



Arroyo Mocho Stanley Reach Riparian Restoration and Channel Enhancement Pilot Project

LIVERMORE, CALIFORNIA

FINAL

**Environmental Initial Study/
Mitigated Negative Declaration**

By

**Alameda County Flood Control and Water Conservation
District, Zone 7**

March 2013

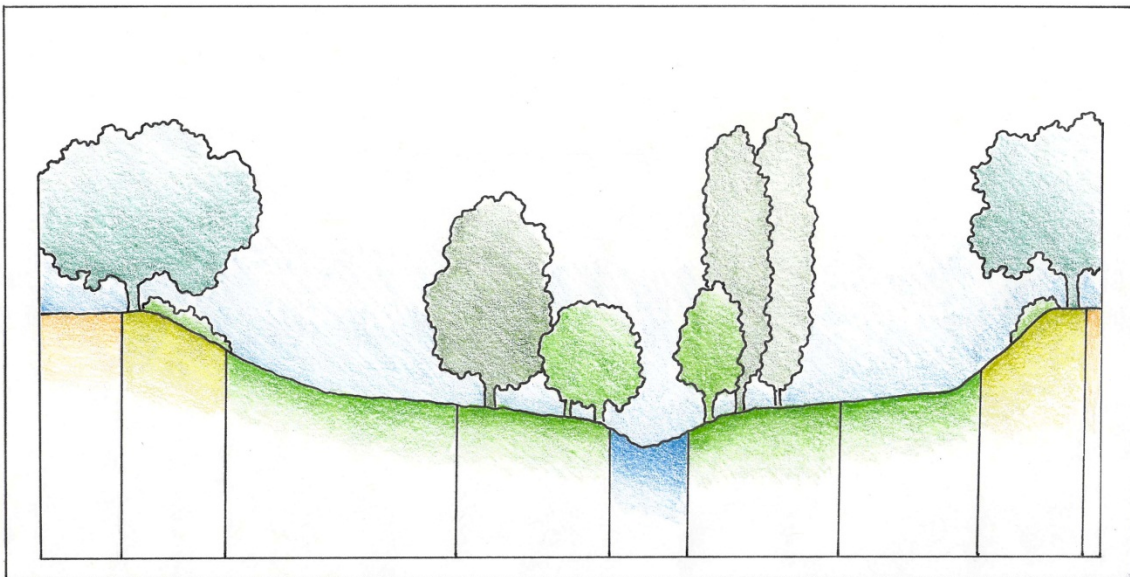


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1 INTRODUCTION

1.1 Background

The Alameda County Flood Control and Water Conservation District, Zone 7 (hereinafter “Zone 7”, also known as Zone 7 Water Agency) supplies drinking water to retailers serving about 220,000 people in Livermore, Pleasanton, Dublin, and, through special agreement with the Dublin San Ramon Services District, the Dougherty Valley area in San Ramon. We also supply untreated irrigation water to some local vineyards, farms, and golf courses. Zone 7 also provides flood protection to eastern Alameda County, and is the groundwater basin manager of the Livermore-Amador Valley groundwater basin.

Zone 7 receives roughly 80% of its water supply from the Delta via the South Bay Aqueduct; the remaining comes from local rain runoff, or from supply stored at Lake Del Valle. Water is sent directly to one of two water treatment facilities, or can be released to the major arroyos for recharge of the groundwater basin. Generally, summer flows in the arroyos, including the project reach on Arroyo Mocho, is comprised of imported water for the purposes of artificial recharge.



Zone 7 Service Area

Zone 7 maintains about 37 miles of flood protection channels (approximately one third of the total in the valley; the remainder is owned by cities, other public agencies, and private landowners). Specifically, Zone 7 owns and manages the reach containing the project - Arroyo Mocho adjacent to Stanley Boulevard between Murrieta Boulevard and Isabel Avenue (Hwy 84) and continuing downstream a short distance.

Zone 7 regularly undertakes projects involving maintenance and improvement of existing facilities, as well as construction of new facilities, and acts as Lead Agency for projects subject to the California Environmental Quality Act (CEQA). This document is a draft Initial Study /Mitigated Negative Declaration (IS/MND) for the Arroyo Mocho Stanley Reach Riparian Restoration and Channel Enhancement Pilot Project (Project). The Zone 7 Board of Directors will consider the information in the IS/MND at a public meeting, and will decide to adopt or reject the findings.

1.2 Purpose and Need / Project Goals and Objectives

The existing channel and in-stream facilities in the Project reach sufficiently provide flood protection, local sediment management, and groundwater recharge. However, the trapezoidal channel leaves much room for improvement by way of added habitat and water quality improvements, and aesthetic quality. Further, the large in-stream structures are considered barriers to fish passage; while fish aren't currently present, Arroyo Mocho has been identified as having potential for contributing to the recovery of steelhead in the Alameda Creek Watershed.

The goal of this Project is to demonstrate the feasibility of transforming a traditional earthen trapezoidal flood protection channel in an urban setting into a vegetated stream reach exhibiting natural fluvial and ecological function, while also maintaining its core functionality for flood protection, local sediment management, and groundwater recharge.

The approach being taken uses state of the art, naturally functioning in-stream structures to guide natural stream processes rather than controlling them, coupled with substantial streamside vegetation planting to stabilize banks, reduce velocities, and increase habitat values. Deliberately increasing “roughness” within the channel is still considered to be counter to standard flood protection practice; this Project intends to demonstrate that it can help ameliorate the deficiencies of trapezoidal channel design with respect to habitat function without increasing flood risk or adversely affecting sediment transport. Much of the vegetation enhancements will be accomplished with volunteers, including local residents, students, and community/environmental groups.

Further, Zone 7 is in discussions with other local agencies that are in need of mitigation credit for recent projects. In some cases, the regulatory agencies with oversight on those projects have preliminarily approved those agencies partnering with Zone 7 on this Project in exchange for mitigation credits. These details are still currently being worked out.

In light of the non-traditional approach to design, funding, and use of a volunteer base, the Project will encourage Zone 7 to expand beyond its conventional methods. Therefore, it is considered a “pilot” project. The objectives for this pilot project are to explore:

- Reducing velocities with non-structural techniques;
- Options for riparian restoration that are compatible with flood protection, sediment management, and water supply;
- Reducing water temperatures by introducing tree canopy;
- Enhancing habitat by removing fish passage barriers and adding habitat features;
- Engaging and training volunteers to collaborate toward a long-term successful project; and
- Alternative funding sources, such as mitigating partners.

Finally, the Project includes significant areas of new vegetative plantings, which will provide three key ecological benefits in addition to reducing velocities:

- Improve water quality. The Arroyo Mocho has been listed under section 303(d) of the Clean Water Act as impaired due to excessive water temperatures. The planting has been designed to create canopy shade over the stream, which will reduce temperatures to within the tolerances of many organisms, such as steelhead salmon, that require cool water. In addition, riparian buffers have been shown to be effective in sequestering water-borne pollutants both in-stream and in overland flow.
- Improve habitat. Riparian habitats are essential to the survival of a large majority of California’s terrestrial and avian species, yet over 90% of the historical extent of riparian woodland in the state has been lost to development, dewatering, or channelization. The plantings will provide habitat for a number of riparian-dependent species, particularly birds.
- Provide a community amenity. The planted site will be much more attractive as a place for visitors than the current conditions, in which the entire site is cloaked in tall-growing invasive

weeds. The trail along this stretch of Arroyo Mocho is planned to be open to the public and integrated into a regional trail network (pending final plans by the City of Livermore).

1.3 Environmental Review

Zone 7, acting as the Lead Agency under CEQA, prepared this document to provide information about the potential environmental effects of the proposed Project.

Pursuant to CEQA, the purpose of an Initial Study is to:

- determine whether the project may have a significant effect on the environment (i.e. whether an Environmental Impact Report (EIR) or an Negative Declaration should be prepared);
- identify measures that mitigate project impacts to a less than significant level (mitigated negative declaration);
- determine scope of the EIR, if one is required;
- justify the lead agency's decision to adopt a Negative Declaration, if one is prepared; and
- determine whether to rely on a previously prepared EIR.

According to CEQA, a public agency shall prepare or have prepared a proposed negative declaration or mitigated negative declaration for a project subject to CEQA when:

- a) The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or
- b) The initial study identifies potentially significant effects, but:
 - 1) revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and
 - 2) there is no substantial evidence, in light of the whole record before the agency, that the project as revised may have significant effect on the environment.

Upon completion of the Initial Study, Zone 7 identified potentially significant impacts and corresponding avoidance, minimization and mitigation measures to reduce these impacts to a level that is considered less than significant. Zone 7 prepared this Mitigated Negative Declaration (MND) to provide the public, and Responsible and Trustee Agencies reviewing this project, with information about the Project and potential effects on the local and regional environment. This Mitigated Negative Declaration was prepared in compliance with Section 15070 of the CEQA Guidelines of 1970 (as amended). In accordance with Section 15073 of the CEQA Guidelines, this document was circulated to applicable local, state and federal agencies and to interested organizations and individuals who may wish to review and comment on the report.

1.4 Project Approvals

The CEQA review process is intended to provide responsible agencies with an opportunity to provide input into the project in order to assist with their responsibilities. Responsible agencies are those that have some responsibility or authority for carrying out or approving a project. In many instances these public agencies must make a discretionary decision to issue a permit, provide right-of-way, funding or resources to the project.

The following permits and approvals (and approving entity) are needed for this Project:

- CEQA (Zone 7 Board of Directors)
- USACE Section 404 authorization
- RWQCB Section 401 water quality certification
- CDFW Section 1602 Streambed Alteration Agreement
- City of Livermore hauling and/or encroachment permits

Zone 7 is currently seeking regulatory permits for Phase 1, which consists of project work in Arroyo Mocho between Isabel Avenue (Hwy. 84) to the west and Murrieta Boulevard to the east. Phase 2 (downstream of Isabel Ave.) is also underway, and described here is somewhat less detail, as final design work is still underway. However, the design and types of construction impacts are expected to be similar to Phase 1. Permits for Phase 2 will be sought at a later date when project funding is secured.

1.5 Public Review Process

This MND will be circulated to local, state and federal agencies, interested organizations and individuals who may wish to review and provide comments on the project description, the proposed mitigation measures or other aspects of the report. The publication will commence a minimum 30-day public review period consistent with CEQA Guidelines §15105(b) beginning on January 28, 2013 and ending on March 4, 2013.

The draft IS/MND and all supporting documents are available for review at the following locations:

Zone 7 Water Agency	Livermore Public Library
100 North Canyons Parkway	1188 South Livermore Avenue
Livermore, CA 94551	Livermore, CA 94550

It will also be posted online at www.zone7water.com. Written comments or questions regarding the draft IS/MND are due by **5 p.m. on March 4, 2013**, and should be submitted to:

Zone 7 Water Agency
Attn: Elke Rank
100 North Canyons Parkway
Livermore, CA 94551
Or, via e-mail to erank@zone7water.com

Zone 7 will consider all comments and make any necessary changes to the document prior to adoption of the final Mitigated Negative Declaration by the Board of Directors.

2 PROJECT DESCRIPTION & CONSTRUCTION

NOTE: This Project will be completed in two Phases. Phase 1 consists of all project elements between Isabel Avenue (Hwy. 84) to the west and Murrieta Boulevard to the east. Phase 2 consists of project elements downstream of Isabel Avenue. Final design work for Phase 2 is still underway – although the design, and associated impacts, will be largely similar to certain elements in Phase 1.

2.1 Project Location and Setting

The Arroyo Mocho flows northwesterly through unincorporated Alameda County and is one of the three natural main channels discharging runoff from the southern hills of the Livermore valley. It continues generally westerly through the City of Livermore, and through the City of Pleasanton where it terminates at its confluence with Arroyo de la Laguna. Arroyo Mocho is natural at its upstream segments and is channelized in the urban/suburban areas of Livermore and Pleasanton. From approximately Stanley Boulevard downstream to its confluence with Arroyo de la Laguna, the Arroyo Mocho consists mainly of trapezoidal flood control channel.

The Project site is located where Arroyo Mocho generally parallels Stanley Blvd. between approximately Murrieta Boulevard and Isabel Avenue (Hwy 84), in the western side of Livermore (see Figure 1). This stretch of Arroyo Mocho was newly constructed as a flood control channel, separate from the historic Arroyo Mocho channel, when the adjacent housing development was constructed in the 1980s. The flood control channel was further modified when Caltrans improved the Isabel Avenue (Hwy 84) corridor in the 1990s. These later modifications included re-aligning the channel with two 90-degree bends upstream and downstream of Isabel Avenue, requiring installation of significant grade and velocity control facilities (now referred to as the dragon's tooth drop structures) and a sedimentation basin.



Figure 1. Project Location – Arroyo Mocho, Stanley Blvd. in Livermore CA



Figure 2. Project Location Photos (Summer 2011)

*On left, view of existing channel looking upstream from the upstream dragon's tooth drop structure.
On right, view looking upstream at the trail (future Iron Horse trail adjacent to the channel).*

2.2 Proposed Project - Overview

The proposed Project includes the following elements, as further described below (also see Figures 3 through 7).

Phase 1 (approx. 2013-2015):

- Maintenance of sedimentation basin, pre-construction (2013)
- Removal of upstream dragon's tooth drop structure (2013)
- Removal of 3 grade control drop structures (2013)
- Modification of 1 grade control drop structure (2013)
- Installation of two roughened channels (2013)
- Vegetation enhancements (2013)
- Modifications to roughened channels, as needed (2014)
- Maintenance of sedimentation basin, post-construction (2014 est.)

Phase 2 (approx. 2015):

- Removal of downstream dragon's tooth drop structure (2015, or depending on funding)
- Installation of one roughened channel (2015, or depending on funding)
- Modifications to roughened channel, as needed (2016)

Vegetation Management (approx. 2014-2024)

- Active vegetation management to encourage the desired canopy density while also creating access zones for future channel maintenance

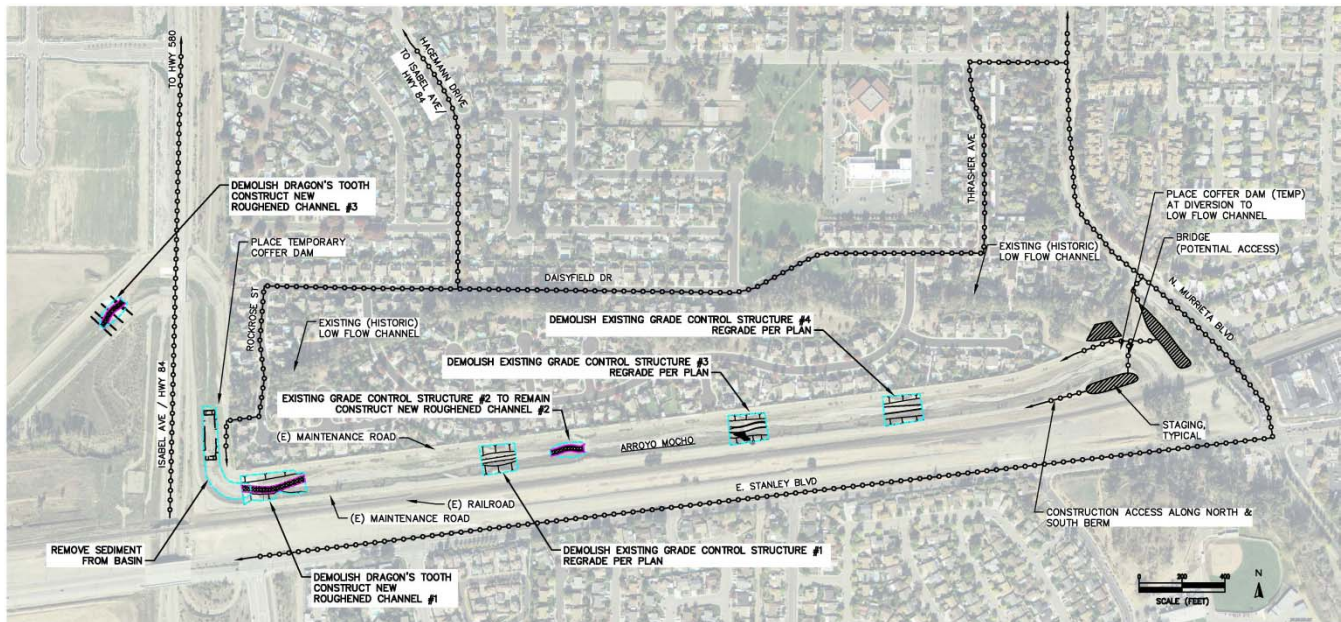


Figure 3. Major Components of Construction
(see Appendix A for a larger version)



Figure 4. The sedimentation basin near Isabel Ave. requires periodic maintenance (removal of accumulated material).



Figure 5. One of the four existing grade control drop structures to be removed / modified.

2.2.1 Sedimentation Basin Maintenance

As is designed, the sedimentation basin on Arroyo Mocho adjacent to Isabel Avenue (Hwy. 84) is in need of periodic maintenance (removal of accumulated materials) in order to remain effective. Recent surveys show that it is already over half full after only six years since its last maintenance. The removal of the grade control drop structures and upper dragon's tooth drop structure is expected, in the first few years after construction, to result in considerable sediment in the basin. Therefore, the Project includes two separate periods for maintaining the basin – one before construction and one post-construction.

2.2.2 Remove/Modify Grade Control Structures

Currently, there are four in-stream grade control structures made of concrete and loose and grouted rock. At each of the grade control drop structures, the channel narrows and the channel bottom drops

sharply. As part of the Project, three of the grade control drop structures will be removed entirely, and the fourth grade control structure will be modified to enhance fish passage. This fourth structure contains utility mainlines within its structure and therefore cannot be readily and safely removed.

The demolition area will be re-graded to match adjacent creek bed and banks and to eliminate channel constrictions. Channel disturbance between work areas (i.e., between grade control structures) will be minimized.

2.2.3 Remove Two Dragon's Tooth Structures

The upstream dragon's tooth grade control drop structure will be completely removed and replaced by a roughened channel as part of Phase 1. Similarly, the downstream dragon's tooth grade control drop structure will be removed and replaced by a roughened channel as part of Phase 2.

2.2.4 Construct Three Roughened Channels

To retain the energy dissipation function of the structures to be removed, three roughened channel sections will be constructed (two in Phase 1, one in Phase 2) from loose boulders and designed to mimic natural bed conditions. One will be constructed at each of the existing dragon's tooth drop structure sites, and the third will be constructed at existing grade control drop structure #2. The roughened channels are designed to create conditions conducive to fish passage by spreading the change in grade over approximately 250 feet of channel length and providing a low-flow pathway. The design includes installation of willow baffles to increase hydraulic roughness in overbank areas adjacent the roughened channels to prevent scour in the immediate post-construction period and introduce topographic variability in the longer term.

2.2.5 Channel Form and Equilibrium

Rather than prescribing a new channel morphology, the Project specifies that the channel be allowed to create its own meander – much as it is doing now – because there is ample room to allow it to find a stable form. This will be closely monitored. The channel thalweg (deepest part of the channel along its entire length) is expected to undergo various cycles of local sediment deposition and scour until a channel slope in equilibrium with flow and sediment delivery conditions is reached.

2.2.6 Vegetation Enhancements

The Project includes significant areas of vegetation enhancements within the channel reach. The carefully selected species and design (see Planting Plan in Appendix B) serve several important roles. Foremost is the role in reducing in-stream velocities (i.e., replacing the channel “roughness” that is currently being accomplished by the in-stream structures). Additional benefits of the plantings are to



Figure 6. Upper dragon's tooth drop structure to be removed and replaced with a roughened channel (Phase 1)



Figure 7. Example of a recently constructed roughened channel in Stockton (note lattice structure), without vegetative enhancements

improve water quality, improve habitat, and provide a community amenity (i.e., an enhanced creekside trail).

The Planting Plan aims to provide shade over the stream in summer, while keeping roughness in the trapezoidal channel as low as possible to minimize the likelihood of flooding. Furthermore, it is important to the neighbors that the plantings are not so dense as to encourage the development of homeless encampments or foster antisocial behaviors; maintaining sightlines into and through the site is essential. Further, small access points will be established to ensure that flood protection channel maintenance crews can readily access the area if needed. A planting strategy focusing on three zones was adopted to achieve these goals (summarized in Table 1, and illustrated in Figures 8 and 9).

Zone A (approximately 2.6 acres), the area immediately on either side of the low-flow channel, will be planted with a mixture of native riparian trees, including willows, cottonwood, sycamore, ash, and others. Trees will be propagated from seed and cuttings collected from within the watershed; they will be installed in small sizes at a high density, on the assumption that there will be considerable attrition over the years. By the fifth year after planting, Zone A will look dense and brushy and 15 to 30 feet tall. At this time, crews will thin the trees to approximately half their initial planted density (from 6-foot spacing to 18-foot), and limb up the survivors to encourage them to grow up rather than out. After 10 years Zone A will have begun to take on its ultimate character - that is of a gallery of tall trees with a spreading canopy. The ground layer will be managed to ensure that it remains largely free of woody species to keep roughness within acceptable limits.

Zone B (approximately 7.5 acres) is the region between Zones A and C, and includes sections of the bottom and sides of the trapezoid. Due to the need to keep roughness in the channel low, Zone B will be planted with a mixture of locally native grasses and wildflowers, and will be managed to ensure that woody plants do not encroach into this area. It is anticipated that it will take approximately four years for the native species to begin to dominate Zone B, at which point it will have achieved most of its mature character. Ongoing introductions of additional grass and wildflower species will continue to increase both the habitat value and the aesthetic beauty of this section over time.

Zone C (approximately 2.5 acres) is a roughly 12-foot wide strip at the top of each bank of the trapezoidal channel. Zone C will be planted with acorns gathered from coast live and valley oaks within the watershed. Acorns will be planted on 10-foot centers; overall survival is expected to be approximately 30 percent, so average spacing at maturity will be approximately 30 feet. Because oaks grow relatively slowly, this section will take the longest time to begin to assume its mature aspect. It is likely that within 25 years the oaks will become substantial landscape features, as well as providing an important food source for many oak-dependent species such as squirrels, deer, and acorn woodpeckers.

[Vegetative enhancements are not currently proposed for Phase 2 \(downstream of Isabel\).](#)

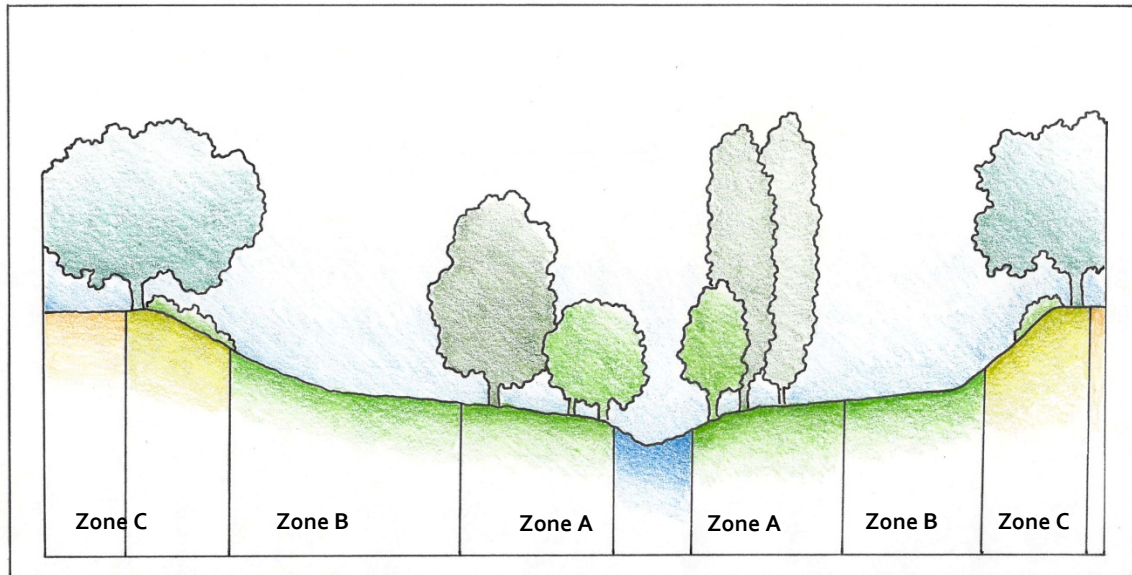


Figure 8. Concept Planting Plan ([Phase 1](#))

Zone A, on either side of active channel, is densely vegetated with riparian tree species and subsequently pruned. Zone B is seeded with native grass species. Zone C, at top of bank, is planted with oak acorns. Not to scale.

Much of the planting will be carried out by community volunteers (e.g., nearby residents, environmental groups, etc.), assisted by interns from the local community college, and supervised by Zone 7.

Table 1. Planting Plan Summary

	Zone A	Zone B	Zone C
General	The area immediately on either side of the low-flow channel.	The region between Zones A and C, includes sections of the bottom and sides of the trapezoid.	Roughly 12-foot wide strip at the top of each bank of the trapezoidal channel.
Timing	Planted in the fall immediately following construction.	Seeded with locally collected native grass seed in the fall following construction.	Planted in the fall following construction.
Total Area	2.6 acres	7.5 acres	2.5 acres
Vegetation	Native riparian trees, including willows, cottonwood, sycamore, ash, and others.	Locally native grasses and wildflowers.	Oak trees.
Density at maturity	18-feet spacing @ 10 years	Mature at 4 years	30-feet spacing @ 25 years

Insert Figure 9, Artist rendering

2.3 Project Construction

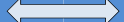
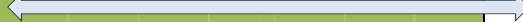
2.3.1 Project Sequencing and Schedule

Project construction can commence only after adoption of this CEQA document and project approval by Zone 7's Board of Directors. Table 2 shows the preferred project schedule. Major milestones are:

- Major construction activities for Phase 1 (pre-construction sedimentation basin maintenance, demolition of grade control structures, replacement of the upstream dragon's tooth structure with a roughened channel) is anticipated to commence in spring 2013 and will take approximately 4 to 6 months, excluding completion of vegetative enhancements and post-construction sedimentation basin maintenance. Should the work not be able to be completed within one construction season (April – October), construction activities may be split between spring/summer 2013 and 2014.
- Vegetative Enhancements will take place in the fall following construction. Thinning and pruning to the desired density will occur over the next 10 years or more.
- For Phase 2, a final design will be completed in 2013, and Zone 7 will seek funding so that construction can take place in approximately summer 2015.

In order to minimize impacts to the local residents, construction will generally occur only during normal working hours, or 8 a.m. to 5 p.m., Monday through Friday, or as allowed by City ordinance. Work on the weekend is not anticipated, except potentially for some planting activities (by hand).

Table 2. Preferred Project Schedule

	Spring 2013	Summer 2013	Fall 2013	Winter 2013	Spring 2014	Summer 2014	Fall 2014	Winter 2014	Spring 2015	Summer 2015
Phase 1 construction (upstream of Isabel)¹										
Pre-construction sedimentation basin maintenance										
Removal of upstream dragon's tooth structure										
Removal / modification of grade control structures										
Installation of two roughened channels										
Vegetative enhancements (installation)										
Adjustments to roughened channels, as needed ²										
Post-construction sedimentation basin maintenance ²										
Phase 2 construction (downstream of Isabel)										
Removal of downstream dragon's tooth structure										
Installation of one roughened channel										
Vegetation Management, 10 Years³										
Thinning and pruning to reach desired canopy										

NOTES:

1) Phase 1 construction is being planned for completion within one year; however, should there be delays some portion of the work will be deferred to the following spring/summer.

2) Should the winter following construction be dry, loose sediment may not move through the site quickly enough to warrant maintenance of the sedimentation basin – or adjustments to the roughened channels, after only one year; in this case, it would be accomplished the following year.

3) Vegetation management includes the planned thinning and pruning required to attain the desired outcome

2.3.2 Work Activities

Phase 1 (Upstream of Isabel Avenue):

Following is a summary of the work activities for Phase 1, listed generally in sequence as they will occur.

Pre-Construction Sedimentation Basin Maintenance

The basin will be restored to the original design elevations. The sediment removed from the basin is expected to either be used onsite or will be re-purposed at other locations within the Zone 7 service area for out of channel improvements such as road repairs.

De-Watering

In the summer months, the water in Arroyo Mocho typically consists of releases of imported water from the South Bay Aqueduct for the purposes of artificial recharge of the groundwater basin – when water is available from the State Department of Water Resources. Flow can be diverted around the Project site via the low flow channel that circumvents the work area (this is a remnant of the historic Arroyo Mocho channel). Two coffer-dams will be installed – one immediately upstream and one immediately downstream of the project work area to create this temporary dry work zone.

Demolition

The upstream concrete dragon's tooth structure will be almost completely demolished, except for the southwest portion, which contains a 66-inch RCP pipe outfall. The terrace elevation will be lowered, resulting in a significant volume of offhaul. The rock will be reused onsite in the new roughened channel construction.

Grade control structures 1, 3, and 4 will be completely removed and the void left will be filled with onsite alluvial material. Grouted and ungrouted riprap are present at all locations with a concrete cutoff wall (0.5 ft thick) extending across the channel at the structure's crest. All these materials will be demolished and the salvageable (clean, free of grout) rock will be reused in the roughened channel construction. The constriction at each structure, made of compacted alluvium, will be removed and a more natural channel corridor created.

Remaining materials will be hauled offsite to either an area quarry for recycling, or to a landfill as a last resort. Excess usable material will be used at other sites within the Zone 7 service area for upland maintenance projects, like road repair.

Grading

Once the concrete and rock materials are removed from each site, the contractor will create a matching transition between the upstream and downstream grades, including the terrace and channel dimensions. Over time the system will achieve an equilibrium slope.

New Construction

Each site will be graded to finished grade on the terraces and to the subgrade in the roughened channel area. After laying down bedding, the contractor will place footer stones and keystones into a lattice structure layout at the appropriate locations and elevations. The contractor then will fill in the lattice structure with the crest stones. The voids between the rocks and stones will be filled and compacted with bedding material. The fine grading will be achieved by backfilling the alluvium over the structure to

finished grades. The roughened channels will have a finished width of about 25 feet, and a depth of approximately 2.5 feet.

In addition, there are a few storm drains that discharge onto the channel. Most are 12-inch and will be trimmed back easily to the new finished grade. Grade control structure #3 has a double 48-inch RCP storm drain that will be modified to conform to the existing slopes.

After construction, the maintenance roads will be restored to current conditions.

Vegetative Enhancements

Just prior to planting in fall 2013 each site will be mowed once, and a sheet mulch weed barrier consisting of cardboard and bark chips will be installed on Zone C. No grading or other surface preparation is anticipated to be necessary prior to planting, apart from digging small planting holes for the acorns (Zone C) and riparian trees (Zone A). Weed control will include mowing (all zones), hand weeding (Zone A only), and placement of weed barrier fabric (Zone C only). Contractors and/or volunteers using hand rakes and/or gas-powered string trimmers will carry out mowing. It is anticipated that six workers will be able to mow the site within a reasonable period of time.

Plant Installation will follow these steps:

- Zone A: Riparian trees will be installed in small sizes. Willows will be planted as stakes averaging roughly three feet long by one inch in diameter. Stakes are inserted into the ground approximately two-thirds of their length. Other species will be planted from D40 pots, approximately equal to a one- or two-gallon nursery container. Plants will be distributed according to a randomized pattern on six-foot centers.
- Zone B: Seed of at least four grass and wildflower species will be broadcast via manually operated seed spreaders.
- Zone C: Acorns will be planted in holes dug by hand at staggered intervals on ten-foot centers. Each hole will be fitted with a wire planting cage to deter rodents.

Roughened Channel Adjustments, As Needed

It is estimated that approximately 1 percent of the rocks placed as part of the roughened channel may shift. Should this occur, Zone 7 will – in the summer following construction – gently reposition the displaced rocks. Much of this work can likely occur with a long reach excavator from the channel bank.

Post-Construction Sediment Basin Maintenance

After the in-channel work is complete and following the first wet winter, it is likely that the sedimentation basin will require maintenance. The basin will again be restored to original design elevations. The fine sediment removed from the basin is expected to either be used onsite or will be repurposed for upland projects, such as road repairs, within the Zone 7 service area.

Post-Construction Vegetation Maintenance

Maintenance of the new vegetation will consist mainly of (1) ongoing weed control, (2) tree cage maintenance and (3) periodic thinning and pruning – described below.

Weed control will take place on the following schedule:

- Zone A: Weeds will be cleared by hand from around young trees twice per year (spring and fall) for the first five years.

- Zone B: Mow three times per year (late winter, late spring, late summer) for the first five years.
- Zone C: No additional weed control is anticipated. Cardboard and wood chip sheet mulch has been proven to be a durable and effective means of suppressing weeds. In addition, it breaks down fully over time and so does not require removal, nor does it result in waste that must be deposited in a landfill.

Tree cages will be removed and tube-type tree shelters will be installed on one half of the surviving coast live oak seedlings in the spring of 2014. (This is an experimental component of the Project to see whether the tree shelters have a sufficiently positive impact on survival and growth rate to justify the added cost and complexity – and will be monitored closely).

Zones A and C will be thinned at five and 10 years, or as necessary to achieve targeted plant densities (Zone A=18 feet on center; Zone C=30-50 feet on center). Trees will be pruned to ensure healthy, vigorous structure and to encourage growth upward rather than outward. All pruning and thinning will be supervised by a certified arborist.

Phase 2 (Downstream of Isabel Avenue):

Phase 2 will consist of demolition, grading, and construction of one new roughened channel in place of the downstream dragon's tooth drop structure – as similarly described above.

2.3.3 Truck Trips and Haul Route

Trucks will be hauling off unused or excess materials, and hauling in new materials for construction. The site is easily accessible to Stanley Boulevard, a major thoroughfare that leads to the nearby Livermore quarries, and to Isabel Avenue (Hwy. 84), which provides easy access to Highway 580 and to a nearby landfill. The site is accessible on both ends, via Rockrose St. on the west and Murrieta Boulevard on the east. A detailed traffic plan will be required by the City of Livermore for overweight vehicles.

It is expected that as much as possible of the material (rocks, bed material) currently onsite will be salvaged and reused onsite. However, demolished concrete as well as unusable rip-rap will be expected to be hauled to either a local quarry or to a local landfill. Sediment/small gravel will be re-purposed by Zone 7 within our service area for upland repairs, like maintenance roads. As many as 1,700 truck trips will be required to offhaul all materials, although this is spread over several years. (Note: for purposes of CEQA analysis this is a very conservative estimate, assuming the unlikely and worst case scenario of no materials re-purposed onsite). See table 3.

Table 3. Truck Trips

	Import Rock for Roughened Channels	Haul-off: concrete / rip-rap	Haul-off: sediment from dragon's tooth structures	Haul-off: sedimentation basin (to occur twice under Phase 1)
Phase 1	95 truck trips (550 cubic yards)	655 truck trips (3765 cubic yards)	435 truck trips (2500 cubic yards)	385 truck trips, each event (2200 cubic yards, each event)
Phase 2	45 truck trips (250 cubic yards)	50 truck trips (300 cubic yards)	175 truck trips (1000 cubic yards)	--

NOTE: Worst case scenario (i.e., no re-use of onsite rip-rap) is presented as the conservative estimate

Large rocks of specific weight and size criteria are needed to construct the roughened channel features. It is expected that these will be hauled in from Bay Area quarries (i.e., Vallejo). There will need to be approximately 140 truck trips to deliver rock for the construction.

2.3.4 Construction Equipment and Workers

This Project (Phases 1 and 2) contains seven distinct project locations ((1) one downstream dragon's tooth structure, (2) one sedimentation basin, (3) one upstream dragon's tooth structure, and (4-7) four grade control structures). The number of construction equipment and crew that the contractor chooses to use for this project will depend on the speed at which they intend to complete the construction. However, it is unlikely that work will take place at more than two project locations simultaneously due to site access and mobility constraints within the project area.

It is estimated that each of the roughened channels will require approximately four to seven weeks for construction; each grade control structure about two weeks; and sediment removal about one to two weeks. For each project location, there will be common equipment used, as described below. Phase 1, with the exception of the post-construction sedimentation basin maintenance, is expected to take approximately 4 to 6 months. Phase 2 is expected to take 1-2 months.

Each location will likely have one to four pieces of equipment working at any given time, and two to five crew members. Maintenance of the sedimentation basin will likely involve an excavator and a dozer. Demolition of concrete and grouted riprap will require an excavator, a dozer, or similar equipment fitted with a hammer. Earthmoving equipment such as an excavator will likely be used for the bulk of the grading operations, and an excavator may also be used for rock placement. Hand labor may be used for small rock placement and filling the voids with bedding material. Material will be off-hauled using equipment such as front end loaders and dump trucks.

It is expected that the contractor will be onsite for 8 to 10 hours per day throughout the construction season (generally April through October).

3 ENVIRONMENTAL SETTING

This section provides an overview of key environmental features of the project site. Additional information is included within the topical discussions in Section 4.

The Stanley Reach of Arroyo Mocho is parallel and adjacent to Stanley Boulevard – and contained within the Arroyo Mocho channel. Specifically, Phase 1 is bounded by Isabel Ave (Hwy. 84) and Murrieta Boulevard. Phase 2 is immediately downstream of Isabel Avenue (Hwy 84). [No work will occur underneath the Hwy. 84 overpass.](#) The site is generally bounded by a residential/urban development to the north and south and east, and gravel mining / encroaching development to the west. Vegetation at the Project site includes annual grassland cover.

4 ENVIRONMENTAL IMPACTS AND DISCUSSION

4.1 Basic Project Information

Project Title:	Arroyo Mocho Stanley Reach Riparian Restoration and Channel Enhancement Pilot Project
Lead Agency Name and Address:	Zone 7 Water Agency 100 North Canyons Parkway Livermore, CA 94551
Contact Person and Phone Number:	Elke Rank Associate Water Resources Planner, Zone 7 (925) 454-5036
Project Location:	See Section 2.0 – Project Description
General Plan Designation:	Open Space (waterways)
Zoning:	Planned Development (PD) Zone
Property Description:	The site is located in Township 3 south, Range 1 and 2 east, in the City of Livermore, CA. The Stanley Reach of Arroyo Mocho is parallel and adjacent to Stanley Boulevard – and contained within the Arroyo Mocho channel. Specifically, Phase 1 is bound by Isabel Avenue (Hwy. 84) and Murrieta Boulevard Phase 2 is immediately downstream of Isabel Avenue (Hwy 84). No work will occur underneath the Hwy. 84 overpass. The site is generally bounded by a residential/urban development to the north and south and east, and gravel mining / encroaching development to the west.
Project Description:	The proposed activities include improving the Arroyo Mocho stream channel to enhance ecological attributes, with an added benefit of enhanced aesthetic quality for trailside recreation.
Surrounding Land Uses:	See Section 4 – Environmental Setting
Other Agencies Whose Approval is Required:	Permits are required from USACE, RWQCB, CDFW, and City of Livermore

4.2 Environmental Factors Potentially Affected

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

- | | | |
|--|---|---|
| ☐ Aesthetics | ☐ Agriculture and Forestry Resources | ☒ Air Quality |
| ☒ Biological Resources | ☐ Cultural Resources | ☐ Geology/Soils |
| ☐ Greenhouse Gas Emissions | ☐ Hazards & Hazardous Materials | ☒ Hydrology/Water Quality |
| ☐ Land Use/Planning | ☐ Mineral Resources | ☒ Noise |
| ☐ Population/Housing | ☐ Public Services | ☐ Recreation |
| ☐ Transportation/Traffic | ☐ Utilities/Service Systems | ☐ Mandatory Findings of Significance |

DETERMINATION: (To be completed by the Lead Agency)

On the basis of the initial evaluation that follows:

- ☐ 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. A TIERED ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, no further environmental document is required. FINDINGS consistent with this determination will be prepared.

Elke Rank

1-28-2013

Signature

Date

Elke Rank

Printed Name

5 Evaluation of Environmental Impacts

I. AESTHETICS				
Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Discussion

a-d. No Impact. The Project is located within the Arroyo Mocho stream channel and riparian corridor. The Project will result in little difference in the appearance of the channel itself, although some of the existing in-stream concrete structures will be replaced with more natural looking structures. After construction, vegetation enhancements in the riparian corridor will improve the appearance of the project area. Therefore, there is no impact to the scenic resources or scenic highways. In addition, there are no proposed lights or building surfaces that would create a new source of substantial light. Therefore, there would be no impact related to light or glare.

II. 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 forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
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))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Discussion

a-e. No Impact. The Project is confined to the stream channel and riparian corridor. As such, there would be no impact related to loss of – or conflicting uses with – agricultural or forest lands associated with implementation of the Project.

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

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion

- a) **No Impact.** The most recently adopted air quality plan for the San Francisco Bay Area is the Bay Area 2010 Clean Air Plan (2010 CAP). The 2010 CAP is an update to the Bay Area Air Quality Management District (BAAQMD)'s 2005 Ozone Strategy to comply with State air quality planning requirements. The 2010 CAP also serves as a multi-pollutant air quality plan to protect public health and the climate. The 2010 CAP control strategy includes revised, updated, and new measures in the three traditional control measure categories, including stationary source measures, mobile source measures, and transportation control measures. In addition, the 2010 CAP identifies two new categories of control measures, including land use and local impact measures, and energy and climate measures (BAAQMD, 2010).

BAAQMD recommends that the agency approving a project where an air quality plan consistency determination is required, analyze the project with respect to the following questions: 1) does the project support the primary goals of the air quality plan; 2) does the project include applicable control measures from the air quality plan; and 3) does the project disrupt or hinder implementation of any 2010 CAP control measures? If all the questions are concluded in the affirmative, BAAQMD considers the project consistent with air quality plans prepared for the Bay Area (BAAQMD, 2012). Any project that would not support the 2010 CAP goals would not be considered consistent with the 2010 CAP, and if approval of the project would not result in significant and unavoidable air quality impacts after the application of mitigation, then the project would be considered consistent with the 2010 CAP.

As presented in the subsequent impact discussions, the proposed project would result in no new long-term operations-related emissions and with mitigation, proposed project-related construction emissions would not exceed the BAAQMD significance thresholds for construction; therefore, the proposed project would support the primary goals of the 2010 CAP. As mentioned above, projects that incorporate all feasible air quality plan control measures are considered consistent with the 2010 CAP. There appear to be no 2010 CAP control measures that would be directly applicable to the proposed project; however, implementation of **Mitigation Measure AIR-1** (see discussion b), below) would ensure that BAAQMD basic construction control measures would be implemented.

The proposed project would support the primary goals of the 2010 CAP and it would not disrupt or hinder implementation of any 2010 CAP control measures. Therefore, there would be no impact associated with conflicting or obstructing implementation of the applicable air quality plan.

- b) **Less than Significant with Mitigation.** Exhaust emissions significance thresholds recommended in the BAAQMD's *Revised Draft Options and Justification Report* (2009) were used to determine the significance of impacts related to air quality standard violations. The justification report provides substantial evidence to support the recommended thresholds and, therefore, Zone 7 Water Agency has determined they are appropriate for use in this analysis. Based on the following, construction and operation of the mitigated project would not result in a violation of

an air quality standard or contribute significantly to an existing or projected air quality violation. Therefore, the associated impact would be less than significant with mitigation.

Construction

Construction activities that would be associated with the proposed project would take place during two phases. Phase 1 would occur in 2013 and would last approximately five months. Activities under Phase 1 would include pre-construction sediment removal, removal of dragon's tooth and other grade control structures, and construction of roughened channels at two locations. Phase 2 would occur in 2015 and would include the removal of the downstream dragon's tooth structure and installation of a roughened channel at one location.

The majority of proposed project-related exhaust emissions would be generated on-site due to the use of heavy-duty off-road equipment that would include one excavator, one grader, one front loader, and one dump truck. It is assumed that the equipment would operate concurrently 8 hours per day at up to two project locations. Exhaust emissions would also be generated by construction worker daily commutes and by heavy-duty diesel tractor trailer truck. It is assumed that up to five construction workers would commute to the project site each workday, and up to 1,570 truck trips would be required to deliver rock and off-haul excavated materials during Phase 1 and up to 270 truck trips would be required to deliver rock and off-haul excavated materials during Phase 2.

Criteria pollutant exhaust emissions of reactive organic gases (ROG), nitrogen oxides (NO_x), particulate matter (PM₁₀), and fine particulate matter (PM_{2.5}) from construction equipment and vehicles would incrementally add to the regional atmospheric loading of these pollutants during construction of the proposed project.

Impacts related to the project contributing to an existing or projected air quality violation and whether the project would result in a cumulatively considerable net increase of any criteria pollutant or associated precursors are judged by comparing estimated direct and indirect project exhaust emissions to the significance thresholds, which for short-term construction emissions are 54 pounds per day for ROG, NO_x, and PM_{2.5}; and 82 pounds per day for PM₁₀. Only the exhaust portion of PM_{2.5} and PM₁₀ emissions are compared against the construction thresholds. The BAAQMD recommends that analyses focus on implementation of dust control measures rather than comparing estimated levels of fugitive dust to a quantitative significance threshold. Rather, the BAAQMD considers implementation of the BAAQMD-recommended basic mitigation measures for fugitive dust sufficient to ensure that construction-related fugitive dust is reduced to a less-than-significant level.

Air pollutant emissions, including ROG, NO_x, PM₁₀, and PM_{2.5} that would be generated by off-road construction equipment (i.e., excavators, graders, loaders, and dump trucks) were estimated using California Air Resources Board (CARB) emission factors. CARB's Off-road emissions inventory database was used to develop air basin specific construction equipment emission factors for calendar year 2013 for ROG, NO_x, and PM₁₀. The Off-road database provides data for only NO_x, PM₁₀, and total hydrocarbons (THC), so other factors identified by CARB (CARB, 2000) were applied to convert THC emissions rates to ROG emissions rates. PM_{2.5}

construction equipment exhaust emission factors were calculated by multiplying the PM₁₀ emission factors by the mass fraction of PM_{2.5} emissions in PM₁₀ diesel exhaust, as identified by the South Coast Air Quality Management District (2006).

Tables 4 and 5 show the estimated total average daily exhaust emissions that would be associated with construction of Phase 1 and Phase 2 of the proposed project, respectively. For all assumptions and calculations used to estimate the project-related construction emissions, refer to Appendix D. As indicated in the tables, the total average daily construction exhaust emissions would not exceed the BAAQMD's significance thresholds. Therefore, impacts that would be associated with construction-related exhaust emissions would be less than significant.

TABLE 4
PHASE 1 CONSTRUCTION CRITERIA POLLUTANT EXHAUST EMISSIONS

Emissions Source	Average Daily Construction Emissions (pounds/day)			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Construction Activities	2.25	29.92	1.06	0.98
Vehicle Trips	0.41	10.40	0.27	0.25
Average Daily (pounds/day)	2.66	40.32	1.34	1.23
BAAQMD Significance Threshold	54	54	82	54
Significant Impact?	No	No	No	No

Notes: Emissions were estimated using emission factors from the Off-road emissions inventory database and EMFAC 2011. Refer to Appendix D for details on the emissions estimates.

TABLE 5
PHASE 2 CONSTRUCTION CRITERIA POLLUTANT EXHAUST EMISSIONS

Emissions Source	Average Daily Construction Emissions (pounds/day)			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Construction Activities	2.36	31.50	1.11	1.02
Vehicle Trips	0.21	5.32	0.14	0.13
Average Daily (pounds/day)	2.58	36.82	1.26	1.16
BAAQMD Significance Threshold	54	54	82	54
Significant Impact?	No	No	No	No

Notes: Emissions were estimated using emission factors from the Off-road emissions inventory database and EMFAC 2011. Refer to Appendix D for details on the emissions estimates.

In addition to exhaust emissions, emissions of fugitive dust would also be generated by project construction activities associated with earth disturbance, travel on paved and unpaved roads, etc. With regard to fugitive dust emissions, the BAAQMD's *Revised Draft Options and Justification Report* recommends that lead agencies focus on implementation of dust control measures to insure that impacts would be less than significant rather than comparing estimated levels of fugitive dust to quantitative significance thresholds. Therefore, BAAQMD basic control measures (BAAQMD, 2012), which are recommended for every construction project and contained in **Mitigation Measure AIR-1** (see below), would be implemented to ensure that impacts associated with fugitive dust emissions would be reduced to a less-than-significant level.

Mitigation Measure AIR-1: Implement BAAQMD Basic Mitigation Measures. Comply with the following applicable BAAQMD basic control measures:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, and graded areas, and unpaved access roads) shall be watered two times a day [limited to active construction areas].
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California Airborne Toxics Control Measure Title 13, Section 2485 of California 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 manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at Zone 7 Water Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

Operations

Once construction is complete, the proposed project would result in no sources of air pollutants. Therefore, there would be no net change in long-term conditions as a result of the project

compared to the baseline conditions; therefore, there would be no long-term operational impact.

- c) **Less than Significant with Mitigation.** Based on BAAQMD guidance, if a project would result in an increase in ROG, NO_x, PM₁₀, or PM_{2.5} of more than its respective average daily mass significance thresholds, then it would also be considered to contribute considerably to a significant cumulative impact. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project would exceed the identified significance thresholds, its emissions would be cumulatively considerable, and if a project would not exceed the significance thresholds, its emissions would not be cumulatively considerable. As presented in discussion b) above, short-term construction exhaust emissions would not exceed the applicable significance thresholds and implementation of **Mitigation Measure AIR-1** (see above) would ensure that impacts associated with fugitive dust emissions would be reduced to a less-than-significant level. In addition, the project would result in no long-term operational emissions. Therefore, the project would not be cumulatively considerable and cumulative impacts would be less than significant.
- d) **Less than Significant Impact.** The BAAQMD recommends that lead agencies assess the incremental toxic air contaminant (TAC) exposure risk to all sensitive receptors within a 1,000-foot radius of a project's fence line. Long-term operations that would be associated with the project would result in no new TAC emissions. However, project construction activities would generate diesel particulate matter (DPM), which is considered to be a TAC. The majority of DPM exhaust emissions that would be generated during construction would be due to the use of diesel off-road equipment.

The closest sensitive receptors to the proposed project would be residences off East Stanley Boulevard to the south of the project site and off Summertree Drive, Sparrow Street, and Cottonwood Court to the north. The closest residences would be at a distance of approximately 50 feet from the proposed channel shaping activities. In addition, the northern edge of the baseball field at Granada High School is approximately 900 feet south of the project site. There are no other sensitive receptors within 1,000 feet of any of the proposed project components.

The dose to which receptors are exposed is the primary factor affecting health risk from exposure to TACs. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period when assessing TACs (such as DPM) that have only cancer or chronic non-cancer health effects (OEHHA, 2003). However, such health risk assessments should be limited to the duration of the emission-producing activities associated with the project. For the proposed project, DPM emissions that would be generated in the vicinity of any one sensitive receptor location would be limited to a span of between one and nine weeks.

Tables 4 and 5 (above) show that the total daily average PM_{2.5} emissions from on-site equipment would be up to one pound per day.¹ Because these daily emissions are miniscule and would occur for a total of up to nine weeks in the vicinity of any single sensitive receptor compared to the 70-year exposure used in health risk assessments, project-related DPM emissions would not be considered substantial and would not result in a significant incremental cancer risk. Therefore, the impact related to exposing sensitive receptors to substantial pollutant concentrations would be less than significant.

- e) **Less than Significant Impact.** Diesel equipment used to construct the project may emit objectionable odors associated with combustion of diesel fuel. However, these emissions would be temporary and intermittent in nature, thus odor impacts associated with diesel combustion during construction activities would be less than significant. There would be no expected operational odors associated with the proposed project and no long-term impact would occur.

IV. BIOLOGICAL RESOURCES				
Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian aquatic, or wetland habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
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?	☐	☐	☒	☐
e) Conflict with any local applicable policies protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒

¹ PM_{2.5} exhaust emissions are conservatively used here as a surrogate for DPM.

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

☐☐☐☒

Discussion

Vegetation and Wildlife

The project site is located within and adjacent to the Arroyo Mocho creek channel, east of the Chain of Lakes², and in the City of Livermore within eastern Alameda County. Land uses surrounding the project area generally include residential, commercial, recreational, agricultural, and industrial mining uses. The creek channel flows seasonally east to west, and is managed by Zone 7 as a flood protection channel, and for groundwater recharge with planned upstream releases from the California Department of Water Resource's South Bay Aqueduct (SBA). Wetland vegetation is present in limited portions of the creek bed among sand and gravel bars, and annual grasslands populate the creek banks. Few planted trees and shrubs occur on the banks of Arroyo Mocho, and no trees present in the channel.

A portion of the paved Arroyo Mocho Bike Trail runs along the project site to the north and a maintenance access road and railroad tracks are present along the project site to the south, inviting regular human disturbance adjacent the project area. A reconnaissance-level field survey was conducted by ESA biologists on November 13, 2012, to verify existing biological conditions, assess vegetation and wildlife habitats, and identify potential for special-status³ species to occur onsite. General and focused biological surveys were also performed in the project area for the 2012 Biological Resources Report (ESA, 2012a), Zone 7 Stream Management Master Plan (ESA, 2006a), and focused California red-legged frog surveys in the local and regional area (ESA, 2001; 2004; 2006b).

Landscape trees, non-native ornamental grasses, forbs, and shrubs are largely present within the neighborhoods located north and east of the project corridor and many mature blue gum eucalyptus (*Eucalyptus globulus*) line a drainage corridor in the neighborhood north of the project site. Planted native trees and shrubs along top of bank, adjacent to the maintenance access road include blue elderberry (*Sambucus nigra* ssp. *Caerulea*), coast live oak (*Quercus agrifolia*), valley oak (*Q. lobata*), and western redbud (*Cercis occidentalis*). No trees occur on the project site. Annual grassland species on creek banks are dominated by common weedy invasive species such as black mustard (*Brassica nigra*), poison hemlock (*Conium maculatum*), wild oats (*Avena fatua*), bristly ox-tongue (*Picris echioides*), and yellow star thistle (*Centaurea solstitialis*). The channel bed and gravel bars showed sparse distribution of wetland-associated vegetation species that include rough cocklebur (*Xanthium strumarium*), pepperweed (*Lepidium latifolium*), and umbrella sedge (*Cyperus eragrostis*). Cattails (*Typha* sp.) are present in the channel bottom, west of the Isabel Avenue overpass and downstream from the downstream dragon's tooth structure. The creek channel was dry at the time of the field survey with a

² A series of active and retired gravel-mining pits located between Livermore and Pleasanton.

³ The term "special-status" species includes those species that are listed and receive specific protection defined in federal or state endangered species legislation, as well as species not formally listed as threatened or endangered, but designated as "Rare" or "Sensitive" on the basis of adopted policies and expertise of state resource agencies or organizations, or policies adopted by local agencies such as counties, cities, and special districts to meet local conservation objectives. A principle source for this designation is the California "Special Animals List" (<http://www.dfg.ca.gov/whdab/pdfs/spanimals.pdf>).

shallow pool located in the sedimentation basin. Based on the disturbed state of vegetation habitat on the project site and focus of the project on removing hardscape materials, special-status plants are not expected in the work area.

The California Natural Diversity Database (CNDDB) documents 27 special-status species in the Livermore USGS 7.5-minute quadrangle that includes the project site (CDFW, 2012). In addition, a USFWS Endangered Species List for the Livermore quadrangle (USFWS, 2012) documents 12 federal listed species in the regional vicinity of the project site. However, a majority of these species are unlikely to occur either because the project site is located outside of species' range, focused surveys have documented absence, or habitat is of poor quality and unsuitable conditions occur at the project site (ESA, 2012a). A full list of special-status species with known occurrence or with the potential to occur in the project vicinity is provided in the Biological Resources Report (Appendix C).

Of particular interest to many is the steelhead trout, and is therefore discussed here. While aquatic habitat is present for species such as the Central California Coast steelhead (*Oncorhynchus mykiss irideus*), the reach of the Arroyo Mocho in the project area is inaccessible; downstream barriers (e.g., the BART weir and rubber dam in lower Alameda Creek) prevent the upstream migration of this species. Also, Arroyo Mocho is a seasonal waterway that will be dry during project implementation, ensuring that steelhead are absent. Further, there are no operational changes associated with the Project in terms of future planned flow releases. However, the removal of the two large dragon's teeth drop structures and riparian enhancements will benefit steelhead by accommodating upstream passage to areas thought to be suitable for spawning and rearing, and potentially lowering in-stream water temperature and improving water quality.

Wetlands

This section of Arroyo Mocho is an engineered, trapezoidal flood protection channel that flows in a westerly direction. This seasonal stream is tributary to Arroyo de la Laguna, which is tributary to Alameda Creek. In removing a substantial amount of hardscape materials (e.g., concrete and concrete grouted rip-rap) from the stream banks and channel bottom, the project will create several acres of waters of the U.S., waters of the State, and CDFW jurisdictional wetlands. To stabilize the stream bottom, the removal is being coupled with grading and sediment removal within Section 10 waters that flow seasonally but do not support wetland vegetation.

A wetland delineation conducted by ESA biologists in November 2012 observed seasonal flow in Arroyo Mocho as a result of rainfall runoff. All wetlands in the delineated study area were in the channel bottom, with a few seasonal wetlands located in depressions above and adjacent to the ordinary high water mark. Delineated waters of the U.S. in the wetland delineation study area total 5.3 acres and 5,535 linear feet (ESA, 2012c) (included in Appendix C). Within the project area, temporary impacts would occur to 0.73 acres of Corps' jurisdictional in-stream wetlands and 0.70 acres of Section 10 waters (both regulated as "waters of the State"), and 2.37 acres subject to CDFW jurisdiction (Table 6).

Much of the in-stream work involves removing concrete and riprap from the stream channel and associated channel bank restoration and enhancement activities. Thus, temporarily disturbed areas would be restored or enhanced as a component of the project and the removal of concrete from the stream channel and banks would additionally create wetland and riparian habitat.

Table 6. Impacts to Jurisdictional Wetlands and Waters

Project Component	USACE Jurisdictional			CDFW ^b Riparian
	In-stream Wetlands (ac)	Open Water (ac)	Total USACE (ac)	Total CDFW (ac)
GCS #1/ Removal	0.05	0.05	0.10	0.33
GCS #2/ Roughened Channel	0.01	0.06	0.07	0.20
GCS #3/ Removal	0.06	0.05	0.12	0.35
GCS #4/ Removal	0.09	0.06	0.15	0.35
Sedimentation Basin/ Cleaning	0.33	0.42	0.75	0.76
DS Dragon's tooth/Roughened Channel	0.08	0.02	0.10	0.11
US Dragon's tooth/Roughened Channel	0.11	0.05	0.16	0.27
Total	0.73	0.70	1.43	2.37
^a - These areas are also regulated by the Regional Water Quality Control Board as waters of the State. ^b - CDFW Riparian area values extend vertically to the maintenance road and are inclusive of the USACE In-stream Wetlands and Open Water.				

Source: ESA

Findings

- a) **Less than Significant with Mitigation.** Based on review of the above mentioned sources, special-status plants and wildlife that are known or have potential to occur in the project vicinity include the California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), and Pacific pond turtle (*Actinemys marmorata*). Additionally, raptors and passerine birds may nest in and near the project area. Twenty-five special-status plant species that are known to or have the potential to occur in the project vicinity were considered for their potential to occur at the Project site (ESA, 2012a). Based on past and present land uses, and available habitats on-site, special-status plant species are not expected at the Project site. Potential impacts to wildlife resources from the project are analyzed below.

California Tiger Salamander

The California tiger salamander is a federal and state-listed threatened species that most commonly breeds in vernal pools, but also breeds in the quiet waters of ponds, reservoirs, lakes, and drainages. Adults spend most of the year in terrestrial habitats including burrows of the California ground squirrel (*Otospermophilus beecheyi*) and pocket gopher (*Thomomys* spp.), debris piles, and beneath man-made structures. They are restricted to grasslands and low foothill regions of Central and Northern California, which is where the longest-lasting rain pools tend to form (Jennings and Hayes, 1994). California tiger salamanders breed following relatively warm rains in winter months, generally December through March. This species participates in nocturnal breeding migrations that may cover distances of 0.7 miles or more during late winter or early spring rains (Jennings and Hayes, 1994).

California tiger salamanders have been detected in suitable breeding and dispersal habitat two to three miles from the project site; to the southwest in stock ponds surrounded by grazed-oak woodlands and annual grasslands with numerous California-ground squirrels; and to the north and east in annual grasslands also with burrows, agricultural fields, and vineyards (CNDDDB,

2012). Residential and commercial development surrounding the project site completely restricts salamander access from these known breeding locations. Additionally, poor quality habitat near the project site consists of agricultural fields and mining areas that do not support this species (ESA, 2012a). Based on the distance from known and potential breeding sites and lack of habitat features in the project area, California tiger salamanders are not anticipated in the project area and no impacts are anticipated to this species.

California Red-Legged Frog

The California red-legged frog is a federal threatened species and California species of special concern typically associated with deep pools or lakes with overhanging woody vegetation such as willows and cattails (Jennings, 1988; USFWS, 2002). California red-legged frogs frequently breed in ephemeral creeks and drainages and in ponds that may or may not have riparian vegetation. During summer and fall months this species may disperse upstream and downstream of breeding sites to forage and seek sheltering habitat. Such shelter may include all aquatic, riparian, and upland areas within the range of the species and landscape features that provide cover, such as small mammal burrows, rocks piles, organic debris (e.g., downed trees or logs), leaf litter, or industrial debris. Incised stream channels may also provide important summer sheltering habitat. During winter rain events, juvenile and adult California red-legged frogs are known to disperse up to one to two kilometers (Rathbun and Scott, 2009). California red-legged frogs generally breed from November to April, attaching egg masses to vegetation, fencing, or any available attachment sites in shallow water pools or protected backwater areas in streams (USFWS, 2002).

Due to flow management in Arroyo Mocho and the general lack of in-stream riparian habitat, potential aquatic habitat in the project area that could support red-legged frogs is restricted to the sediment basin. The six other distinct project locations consist of in-stream hardscape materials (e.g., concrete-reinforced riprap) and gravel-lined areas that will be dry at the time of construction. The Arroyo Mocho channel is also channelized and lacks backwater pools and woody, overhanging or emergent vegetation. The combination of fluctuating flows, supplemental water releases to Arroyo Mocho by the California Department of Water Resources, and frequent drying over a several mile reach of stream indicates poor habitat conditions for California red-legged frogs. Portions of the stream within 1.0 mile of the project area do not provide breeding habitat for this species.

As described in the *Zone 7 Water Agency 2012 Maintenance Projects California Red-legged Frog Survey Report*, protocol-level surveys performed for California red-legged frog in the project vicinity between 2001 and 2012 have repeatedly produced negative results (ESA, 2012a). The closest California red-legged frog occurrence to the project site is located in the downstream portion of Arroyo las Positas downstream from the Las Positas Golf Course, greater than 2.0 miles northwest of the project area. Based on the poor quality upland and aquatic habitat in the project area and the absence of nearby California red-legged frog populations, this species is unlikely to be encountered during construction.

Pacific Pond Turtle

Pacific pond turtles (*Actinemys marmorata*) are a California species of special concern that range along the entire western portion of California, including the Central Valley, north into British Columbia and south into northern Baja California. Pond turtles inhabit ponds, marshes, streams, and ditches that typically have a rocky or muddy substrate and support emergent vegetation. The pond turtle is commonly associated with permanent water bodies, though they may seasonally move through upland habitat and intermittent drainages. This species has not been documented in Arroyo Mocho within 1.0 mile of the project area, and because this portion of Arroyo Mocho dries seasonally there is low likelihood that it may be encountered during construction.

Construction

Because habitat in the project area is of poor quality for California red-legged frog and Pacific pond turtle, there is a little chance that these protected species would be encountered during construction. The likelihood of an encounter with either species is considered low based on recent negative protocol-level survey findings, and because this portion of Arroyo Mocho dries seasonally and will be dry at the time of construction (with the possible exception of the sediment basin). Direct effects to either species would be considered a significant impact. By enlarging (maintaining) the sediment retention basin and enhancing riparian habitat in the stream corridor, the project will have beneficial effects on the availability of aquatic habitat. The implementation of **Mitigation Measure BIO-1** will reduce the potential for construction-related impacts to these species to less-than significant.

Mitigation Measure BIO-1: Implement measures to reduce impacts to California red-legged frogs and Pacific pond turtle. The following measures shall be implemented to reduce impacts to these species:

- In-stream disturbances shall be performed during the dry season when Arroyo Mocho flows cease in the project area (e.g., May 15 to October 15, or as early as May 1 if conditions are dry). Additionally, upstream water releases from DWR shall be ceased or diverted around the site during the construction period to minimize the likelihood of animal movement through the project area during construction. A qualified biological monitor shall perform a preconstruction survey of the project area prior to construction to verify that California red-legged frogs and pond turtles are not present in work areas. Additionally, in the event that standing water is present in the sediment basin at the time of construction, the monitor shall perform periodic inspections of the project site to verify the absence of California red-legged frog and pond turtle should water be present.
- A biological resource education program shall be provided for construction crews and contractors before construction activities begin. The program shall describe the life history and identification of the California red-legged frog and Pacific pond turtle, protective measures to be implemented if sensitive species are identified or suspected to be in the work area (i.e., immediate notification of the biological monitor and temporary protective buffers of 100 feet), and penalties for handling or harming these species.

- If pond turtles are identified in the work area, construction activities shall cease until the individual disperses from the project site, or is relocated by the biological monitor. In addition, if a California red-legged frog is located, work shall be ceased in the immediate area and the U.S. Fish and Wildlife shall be notified before work is reinitiated.

Nesting Birds

A variety of suitable nesting habitat is present on and near the project site that could support both passerine birds and raptor species, including planted trees and shrubs at the top of slope, mature cattail and poison hemlock vegetation in the creek channel, and stands of eucalyptus in the residential development to the north. Large trees could support nesting raptors, such as red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), and white-tailed kite (*Elanus leucurus*). Golden eagles (*Aquila chrysaetos*) are known to nest in the vicinity of the project site; however, the eucalyptus large trees near the project site are subject to constant disturbance from pedestrians, nearby roads, and construction, and are not considered suitable nesting habitat for eagles. Species such as red-winged blackbird (*Agelaius phoeniceus*) could nest in the mature vegetation within the creek channel.

A few small mammal burrows were observed on the creek channel banks during the November 13, 2012 field survey; however, burrow sizes were small and shallow and thus do not support burrowing owl (*Athene cunicularia*).

The tricolored blackbird (*Agelaius tricolor*) is almost always present in large nesting colonies or flocks, with a range including the Central Valley and much of the Coast Ranges. Nesting habitats include freshwater wetlands with dense cattails or other wetland vegetation, and nesting colonies are larger than any other North American landbird (Shuford and Garaldi, 2008). Basic requirements for the species' selection of nesting sites includes open accessible water, a protected nesting substrate with either flooded or thorny vegetation, and a suitable foraging space with adequate insect prey within one to two miles of the colony. Nesting colonies have been historically present one to two miles to the west and south of the project site in sand and gravel mining ponds. Tall, dense cattail and poison hemlock vegetation stands in the creek channel could support nesting colonies; however, have not been historically observed in the project area.

As a result of project construction, any nesting raptors within 250 feet and passerine birds within 150 feet could be disrupted by project activities. The displacement of actively nesting would violate the Migratory Bird Treaty Act and CDFG code, and would constitute a significant impact. The implementation of **Mitigation Measure BIO-2** will reduce impacts on nesting birds to a less-than significant level.

Mitigation Measure BIO-2: If construction or vegetation removal must be performed during the nesting period (February 1 through August 31), Zone 7 shall retain a qualified biologist to survey trees and dense wetland vegetation within 250 feet of the project site for any nesting birds to verify the presence or absence of nests no more than 14 days prior to construction activities. If active nests are observed, buffer zones will be established around trees/shrubs with nests, with a buffer size established by the qualified biologist through

consultation with the appropriate regulatory agency (e.g., CDFW). Buffer zones will be avoided during construction activities until young have fledged or the nest is otherwise abandoned.

Operations

Upon completion of the project, the channel would function as it does presently with long-term in-stream habitat gains that would benefit native wildlife, including special-status wildlife species and nesting birds. As a result, there would be no long-term operational impact to candidate, sensitive or special-status plant or wildlife species.

- b) Less than Significant.** The project will result in temporary impacts to the creek channel during construction; however, the project is beneficial overall, improving existing low quality riparian habitat through the implementation of a revegetation plan that is incorporated into the project design (see Project Description, Section 2.2.6, *Vegetation Enhancements*). Thus, temporary project impacts to riparian habitat will be addressed through project design and do not require additional mitigation. The stream channel dries during the summer months and supports only sparse, annual riparian vegetation such as umbrella sedge and cattails that occur principally in the sediment basin. The amount of vegetated wetland habitat (i.e., in-stream wetlands) that would be affected by the project is presented in Table 6. Areas where hardscape structures would be removed do not support riparian vegetation.

Demolition and grading will result in removal of largely non-native or invasive in-stream vegetation (e.g., rough cocklebur, pepperweed, and poison hemlock (*Conium maculatum*), which will be replaced with native plants, as described in the project Planting Plan (see Project Description, Section 2.2.6, *Vegetation Enhancements*). As a result, the Project will improve riparian habitat conditions and have a less than significant impact on riparian habitat or other sensitive natural communities.

- c) Less than Significant.** During the removal of hardscape materials and accumulated sediment, project construction will temporary disturb approximately 0.73 acres of Corps' jurisdictional in-stream wetlands, 0.70 acres of Section 10 waters (both regulated as waters of the State), and 2.37 acres of CDFW riparian habitat (Table 6). As a focus of project design, the Project presently minimizes disturbance to in-stream wetlands and riparian vegetation in the project area; however, the removal of in-stream structures will require in-stream access and disturbance to the stream channel and associated vegetation.

Following the contouring of side slopes and removal of hardscape materials during construction, the planting of vegetation will create a shaded, native riparian vegetation community in the project area where one does not presently exist. Because concrete and riprap hardscape materials will be removed as a component of the project, the area of USACE, RWQCB, and CDFW-regulated jurisdictional wetlands in the project area will increase in direct relation to the area of removal materials. Additionally, the upstream portion of each grade control structure to be removed during construction is partially covered with sediment. The removal of buried concrete will enhance wetland characteristics in these areas and allow the establishment of riparian vegetation where only shallow rooted vegetation presently exists.

Implementation of the Planting Plan as described in the Project Description, (see Section 2.2.6, *Vegetation Enhancements*) will reduce project impacts on federal and State-protected wetlands to a less-than-significant level. Potential project impacts to water quality will be addressed through the implementation of protective measures identified in Section IX, *Hydrology and Water Quality*. Project permitting shall be required with the USACE, RWQCB, and CDFW; however, the creation and restoration of on-site wetlands and riparian plantings will adequately mitigate for temporary impacts to on-site wetlands. As a result, the project will have a less than significant impact on federally protected wetlands.

- d) Less than Significant.** As described in a) and b), existing habitat conditions at the project site are of minimal value, and project implementation and incorporated habitat enhancement activities (revegetation plans) will improve habitat contiguity for wildlife (including but not limited to fish, amphibians, and avian species) and provide long-term improvement to a low-quality wildlife movement corridor. Thus, impacts to native resident or wildlife movement would be less than significant.
- e) No Impact.** Project objectives to restore in-stream and riparian habitat are consistent with the open space and conservation elements of the Alameda County East County Area Plan and City of Livermore General Plan. No trees would be removed under the project. As a result, the project does not conflict with local biological resource protection policies or ordinances.
- f) No Impact.** No habitat conservation plans, natural community conservation plan, or other approved conservation plans have been approved for lands that include the project site.

V. CULTURAL RESOURCES				
Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☒	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

Discussion

- a-d) Less Than Significant Impact.** The Project is confined to a constructed stream channel, and earthwork will largely entail removing existing cement and rip-rap that dates to the 1980s, and removal of accumulated sediment. Because construction activities would take place within areas that were previously excavated and graded, it is unlikely that known or unknown paleontological or cultural resources would be encountered during the Project. In the event that suspected

archeological or paleontological resources are encountered during construction, all work shall cease until an archeologist is consulted and their recommendations are followed. Therefore, the potential impact of the Project on pre-historic and historic resources and archeological remains is less than significant.

VI. GEOLOGY AND SOILS

Would the project:

Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

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

☐	☐	☐	☒
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ii) Strong seismic ground shaking?

☐	☐	☐	☒
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iii) Seismic-related ground failure, including liquefaction?

☐	☐	☐	☒
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iv) Landslides?

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

☐	☐	☐	☒
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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?

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

☐	☐	☐	☒
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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?

☐	☐	☐	☒
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Discussion

a-e) No Impact. The project area is located in the San Francisco Bay area, a region of high seismic activity. The Calaveras and Greenville faults are two of the most significant faults in the Livermore area. These faults have ruptured between the last 200 to 11,000 years. The Project is confined to an existing stream channel, with small in-stream facilities built upon imported and/or packed materials. Arroyo Mocho is currently subject to natural erosional process and

sediment transport during both precipitation events and recharge operations. The site is non-habitable and would not expose people to injury or death, or risks to life or property. Therefore, this Project will have no impacts to geology or soils.

Also note that **Mitigation Measure AIR-1: Implement BAAQMD Basic Mitigation Measures** includes a provision to keep exposed surfaces (e.g., parking areas, staging areas, soil piles, and graded areas, and unpaved access roads) wet.

VII. GREENHOUSE GAS EMISSIONS

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

Discussion

- a) **Less than Significant Impact.** Based on the following analysis, construction and operation of the project would not generate greenhouse gas (GHG) emissions, either directly or indirectly, that would have a significant impact on the environment.

Construction

Construction activities that would be associated with the project would include the removal of three grade control structures, creation of three roughened channels to restore the existing channel, and sediment removal. It is anticipated that construction activities would occur during two separate phases. Phase 1 would occur in 2013 and would last approximately five months and Phase 2 would occur in 2015 and would last approximately two months. The majority of the project-related GHG emissions would be generated on-site due to the use of heavy-duty off-road equipment that would include an excavator, grader, front end loader, and dump truck. The equipment operation hours per day and number of required work-days would vary depending on the specific type of equipment and on the construction activity; however, for the purposes of this analysis, it is assumed that each piece of equipment would operate at the site for an average of 8 hours per day. GHG emissions would also be generated by construction worker daily commutes and by heavy-duty diesel tractor trailer trucks that would be required to haul excavated and imported soil and gravel and debris to/from the project sites.

The BAAQMD's *Revised Draft Options and Justification Report* (BAAQMD, 2009) identifies qualitative and quantitative operations-related thresholds of significance for GHG emissions. For projects other than stationary sources, the qualitative threshold is noncompliance with a qualified climate action plan or qualified general plan. The quantitative threshold is annual operational emissions of more than 1,100 metric tons carbon dioxide equivalent (CO₂e). For

stationary source projects, there is only a quantitative threshold of 10,000 metric tons CO₂e per year. There is no threshold established for emissions of GHG generated during project construction. However, for a conservative study, this analysis applies the BAAQMD's threshold of 1,100 metric tons CO₂e per year for non-stationary source projects.

Project construction equipment GHG emissions were estimated using CARB's off-road construction equipment diesel fuel consumption rates for calendar year 2013 in Alameda County. GHG emissions for off-road construction equipment were estimated by multiplying the total diesel fuel consumed by each piece of equipment by CO₂, N₂O, and CH₄ emission factors obtained from The Climate Registry (TCR) (2011) for diesel fuel combustion. N₂O and CH₄ emissions were multiplied by their respective global warming potentials and added to the CO₂ emissions to obtain CO₂e emissions.

GHG emissions from motor vehicles used during construction were estimated using the same general methodology described for criteria pollutants from construction vehicles (see Section 2.3). However, since the EMFAC2011 model provides GHG emission factors only for CO₂ emissions, N₂O and CH₄ emission factors for gasoline and diesel combustion were obtained from TCR (2011). GHG emissions in the form of CO₂e were calculated by multiplying the estimated total miles travelled by project-related worker vehicles and haul trucks by the GHG emission factors, then multiplying the N₂O and CH₄ emissions by their respective global warming potential, and then by adding the CO₂, N₂O, and CH₄ emissions.

Estimated construction GHG emissions that would be associated with Phases 1 and 2 of the project are presented in Tables 7 and 8, respectively. Refer to Appendix D for the assumptions used to estimate GHG construction emissions that would be associated with the project.

As indicated in Tables 7 and 8, short-term total project construction-related GHG emissions would be up to 202 metric tons CO₂e per year, and would total approximately 281 metric tons CO₂e, which is considerably lower than BAAQMD's quantitative threshold of 1,100 metric tons CO₂e per year for non-stationary sources. Therefore, GHG emissions that would be associated with construction of the project would represent a less-than-significant impact.

TABLE 7. PHASE 1 CONSTRUCTION GHG EMISSIONS ESTIMATE

Construction Activity Source	CO₂e
Off-road Equipment Emissions (metric tons)	131
Vehicle Emissions (metric tons)	71
Total Construction Emissions (metric tons)	202
Significance Threshold (metric tons)	1,100
Significant Impact?	No

TABLE 8. PHASE 2 CONSTRUCTION GHG EMISSIONS ESTIMATE

Construction Activity Source	CO₂e
Off-road Equipment Emissions (metric tons)	62
Vehicle Emissions (metric tons)	17

Total Construction Emissions (metric tons)	79
Significance Threshold (metric tons)	1,100
Significant Impact?	No

Operations

Once construction is complete, the project would result in virtually no sources of GHG emissions. Therefore, there would be no net change in long-term baseline conditions as a result of the project, and there would be no long-term operational impact.

- b) No Impact.** There are no adopted GHG-related plans, policies, or regulations that would be applicable to the project. No impact would occur

VIII. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

☐☐☒☐

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?

☐☐☒☐

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

☐☐☒☐

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?

☐☐☐☒

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

☐☐☒☐

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

☐☐☐☒

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

☐☐☐☒

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

☐☐☐☒

Discussion

- a-b) Less Than Significant Impact.** The Project will require the use of certain potentially hazardous materials such as fuels and oils. Fuels and oil would be used by construction equipment. Spills during on-site fueling of equipment or an upset condition, could result in a release of these material into the environment. However, the segment of stream channel will be blocked on both ends by coffer-dams during construction, making full containment and clean-up readily achievable. A hazardous materials management/spill prevention plan will be required by the contractor. Therefore, impacts from hazardous materials release are considered less than significant.

Implementation of Best Management Practices as identified in Section IX, Hydrology and Water Quality (**Measure WQ-1**), would reduce potential impacts to less-than-significant levels.

- c) Less Than Significant Impact.** There is an existing school within one-quarter mile of the site. However, the Project will not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste. Therefore, there would be no impact on schools within one-quarter mile of the site related to hazardous emissions or materials.
- d) No Impact.** The project is not included on the hazardous materials sites compiled pursuant to Government Code §65962.5. Therefore, there is no impact with respect to this list.
- e) Less Than Significant Impact.** The project site is located approximately one mile from the Livermore Municipal Airport's southern boundary. There is an airport land use plan (Alameda County Airport Land Use Policy Plan) and a General Plan Airport Protection Plan, which restricts new residential land use designations within a 5,000-foot buffer. The project will not result in new structures or functions that would impede airport traffic. Therefore, this project will have no impact related to the Livermore Municipal Airport with respect to safety hazards for people residing or working in the project area.
- f) No Impact.** There are no private airstrips within two miles of the project site. Therefore, there would be no impact with respect to safety at private airstrips.
- g) No Impact.** The project work is in the stream channel, in areas not accessible to cars. The project would not interfere with implementation of an emergency response or evacuation plan. Therefore, there would be no impact with respect to such emergency plans.
- h) No Impact.** The project site is not located in an extreme or high fire risk area. The Project would not result in creation of structures for habitation and would not expose people to wildfires. Therefore, there would be no impact with respect to extreme or high fire risks.

IX. HYDROLOGY AND WATER QUALITY

Would the project:

Potentially
Significant
ImpactLess Than
Significant with
Mitigation
IncorporatedLess Than
Significant
Impact

No Impact

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

i) Is the project tributary to an already impaired water body, as listed in the Clean Water Act Section 303(d) list? If so, will it result in an increase in any pollutant for which the water body is already impaired?

☐☐☒☐

ii) Will the proposed project cause or contribute to an exceedance of applicable surface or groundwater receiving water quality objectives or degradation of beneficial uses?

☐☐☒☐

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

☐☐☒☐

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

☐☐☒☐

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

☐☐☒☐

i) Review the final approved CWP Hydrograph Modification Plan (HMP) to assess the significance of altering existing drainage patterns.

☐☐☒☐

ii) Potentially cause streambed or bank erosion downstream from the project?

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

☐☐☒☐

i) Would the proposed project result in increased impervious surfaces and associated increased runoff? Does the project meet the NPDES permit's Group 1 or Group 2 criteria? Note that Provision C.3 requirements need to be met in environmental documents. For projects that do not meet Group 1 or Group 2 criteria, consider incorporating appropriate site design and source control measures.	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?				
i) Would the proposed project result in an increase in pollutant discharges to receiving waters? Consider water quality parameters such as temperature, dissolved oxygen, turbidity, and other typical stormwater pollutants (e.g., heavy metals, pathogens, petroleum derivatives, synthetic organics, sediment, nutrients, oxygen-demanding substances, and trash).	☐	☒	☐	☐
ii) Would the proposed project result in significant alternation of receiving water quality during or following construction?	☐	☒	☐	☐
iii) Would the proposed project have a potentially significant environmental impact on surface water quality to marine, fresh, or wetland waters?	☐	☒	☐	☐
iv) Would the proposed project have a potentially significant adverse impact on ground water quality?	☐	☐	☒	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion

- a) **Less Than Significant Impact.** The Project is located in Arroyo Mocho, which is listed in the Clean Water Act Section 303(d) list as an impaired water body for diazanon. The Project will not result in an increase of this pollutant because there will be no additional discharges into the Arroyo Mocho. The Arroyo Mocho has also been listed under section 303(d) of the Clean Water Act as impaired due to excessive water temperatures. The Project has been designed to create canopy

shade over the stream, which is expected to reduce temperatures to within the tolerances of many organisms, such as steelhead salmon, that require cool water. In addition, riparian buffers have been shown to be effective in sequestering water-borne pollutants both in-stream and in overland flow.

After construction, Zone 7 will continue recharge operations on Arroyo Mocho, which includes the release of imported water from the State Water Project. Release of this water supply would not violate any water quality standards or waste discharge requirements. There will be no degradation of designated beneficial uses.

Also see sub-part f.

b) Less Than Significant Impact. This reach of Arroyo Mocho contributes to groundwater recharge. It is expected that the additional “roughness” in the channel supplied by the roughened channels and riparian vegetation will slow the water sufficiently to potentially enhance groundwater recharge.

c-d) Less Than Significant Impact. The project will modify certain in-stream structures and promote a riparian canopy where today there is none. This may result in a natural shift of the meander of the channel over time, but there will be no change in the overall drainage pattern or stream course of Arroyo Mocho. Under post-project conditions, the thalweg is expected to undergo cycles of local sediment deposition and scour until a channel slope in equilibrium with flow and sediment delivery conditions is reached.

Removal of the existing in-stream structures may result in loosened sediment moving downstream beginning with the first winter storm following construction, and also as the low flow channel finds its new stable course. The project includes two periods of maintenance of the sedimentation basin (an existing facility), so that loosened sediment can be captured rather than continue downstream.

The project will not result in any new impervious surface, and the large-scale planting is intended to slow water through the reach (in lieu of the existing concrete and rip-rap structures). No increase in surface runoff is expected. The project will not cause streambed or bank erosion downstream of the project site.

e) Less Than Significant Impact. This riparian restoration and channel enhancement project will not result in new impervious surfaces. The Project will not result in increased runoff.

f) Less Than Significant with Mitigation Incorporated. Construction of the proposed project could violate water quality standards or waste discharge requirements should there be an accidental fuel spill, uncontrolled runoff of sediment laden water, or any other construction related soil erosion. This is unlikely, however, as the site will be dry and fully contained by coffer-dams on the upstream and downstream ends. Therefore, polluted discharges to receiving waters is very unlikely during construction. A SWPPP will be required to be prepared and implemented by the contractor. The Project will also seek a 401 water quality certification from the Regional Water Quality Control Board. Adherence to the prescribed measures in the SWPPP and 401 permit will further reduce impacts to water quality. Once the riparian canopy is

established, there may be a net benefit to surface water quality. No impact to groundwater quality is anticipated.

Measure HYD/WQ-1: A detailed Storm Water Pollution Prevention Plan (SWPPP) shall be prepared and implemented. Measures set forth in the 401 water quality certification will also be implemented.

Measure HYD/WQ-2: Implement Best Management Practices (BMPs) to control short-term construction water quality impacts. Construction BMPs would reduce erosion of disturbed soils during construction activities, and are used to minimize wind and water erosion and transport of sediments during construction. Further, these measures will reduce the risk of accidental spills of petroleum products into the creek. Measure may include these or similar measures:

- Regular inspection of coffer-dams;
- Back-up pumping capability in the event of failure of the coffer-dam;
- Any stockpiled soil, awaiting removal from the site, would be placed and sloped so that it would not be subject to accelerated erosion. (See also Mitigation Measure AIR-1);
- Refueling outside the riparian corridor with measures for containing accidental fuel spills;
- All construction equipment and machinery shall be checked for leaks prior to entry into the stream channel; and
- Any construction equipment shall not be stored or stockpiled in the creek channel.

The implementation of Mitigation Measures HYD/-WQ-1 and -2 will reduce impacts to water quality to a less-than significant level.

- g-h) No Impact.** The project is contained within the Arroyo Mocho stream channel, which is designed to carry the 100-year storm event. No housing or other structures will be built as part of the project. The project does not include levees or dams. Therefore, there is no impact with respect to flooding.
- i) No Impact.** The project is contained within the Arroyo Mocho stream channel, which is designed to carry the 100-year storm event. The project has been modeled to show that it will continue to contain the 100-year event after construction. Therefore, there is no impact with respect to flooding.
- j) No Impact.** The project area is not in a location affected by seiche, tsunami, or mudflow. Therefore, there is no impact with respect to flooding.

X. LAND USE AND PLANNING

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the LRDP, general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Discussion

- a) **No Impact.** There is no potential to physically divide an established community; therefore, there would be no impact since there is no established community.
- b) **No Impact.** The Project is located in an existing stream channel in Livermore, CA; it will not conflict with any other plans or policies. Livermore has long-term plans to improve and open to the public the trail immediately adjacent to this section of stream. This Project should enhance the future trail improvements.
- c) **No Impact.** There are no habitat conservation or natural community conservation plans in the project area. Therefore, there is no impact.

XI. MINERAL RESOURCES

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Discussion

- a-b) **No Impact.** The Project is contained within in an existing, constructed stream channel. It will have no impact with respect to the loss of availability of mineral resources.

XII. NOISE

Would the project result in:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion

a, d) Less than Significant With Mitigation Incorporated. Construction noise levels will be intermittent, and would fluctuate depending on the particular type, number, and duration of use of various pieces of construction equipment. Construction of the proposed facilities, which is expected to last five months for Phase 1 and 2 months for Phase 2, would temporarily increase noise levels in the project vicinity. Some land uses are more sensitive to ambient noise levels than others due to the amount of noise exposure and types of activities typically involved. Noise sensitive land uses include residential, mobile home parks, motels and hotels, schools, libraries, churches, hospitals, nursing and convalescent homes, and some parks and cultural facilities. There is residential community located immediately adjacent to the project site, separated by a sound wall. This community is subject to the existing nearby noises including heavy traffic on Stanley Blvd., Isabel Avenue (Hwy 84), and Murrieta Blvd; airport (plane) traffic; and the railroad which runs along the project site between the channel and Stanley Blvd. **Mitigation Measure NOI-1** would ensure that equipment noise is controlled to the degree feasible and would reduce potential noise impacts to less-than-significant levels.

Measure NOI-1: Noise generating construction work will generally be limited to weekdays from 8a.m. to 5p.m., or as specified in the City's ordinances. All construction work shall be conducted only as prescribed by City permits. Construction equipment shall be equipped with noise arrestors.

- b) Less Than Significant Impact.** Construction activities do not include blasting or drilling or other activities typically associated with groundborne vibration or groundborne noise. Given the background traffic and other noises, and the natural attenuation of noise with distance, this is considered a less than significant impact.
- c) No Impact.** Following construction, the project will result in no permanent increase in noise, and therefore there is no impact.
- e-f) No Impact.** The project site is located within two miles of an active airport; however, the project would not expose people residing or working in the project area to excessive noise levels associated with airport operations. Therefore, there is no impact.

XIII. POPULATION AND HOUSING	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

- a-c) No Impact.** Growth inducement impacts will not occur because the purpose is limited to riparian restoration and other channel enhancements. No existing housing will be displaced necessitating construction of replacement housing. No people will be displaced. Therefore, there are no impacts with respect to population/housing.

XIV. PUBLIC SERVICES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒

Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Discussion

- a) **No Impact.** The proposed project would not necessitate the need for alteration of public services or facilities. Therefore, no physical or environmental impacts associated with the provision of new or altered governmental facilities would result.

XV. 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?	☐	☐	☐	☒
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?	☐	☐	☒	☐

Discussion

- a) **No Impact.** The project site is currently not accessible to the public, and channel restoration will therefore not have any impacts to recreation at the site or elsewhere.
- b) **Less than significant Impact.** The City of Livermore has long-term plans to improve and open to the public the trail immediately adjacent to this section of stream as part of a larger network of trails. This Project should enhance the recreational experience of the trail. It is not anticipated that future improvements to the trail, if any, would result in adverse effects on the environment.

XVI. TRANSPORTATION/TRAFFIC

Would the project:

Potentially
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Significant with
Mitigation
IncorporatedLess Than
Significant
Impact

No Impact

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

☐☐☒☐

b) Conflict with an applicable congestion management program, including, but not limited to a level of service standard and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

☐☐☒☐

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

☐☐☐☒

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

☐☐☒☐

e) Result in inadequate emergency access?

☐☐☐☒

f) Result in inadequate parking capacity

☐☐☐☒

g) Conflict with applicable policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

☐☐☒☐**Discussion**

a.b) Less Than Significant Impact. The project area is located in the City of Livermore, with arterial or collector roads nearby (Stanley Blvd., Isabel Avenue (Hwy. 84) and Murrieta Blvd. Access points for Phase 1 are on either end of the site – from Rockrose St. on the west (downstream) end and from Murrieta on the east (upstream) end. Most larger vehicles will enter from Murrieta, because of the very sharp turn along the channel bank at the west end. For Phase 2, access will be from Isabel Ave.

During Phase 1 (between Murrieta Blvd. and Isabel Ave.), there will be a fairly steady stream of haul trucks entering and exiting the site on most days – concentrated during the sediment removal and demolition activities. Phase 2 (downstream of Isabel Ave.) requires significantly fewer truck trips.

	Import Rock for Roughened Channels	Haul-off: concrete / rip-rap	Haul-off: sediment from dragon's tooth structures	Haul-off: sedimentation basin (to occur twice under Phase 1)
Phase 1	95 truck trips (550 cubic yards)	655 truck trips (3765 cubic yards)	435 truck trips (2500 cubic yards)	385 truck trips, each event (2200 cubic yards, each event)
Phase 2	45 truck trips (250 cubic yards)	50 truck trips (300 cubic yards)	175 truck trips (1000 cubic yards)	--

Off-site vehicle trips generated by construction would primarily consist of truck movements associated with transporting the heavy equipment to the site, transport of soil and other materials to and from the project site, and the daily arrival and departure of construction workers. The impact of construction-related traffic would be a temporary. As a result, the proposed project would not result in any long-term degradation in operating conditions or level of service on any project roadway.

In addition to construction truck trips, construction activities would require approximately 8 construction employees, who would generate about sixteen one-way commute trips per day (eight inbound in the morning, and eight outbound in the afternoon). As stated above, there are major arterial streets surrounding the project site, and the temporary addition of construction employee trips would not adversely affect traffic flow conditions. Therefore, vehicle trips associated with construction employees are considered a less than significant impact.

In addition to increased traffic volumes on area roadways, access from Murrieta may require closure of one lane (and/or the bike/turning lane) immediately surrounding the access point during the construction work hours. This will be carefully evaluated in coordination with the City of Livermore. To ensure that project impacts are kept at a level considered less than significant, **Mitigation Measure TRAF-1** has been identified.

Mitigation Measure TRAF-1: Develop a traffic plan in coordination with the City of Livermore. The plan may include measure such as:

- construction signs that advise drivers of closed lanes (if applicable) or other traffic changes / cautions;
- establishing a 24-hour emergency telephone resource for questions and complaints; and
- providing flaggers as needed when trucks are maneuvering in traffic.

- c) **No Impact.** The project is located within one mile of the Livermore Municipal Airport; however, the project will not impact the air traffic since the project will not involve erecting structures that could impede flight path or radio signals.
- d) **Less Than Significant Impact.** The proposed project would not include any permanent design features (e.g., new facilities or obstructions) within public roadways or alterations of existing roadway features (e.g., road realignment) that would create a permanent and substantial design

hazard. However, as discussed above, construction activities may result in temporary/partial lane closure on Murrieta Blvd. Pending an approved traffic plan by the City of Livermore, it is assumed that traffic flow would be maintained around the construction access point on Murrieta Blvd. by using cones and a flagger. Compliance with the traffic plan and standard roadside safety protocols would ensure that the impact would be less than significant.

- e) **No Impact.** Access to the project site is off Murrieta Blvd. or Rockrose St. At neither location will the full roadway be closed such that it would impede the existing access; therefore, there is no impact to emergency access.
- f) **No Impact.** The project will require parking for construction workers. There is adequate parking to accommodate the approximately 8 daily construction workers within the project area or nearby street parking. Workers will not park in any spaces specially reserved for tenants. Therefore, there is no impact with respect to parking.
- g) **No Impact.** The project area is not open to the public. Therefore, there is no impact on these alternative transportation facilities or plans for the area. Further, the City of Livermore has long-term plans to improve and open to the public the trail immediately adjacent to this section of stream as part of a larger network of trails. This Project should enhance the recreational experience of the trail.

XVI. UTILITIES AND SERVICE SYSTEMS Would the project:	Less Than			
	Potentially Significant Impact	Significant with Mitigation Incorporated	Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒

g) Comply with applicable federal, state, and local statutes and regulations related to solid waste? ☐ ☐ ☐ ☒

Discussion

a-g) No Impact. The Project is limited to riparian restoration and channel enhancement measures. Activities will not require water or wastewater service onsite. Therefore, no expansion of existing or construction of new water or wastewater facilities would be required, and wastewater treatment requirements would not be exceeded. The project will not result in the construction of new storm water drainage facilities. Finally, there will be no solid waste generated as a result of this project, and therefore there would be no impact on water, wastewater, or solid waste disposal services.

XVII. 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 degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
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)?	☐	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Discussion

- a) Less Than Significant Impact.** Without mitigation, the proposed project does have the potential to degrade the quality of the environment during construction activities. However, with the mitigation measures included as part of this Initial Study, all potentially significant impacts would be reduced to a less-than significant level.
- b) Less Than Significant Impact.** Potential impacts associated with the proposed project are only related to construction activities. Due to the limited scope of the proposed activities, the proposed project would not contribute to cumulatively considerable impacts. Therefore, potential impacts are considered to be less than significant.
- c) Less Than Significant Impact.** Without mitigation, the proposed project does have the potential to adversely affect human beings, primarily through activities related to project construction.

However, these impacts would be temporary (lasting only for the duration of construction) and the mitigation measures included as part of this Initial Study would reduce these potential impacts to a less-than-significant level.

XVIII. FISH AND GAME DETERMINATION

Based on the information above, there is no evidence that the project has a potential for a change that would adversely affect wildlife resources or the habitat upon which the wildlife depends. The presumption of adverse effect set forth in 14 CCR 753.5 (d) has been rebutted by substantial evidence.

- ☐ Yes (Certificate of Fee Exemption)
☒ No (Pay fee)

6 PUBLIC COMMENTS

A notice of the ~~is~~ Draft Initial Study/ Mitigated Negative Declaration document was mailed to agencies and interested parties, including property owners adjacent to the proposed Project site. It was also made available at the public library in Livermore ([1188 South Livermore Ave](#)), and noticed in the Valley Times newspaper. The 30-day public review period ~~was~~ January 28, 2013 through March 4, 2013.

Only one comment letter was received (see Appendix F). Following is a summary of the comments and Zone 7 response. Minor changes were made to the MND to clarify some of the issues raised by Caltrans; no additional analysis was needed, nor were conclusions on environmental impacts modified. ~~The final IS-MND will include a summary of comments and responses received through March 4, 2013.~~

1. **Comment:** Zone 7 is responsible for all project mitigation... The project's fair share contribution, financing, scheduling, and implementation responsibilities as well as lead agency monitoring should be fully discussed for all proposed mitigation measures and the project's mitigation fees should be specifically identified in the environmental document.

Response:

Because this is a restoration project, the project is designed to yield a net benefit to the environment. Therefore, no compensatory mitigation (e.g., creation of lost habitat or payment of mitigation fees) is proposed.

Mitigation measures to lessen the temporary impacts associated with construction (traffic, noise, etc.) will be completed within the timeframe of construction, and fully paid for and implemented by Zone 7.

All aspects of the proposed project are being fully funded by Zone 7 using existing finances. Zone 7 and Alameda County Surplus Property Authority (ACSPA) have negotiated an MOU allowing ACSPA to reimburse Zone 7 for a small portion of the project cost and in return earn mitigation credit for an unrelated project; this arrangement was made with support from the Regional Water Quality Control Board.

2. **Comment:** We are concerned that the change in channel profile could jeopardize the integrity of the existing bridge foundation. Please discuss any studies/assessments that address impacts to the existing bridge and its foundation caused by the change in channel profile.

Response:

Roughened channels will replace both Dragon's Teeth structures, and are designed to provide grade control and channel stability while also allowing fish passage.

In all, three existing structures will be replaced with "roughened channel" sections constructed from loose boulders and designed to mimic natural bed conditions – two upstream of SR-84 (Phase 1) and one downstream (Phase 2).

ESA PWA was retained by Zone 7 to complete the project design. Primary criteria for the project design were to maintain (or possibly reduce) the existing velocity, maintain the integrity of the channel as a flood control facility, and to provide fish passage.

This will be accomplished by spreading the drop over ~250' of channel length and providing a low-flow pathway. By contrast, the upper Dragon's Teeth structure currently stabilizes approximately six feet of elevation difference over a distance of less than ten feet of channel length. The design includes many features to stabilize the channel gradient including the large keystone matrix, upstream key trench, side cutoff trenches, and flow-resistant vegetation.

3. **Comment:** The vegetation enhancements will introduce woody debris to the system that will accumulate around the existing SR-84 bridge piers in Arroyo Mocho.

Response:

Zone 7 will implement and fund a specially designed long-term maintenance program as part of this project in order to yield the desired tree canopy when the trees are mature. The added focus on maintenance work at this project site will limit any accumulation of woody debris near the SR-84 bridge piers, other than what would normally be expected without implementation of this project. Therefore, a maintenance agreement is not warranted.

4. **Comment:** The vegetation enhancement appears to terminate on the upstream side of SR-84 across Arroyo Mocho. Please discuss any enhancement work downstream of the state bridge.

Response:

The current design for the downstream reach (Phase 2) includes only the replacement of the Dragon's teeth energy dissipation structure with a fish-friendly roughened channel structure, without added riparian enhancement.

5. **Comment:** An encroachment permit is required for work on the State right-of-way

Response:

The work will not be within the State right-of way (including under SR-84) and therefore an encroachment permit will not be needed from Caltrans.

7 MITIGATION MONITORING AND REPORTING PLAN

The Mitigation Monitoring and Reporting Plan (MMRP) is included as Appendix E; it identifies the implementation procedure, monitoring and reporting actions, monitoring responsibility, and monitoring schedule for all mitigations measures.

8 REFERENCES

- Baich, P.J. and C.J.O. Harrison, A Guide to the Nests, Eggs, and Nestlings of North American Birds, 2nd edition, Academic Press, San Diego, CA, 345 pp., 1997.
- Bay Area Air Quality Management District (BAAQMD), 2009. Revised *Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance*, October, 2009.
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