	0.00	4.68

Pounds per day - Grading/Excavation	0.15	2.42	0.21	0.10	0.04	0.01	703.18	0.02	0.02	709.18
Tons per const. Period - Grading/Excavation	0.00	0.06	0.01	0.00	0.00	0.00	18.56	0.00	0.00	18.72
Pounds per day - Drainage/Utilities/Sub-Grade	0.15	2.42	0.21	0.10	0.04	0.01	703.18	0.02	0.02	709.18
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.06	0.00	0.00	0.00	0.00	16.24	0.00	0.00	16.38
Pounds per day - Paving	0.15	2.42	0.21	0.10	0.04	0.01	703.18	0.02	0.02	709.18
Tons per const. Period - Paving	0.00	0.02	0.00	0.00	0.00	0.00	6.96	0.00	0.00	7.02
Total tons per construction project	0.01	0.16	0.01	0.01	0.00	0.00	46.41	0.00	0.00	46.81

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions										
User Input		User Override of	Program Estimate of	User Override of Truck	Default Values	Calculated	User Override of	Default Values	Calculated	
		Default # Water Trucks	Number of Water Trucks	Round Trips/Vehicle/Day	Round Trips/Vehicle/Day	Trips/day	Miles/Round Trip	Miles/Round Trip	Daily VMT	
Grubbing/Land Clearing - Exhaust			1		5	5		8.00	40.00	
Grading/Excavation - Exhaust			1		5	5		8.00	40.00	
Drainage/Utilities/Subgrade			1		5	5		8.00	40.00	
Paving			1		5	5		8.00	40.00	
Emission Rates										
		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O
Grubbing/Land Clearing (grams/mile)		0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27
Grading/Excavation (grams/mile)		0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27
Draining/Utilities/Sub-Grade (grams/mile)		0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27
Paving (grams/mile)		0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27
Grubbing/Land Clearing (grams/trip)		0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)		0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)		0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)		0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O
Pounds per day - Grubbing/Land Clearing		0.00	0.04	0.32	0.01	0.00	0.00	154.20	0.00	0.02
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.00	0.00
Pounds per day - Grading/Excavation		0.00	0.04	0.32	0.01	0.00	0.00	154.20	0.00	0.02
Tons per const. Period - Grading/Excavation		0.00	0.00	0.01	0.00	0.00	0.00	4.07	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade		0.00	0.04	0.32	0.01	0.00	0.00	154.20	0.00	0.02
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.01	0.00	0.00	0.00	3.56	0.00	0.00
Pounds per day - Paving		0.00	0.04	0.32	0.01	0.00	0.00	154.20	0.00	0.02
Tons per const. Period - Paving		0.00	0.00	0.00	0.00	0.00	0.00	1.53	0.00	0.00
Total tons per construction project		0.00	0.00	0.02	0.00	0.00	0.00	10.18	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust		User Override of Max	Default	PM10	PM10	PM2.5	PM2.5
		Acreage Disturbed/Day	Maximum Acreage/Day	pounds/day	tons/per period	pounds/day	tons/per period
Fugitive Dust - Grubbing/Land Clearing			2.41	24.10	0.16	5.01	0.03
Fugitive Dust - Grading/Excavation			2.41	24.10	0.64	5.01	0.13
Fugitive Dust - Drainage/Utilities/Subgrade			2.41	24.10	0.56	5.01	0.12

Off-Road Equipment Emissions															
Grubbing/Land Clearing	Default		Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles	Override of													
	Override of Default Number of Vehicles	Program-estimate	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier											
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Model Default Tier	Cranes	0.37	1.89	4.18	0.17	0.16	0.01	558.83	0.18	0.01	564.85
0.00	1			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2			Model Default Tier	Excavators	0.20	3.26	1.78	0.09	0.08	0.01	500.02	0.16	0.00	505.41
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Model Default Tier	Generator Sets	0.33	3.68	2.93	0.15	0.15	0.01	623.04	0.03	0.00	625.17
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Model Default Tier	Off-Highway Trucks	1.06	6.72	8.03	0.29	0.27	0.03	2,557.97	0.83	0.02	2,585.51
2.00				Model Default Tier	Other Construction Equipment	0.75	8.04	7.63	0.40	0.37	0.01	1,196.66	0.39	0.01	1,209.59
				Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equiprn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Model Default Tier	Tractors/Loaders/Backhoes	0.33	4.48	3.35	0.18	0.17	0.01	602.48	0.19	0.01	608.96
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment															
If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab						ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles			Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Grubbing/Land Clearing	pounds per day			3.04	28.06	27.90	1.28	1.19	0.06	6,039.00	1.78	0.05	6,099.49
		Grubbing/Land Clearing	tons per phase			0.02	0.19	0.18	0.01	0.01	0.00	39.86	0.01	0.00	40.26
Grading/Excavation															
Grading/Excavation	Default		Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles	Override of													
	Override of Default Number of Vehicles	Program-estimate	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier											
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	0			Model Default Tier	Cranes	0.37	1.89	4.18	0.17	0.16	0.01	558.83	0.18	0.01	564.85
0.00	1			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	3			Model Default Tier	Excavators	0.20	3.26	1.78	0.09	0.08	0.01	500.02	0.16	0.00	505.41
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Model Default Tier	Generator Sets	0.33	3.68	2.93	0.15	0.15	0.01	623.04	0.03	0.00	625.17
0.00	2			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Model Default Tier	Off-Highway Trucks	1.06	6.72	8.03	0.29	0.27	0.03	2,557.97	0.83	0.02	2,585.51
2.00				Model Default Tier	Other Construction Equipment	0.75	8.04	7.63	0.40	0.37	0.01	1,196.66	0.39	0.01	1,209.59
				Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equiprn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2			Model Default Tier	Rollers	0.00	0.00	0.0							

			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	3		Model Default Tier	Tractors/Loaders/Backhoes	0.33	4.48	3.35	0.18	0.17	0.01	602.48	0.19	0.01	608.96	
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
User-Defined Off-road Equipment															
Number of Vehicles		If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
		Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		Paving	pounds per day		2.32	22.85	22.13	1.03	0.96	0.05	4,511.39	1.29	0.04	4,555.43	
		Paving	tons per phase		0.02	0.23	0.22	0.01	0.01	0.00	44.66	0.01	0.00	45.10	
Total Emissions all Phases (tons per construction period) =>					0.20	1.86	1.83	0.08	0.08	0.00	392.12	0.11	0.00	395.98	

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231		8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89		8
Generator Sets		84		8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130		8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		80		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97		8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Laguna Creek Restoration and Flood Control Project																																																								
Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)																																										
Grubbing/Land Clearing	3.20	30.51	28.42	25.49	1.39	24.10	6.24	1.23	5.01	0.07	6,896.38	1.80	0.10	6,970.09																																										
Grading/Excavation	3.22	30.68	29.70	25.53	1.43	24.10	6.26	1.25	5.01	0.08	7,590.27	1.80	0.21	7,696.51																																										
Drainage/Utilities/Sub-Grade	3.47	32.93	30.30	25.59	1.49	24.10	6.35	1.34	5.01	0.07	7,271.64	1.82	0.10	7,346.81																																										
Paving	2.48	25.31	22.66	1.14	1.14	0.00	1.00	1.00	0.00	0.06	5,368.77	1.30	0.08	5,426.03																																										
Maximum (pounds/day)	3.47	32.93	30.30	25.59	1.49	24.10	6.35	1.34	5.01	0.08	7,590.27	1.82	0.21	7,696.51																																										
Total (tons/construction project)	0.21	2.02	1.90	1.44	0.09	1.35	0.36	0.08	0.28	0.00	467.02	0.11	0.01	472.62																																										
<div>Notes:</div> <div>Project Start Year -> 2022</div> <div>Project Length (months) -> 6</div> <div>Total Project Area (acres) -> 2</div> <div>Maximum Area Disturbed/Day (acres) -> 2</div> <div>Water Truck Used? -> Yes</div> <table><tr><th></th><th colspan="2">Total Material Imported/Exported Volume (yd³/day)</th><th colspan="4">Daily VMT (miles/day)</th></tr><tr><th>Phase</th><th>Soil</th><th>Asphalt</th><th>Soil Hauling</th><th>Asphalt Hauling</th><th>Worker Commute</th><th>Water Truck</th></tr><tr><td>Grubbing/Land Clearing</td><td>0</td><td>0</td><td>0</td><td>0</td><td>960</td><td>40</td></tr><tr><td>Grading/Excavation</td><td>113</td><td>0</td><td>180</td><td>0</td><td>960</td><td>40</td></tr><tr><td>Drainage/Utilities/Sub-Grade</td><td>0</td><td>0</td><td>0</td><td>0</td><td>960</td><td>40</td></tr><tr><td>Paving</td><td>0</td><td>0</td><td>0</td><td>0</td><td>960</td><td>40</td></tr></table>																Total Material Imported/Exported Volume (yd³/day)		Daily VMT (miles/day)				Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck	Grubbing/Land Clearing	0	0	0	0	960	40	Grading/Excavation	113	0	180	0	960	40	Drainage/Utilities/Sub-Grade	0	0	0	0	960	40	Paving	0	0	0	0	960	40
																Total Material Imported/Exported Volume (yd³/day)		Daily VMT (miles/day)																																						
															Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck																																			
															Grubbing/Land Clearing	0	0	0	0	960	40																																			
															Grading/Excavation	113	0	180	0	960	40																																			
															Drainage/Utilities/Sub-Grade	0	0	0	0	960	40																																			
															Paving	0	0	0	0	960	40																																			
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.																																																								
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.																																																								
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.																																																								
Total Emission Estimates by Phase for -> Laguna Creek Restoration and Flood Control Project																																																								
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)																																										
Grubbing/Land Clearing	0.02	0.20	0.19	0.17	0.01	0.16	0.04	0.01	0.03	0.00	45.52	0.01	0.00	41.73																																										
Grading/Excavation	0.08	0.81	0.78	0.67	0.04	0.64	0.17	0.03	0.13	0.00	200.38	0.05	0.01	184.33																																										
Drainage/Utilities/Sub-Grade	0.08	0.76	0.70	0.59	0.03	0.56	0.15	0.03	0.12	0.00	167.97	0.04	0.00	153.96																																										
Paving	0.02	0.25	0.22	0.01	0.01	0.00	0.01	0.01	0.00	0.00	53.15	0.01	0.00	48.73																																										
Maximum (tons/phase)	0.08	0.81	0.78	0.67	0.04	0.64	0.17	0.03	0.13	0.00	200.38	0.05	0.01	184.33																																										
Total (tons/construction project)	0.21	2.02	1.90	1.44	0.09	1.35	0.36	0.08	0.28	0.00	467.02	0.11	0.01	428.76																																										
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.																																																								
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.																																																								
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.																																																								
The CO2e emissions are reported as metric tons per phase.																																																								