DRAFT

Initial Study and Mitigated Negative Declaration

Zanja Trail and Greenway Park Project – 7th St. to Church St.

October 2019

Lead Agency:
City of Redlands

P.O. Box 3005
Redlands, CA 92373

Prepared by:

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

215 N. 5TH Street
Redlands, CA 92374

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DRAFT MITIGATED NEGATIVE DECLARATION
ZANJA TRAIL AND GREENWAY PARK – 7TH ST. TO CHURCH ST. PROJECT

Lead Agency:	City of Redlands
Project Proponent:	The Redlands Conservancy
Project Location:	Along the Zanja alignment from 7TH St. to Church St. north of Redlands Boulevard and south of Interstate 10.

Project Description: The Proposed Project would begin at 7th Street and end at Church Street. The Proposed Project includes two elements, a Zanja Trail Gateway Monument at its westernmost end at 7th Street, and a 0.4-mile trail from 7th Street to Church Street. The trail is characterized as a decomposed granite pedestrian trail with a varying width of 6 to 12 feet.

Public Review Period: <u>October 25, 2019</u> to <u>November 13, 2019</u>

Mitigation Measures Incorporated into the Project to Avoid Significant Effects:

Biological Resources

BIO-1: If construction activities occur within the bird breeding season (February 1 through August 31) then a pre-construction nesting survey shall be conducted no more than 30 days prior to the start of construction by a qualified biologist. The nest survey shall include the project site and areas within 500 feet of the site that could be affected by construction activities that could generate indirect effects to nesting birds, such as noise, human activity, dust, etc. If active bird nests are found during the survey, and could be affected by construction activities, then the qualified biologist shall establish an appropriate buffer zone around the active nests based on the work activities, nesting species, and likelihood of the species being affected by construction activities. Buffers may typically be a 300-foot radius for songbirds and a 500-foot radius for raptors. Project activities shall be avoided within the buffer zone until the nest is deemed no longer active by the biologist. Weekly nesting surveys and biological monitoring may be necessary if nesting birds are found on the project site.

BIO-2: To ensure impacts to waters and habitats jurisdictional to the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife are avoided, an exclusion zone shall be staked by a qualified biologist prior to the commencement of ground-disturbing activities. The exclusion zone shall remain in place for the duration of construction, and the purpose of the exclusion zone shall be included in the construction worker daily briefings (tailgate meetings).

Cultural Resources

CUL-1: Archaeological Monitoring: Due to the heightened cultural sensitivity of the proposed project area, an archaeological monitor with at least 3 years of regional experience in archaeology shall be present for all ground-disturbing activities that occur within the proposed project. Ground disturbance is defined as any activity that compacts or disturbs the ground within a project area. The project area is defined as all areas where project activities will occur, including: the actual construction activities, permanent easements, temporary construction easements, staging areas for supplies and equipment, and borrow pits. Ground disturbance can also be caused by the use of hand tools (shovels, pick axe, posthole digger, etc.), heavy equipment (excavators, backhoes, bulldozers, trenching and earthmoving equipment, etc.), and heavy trucks (large four wheel drive trucks, dump trucks and tractor trailers, etc.). Trenching, bulldozing, excavating, scraping, and plowing are typical examples of ground disturbance activities. Project types that usually involve ground disturbance include acquisition/demolition/relocation of structures; vegetation management; landslide stabilization; and infrastructure projects such as utilities, storm water management, and flood control. However, any projects that include the installation of utilities, culverts, temporary roads or structures, permanent roads, foundations and footers all typically involve ground disturbance activities. A sufficient number of archaeological monitors shall be present each work day to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation ("Cultural Resources" and "Tribal Cultural Resources") shall be completed by the archaeologist and submitted to the Lead Agency for dissemination to the government representatives of consulting Tribes. Once all parties review and approve the plan, it shall be adopted by the Lead Agency – the plan must be adopted prior to permitting for the project. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.

Hazards and Hazardous Materials

HAZ-1: Prior to work in any City street, a Traffic Control Plan shall be submitted to the City of Redlands Engineering Department for review and approval. The Traffic Control Plan shall include measures to maintain emergency access to residences and structures in the vicinity of the project area.

Noise

NOI-1: The applicant shall limit construction activities to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday with no construction activities permitted on weekends and Federal holidays. Project contractors shall ensure that all construction equipment, fixed or mobile, shall be operated with properly functioning and maintained mufflers, consistent with manufacturer standards. Stationary construction equipment shall be located as far away from residences or religious institutions as is practical.

Transportation/Traffic

TRANS-1: The final design of traffic and pedestrian control features at trail's intersection with 7th Street and 9th Street shall be approved by the City Engineer prior to encroachment permit issuance.

These design features could include, but are not limited to, removable lockable bollards at the trail entrances, colored stamped concrete, and signage.

Tribal Cultural Resources

TCR-1: **Tribal Monitoring:** Due to the heightened cultural sensitivity of the proposed project area, Tribal monitors representing the consulting Tribes shall be present, on a rotating basis, for all ground-disturbing activities that occur within the proposed project. Ground disturbance is defined as any activity that compacts or disturbs the ground within a project area. The project area is defined as all areas where project activities will occur, including: the actual construction activities, permanent easements, temporary construction easements, staging areas for supplies and equipment, and borrow pits. Ground disturbance can also be caused by the use of hand tools (shovels, pick axe, posthole digger, etc.), heavy equipment (excavators, backhoes, bulldozers, trenching and earthmoving equipment, etc.), and heavy trucks (large four wheel drive trucks, dump trucks and tractor trailers, etc.). Trenching, bulldozing, excavating, scraping, and plowing are typical examples of ground disturbance activities. Project types that usually involve ground disturbance include acquisition/demolition/relocation of structures; vegetation management; landslide stabilization; and infrastructure projects such as utilities, storm water management, and flood control. However, any projects that include the installation of utilities, culverts, temporary roads or structures, permanent roads, foundations and footers all typically involve ground disturbance activities. A sufficient number of Tribal monitors shall be present each work day to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation ("Cultural Resources" and "Tribal Cultural Resources") shall be completed by the archaeologist, as detailed within CUL-1, and submitted to the Lead Agency for dissemination to the government representatives of consulting Tribes. Once all parties review and agree to the plan, it shall be adopted by the Lead Agency – the plan must be adopted prior to permitting for the project. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.

TCR-2: **Treatment of Cultural Resources:** If a pre-contact and/or post-contact cultural resource is discovered during project implementation, ground disturbing activities shall be suspended 60 feet around the resource(s) and an Environmentally Sensitive Area (ESA) physical demarcation/barrier constructed. Representatives from the consulting Tribal governments, the Archaeological Monitor/applicant, and the Lead Agency shall confer regarding treatment of the discovered resource, as detailed within the Monitoring and Treatment Plan. A research design shall be developed and will include a plan to evaluate the resource for significance under CRHR criteria, as well as its potential as a Tribal Cultural Resource (TCR).

Should any significant resource(s) not be a candidate for avoidance or preservation in place, and the removal of the resource(s) is necessary to mitigate impacts, the research design shall include a comprehensive discussion of limited non-destructive sampling strategies, resource processing, analysis, and reporting protocols/obligations. Removal of any cultural resource(s) shall be conducted with the presence of a Tribal monitor representing the consulting Tribes, unless otherwise decided by government representatives of the consulting Tribes. All plans for analysis shall be reviewed and approved by the applicant and government representatives of the consulting Tribes prior to implementation, and all removed material shall be temporarily curated on-site. It is the preference that removed cultural material be reburied as close to the original find location as possible. However, should reburial within/near the original find location during project implementation not be feasible, then a reburial location for future reburial shall be decided upon by the consulting Tribes, the landowner, and the Lead Agency, and all finds shall be reburied within this location. Additionally, in this case, reburial shall not occur until all ground-disturbing activities associated with the project have been completed, all monitoring has ceased, all cataloguing and basic recordation of cultural resources have been completed, and a final monitoring report has been issued to Lead Agency, CHRIS, and consulting Tribes. All reburials are subject to a reburial agreement that shall be developed between the landowner and government representatives of the consulting Tribes outlining the determined reburial process/location, and shall include measures and provisions to protect the reburial area from any future impacts (vis a vis project plans, conservation/preservation easements, etc.).

Should it occur that avoidance, preservation in place, and on-site reburial are not an option for treatment, the landowner shall relinquish all ownership and rights to this material and confer with government representatives of the consulting Tribes to identify an American Association of Museums (AAM)-accredited facility within the County that can accession the materials into their permanent collections and provide for the proper care of these objects in accordance with the 1993 CA Curation Guidelines. A curation agreement with an appropriate qualified repository shall be developed between the landowner and museum that legally and physically transfers the collections, along with title and associated records to the facility. This agreement shall stipulate the payment of fees necessary for permanent curation of the collections and associated records and the obligation of the Project developer/applicant to pay for those fees.

All draft records/reports containing the significance and treatment findings and data recovery results shall be prepared by the archaeologist and submitted to the Lead Agency and government representatives of the consulting Tribes for their review and comment within 30 days of receipt. After approval from all parties, the final reports and site/isolate records are to be submitted to the local CHRIS Information Center, the Lead Agency, and consulting Tribes.

TCR-3: Inadvertent Discoveries of Human Remains/Funerary Objects: In the event that any human remains are discovered within the project area, ground disturbing activities shall be suspended 100 feet around the resource(s) and an Environmentally Sensitive Area (ESA) physical demarcation/barrier constructed. The on-site lead/foreman shall then immediately notify the government representatives of the consulting Tribes, the applicant/developer, and the Lead Agency. The Lead Agency and the applicant/developer shall then immediately contact the County Coroner regarding the discovery. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the NAHC within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c). The NAHC-identified Most Likely Descendant (MLD), shall be allowed, under California Public Resources Code § 5097.98

(a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and funerary objects shall be treated and disposed of with appropriate dignity. The MLD, Lead Agency, and landowner agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes. The MLD shall complete its inspection and make recommendations within forty-eight (48) hours of the site visit, as required by California Public Resources Code § 5097.98.

Reburial of human remains and/or funerary objects (those artifacts associated with any human remains or funerary rites) shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The MLD in consultation with the landowner, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains and funerary objects. All parties are aware that the MLD may wish to rebury the human remains and associated funerary objects on or near the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The applicant/developer/landowner should accommodate on-site reburial in a location mutually agreed upon by the Parties.

It is understood by all Parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r).

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
APE	Area of Potential Effect
AQMP	Air Quality Management Plan
BMPs	Best Management Practices
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation

CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
CO Plan	Federal Attainment Plan for Carbon Monoxide
CRHR	California Register of Historic Places
CWA	California Water Act
DTSC	Department of Toxic Substances Control
EIC	Eastern Information Center
EIR	Environmental Impact Report
GHGs	Greenhouse Gases
LSTs	Localized Significance Thresholds
MBTA	Migratory Bird Treaty Act
MLD	Most Likely Descendent
MND	Mitigated Negative Declaration
NAHC	Native American Heritage Commission
ND	Negative Declaration
NO_x	Nitrogen Oxides
NRHP	National Register of Historic Places
PM_{10} and $PM_{2.5}$	Particulate Matter
ROG	Reactive Organic Gases
RWQCB	Regional Water Quality Control Board
USACE	United States Army Corps of Engineers
SCAQMD	South Coast Air Quality Management District
SP	Service Population
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board

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SECTION 1.0 BACKGROUND

1.1 Summary

Project Title:	Zanja Trail and Greenway Park Project – 7th St. to Church St.
Lead Agency Name and Address:	City of Redlands PO Box 3005 Redlands, CA 02373
Contact Person and Phone Number:	Chris Boatman, Facilities & Community Services (909) 798-7655
Project Location:	Adjacent to the Zanja alignment, from 7th St. to Church St., north of Redlands Boulevard and south of Interstate 10.
General Plan Designation:	Linear Park, Parks/Golf Courses, and Commercial/Industrial
Zoning:	SP-45/TC, Specific Plan 45/Town Center

1.2 Introduction

The City of Redlands (City) is the Lead Agency and the San Bernardino Flood Control District is a Responsible Agency for this Initial Study. The Initial Study has been prepared to identify and assess the anticipated environmental impacts of the Zanja Trail and Greenway Park Project – 7th St. to Church St. This document has been prepared to satisfy the California Environmental Quality Act (CEQA) (Pub. Res. Code, Section 21000 *et seq.*) and State CEQA Guidelines (14 CCR 15000 *et seq.*). CEQA requires that all state and local government agencies consider the environmental consequences of Projects over which they have discretionary authority before acting on those Projects. A CEQA Initial Study is generally used to determine which CEQA document is appropriate for a Project (Negative Declaration [ND], Mitigated Negative Declaration [MND], or Environmental Impact Report [EIR]).

1.3 Surrounding Land Uses/Environmental Setting

The Zanja Trail and Greenway Park Project – 7th Street to Church Street (Proposed Project) would parallel an approximately 1,050 linear foot segment of the Mill Creek Zanja along its north side between 9th Street and Church Street, and an approximately 600 linear foot segment north of the Hatfield Buick property (Figures 1 and 2). The proposed trail alignment between 9th Street and Church Street is located adjacent to multiple-family residential neighborhoods. The proposed trail alignment between 7th Street and 9th Street is located adjacent to commercial and office uses (Hatfield Buick dealer, The Door Christian Fellowship, and the Redlands Mill office building). The Zanja is listed on the National Register of Historic Places (NRHP) and is a California Historic Landmark. The Zanja is the oldest civil engineering project remaining in southern California and was fundamental to the founding and settlement of Redlands. The Zanja is depicted on the earliest United States Geological Survey (USGS) topographic maps of the area.

The elevation of the project area ranges from 1,375 feet above mean sea level (msl) to 1,404 feet msl. It is located approximately 1.9 miles south of the Santa Ana Wash that emanates from the San Bernardino Mountains approximately 5.3 miles to the northeast. Soil in the area consists of fluvial sediments of the Santa Ana River flood plain, made up of coarse granitic sand and gravel. The project site contains only heavily disturbed habitat in an urban setting that is mostly void of vegetation and includes non-native grassland, disturbed habitat, and developed areas. Sediments in the area are highly disturbed due to the creation of the Zanja itself and other modern improvements to the channel. The banks of the Zanja have been graded to provide a flat maintenance access road adjacent to the channel that also serves as an informal pedestrian walkway. Representative site photos are provided below.

Photo 1 - Mill Creek Zanja between 9th Street and Church Street facing west.

Photo 2 - Mill Creek Zanja between 9th Street and Church Street facing west.

Photo 3 - Mill Creek Zanja Inlet at 9th Street facing west.

Photo 4 - Proposed Zanja Trail Gateway Monument location at 7th Street facing east.

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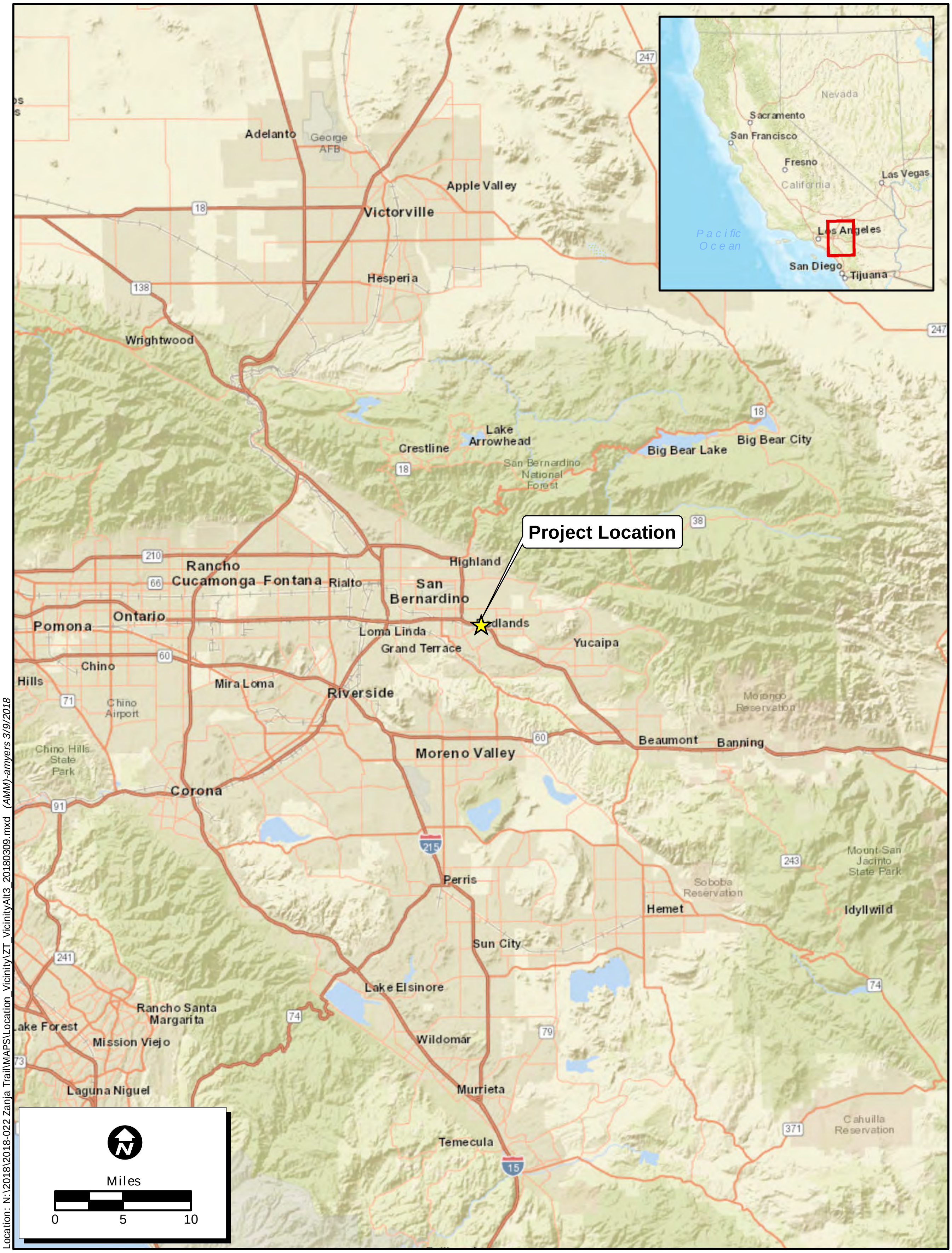

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Map Date: 3/9/2018

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

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Figure 1. Project Vicinity

2018-022 Zanja Trail Project

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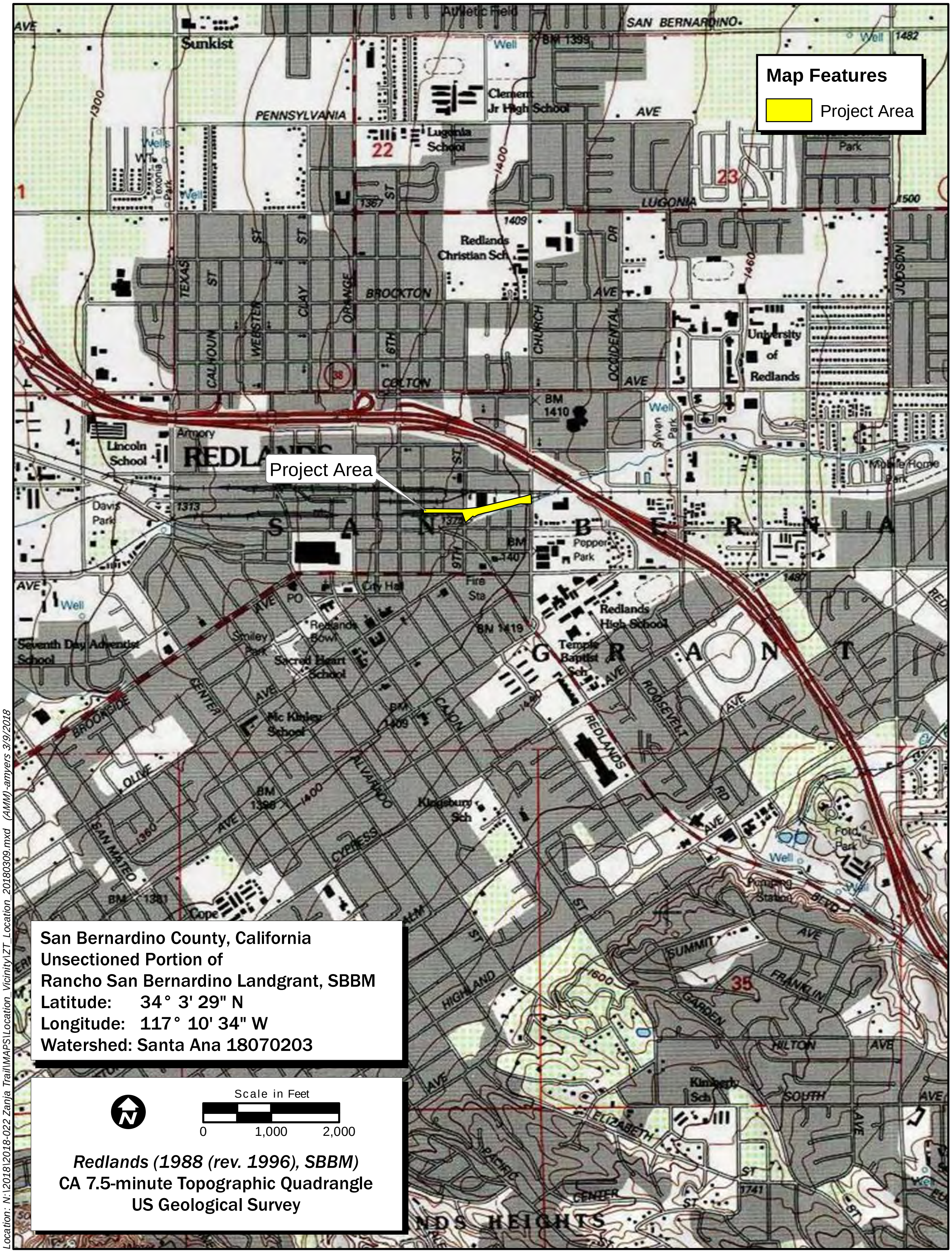

Map Date: 3/9/2018

iService Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed

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Figure 2. Project Location

2018-022 Zanja Trail Project

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SECTION 2.0 PROJECT DESCRIPTION

2.1 Project Background

The information in the Project Background is taken from the *Zanja Trail and Greenway Park Project Master Plan* (Redlands Conservancy 2015). This Master Plan was accepted by the Redlands City Council on December 15, 2015 as the guiding document for development of the Zanja Trail.

The City of Redlands Park and Open Space Plan, adopted in 1987, calls for eight major features, one of which is the creation of "a strip park and related trails following the Zanja from Crafton through the downtown area to the westerly city limits." Much of this 1987 plan was incorporated into the City's Open Space and Conservation Element of the 1995 General Plan. The recently-adopted 2017 General Plan includes the Zanja Trail as part of a regional trail network which also includes the Orange Blossom Trail and Santa Ana River Trail.

The Redlands Conservancy has prepared a Master Plan, which identifies the route, potential amenities, and opportunities and constraints of the full Zanja trail alignment, which originally extended from Wabash Avenue to 9th Street/Redlands Boulevard and has since been revised to extend to 7th Street, approximately 2.3 miles. This Initial Study focuses only on the 7th Street to Church Street portion of the trail.

2.2 Project Characteristics

The Proposed Project would begin at 7th Street and end at Church Street. The Proposed Project includes two elements, a Zanja Trail Gateway Monument at its westernmost end at 7th Street, and a 0.4-mile trail from 7th Street to Church Street. The trail is characterized as a pedestrian trail with a varying width of 6 to 12 feet (Figure 3).

7th Street to 9th Street Trail Segment

This trail segment would be approximately 600 feet long, within a 54- to 60-foot-wide alignment from the western curb of 7th Street to the western curb of 9th Street. In this area the Zanja channel is underground. This space is currently used as a surface parking for a religious facility (The Door Christian Fellowship) located north of the Hatfield Buick dealership. This space is owned by the City and is leased to the religious facility.

The trail would begin at the western curb of 7th Street, north of Redlands Boulevard, where an enhanced paving crosswalk would be installed. On the eastern side of 7th Street a Zanja Trail Gateway Monument would be installed. A 6-foot-wide natural surface pedestrian trail would be built within a 16 to 22-foot-wide strip of landscaping north of the Hatfield Buick dealership. Landscaping would include native trees and shrubs to provide shade and help shield pedestrians from vehicles using the parking lot. Interpretive way-finding and mile-marking signs would also be installed along the route and at the northwest corner of Redlands Boulevard and 7th Street. The area north of the trail would include a 40-space parking lot with a two-way drive aisle. Existing fencing on both the north and south side of the existing parking lot would remain.

9th Street to Church Street Trail Segment

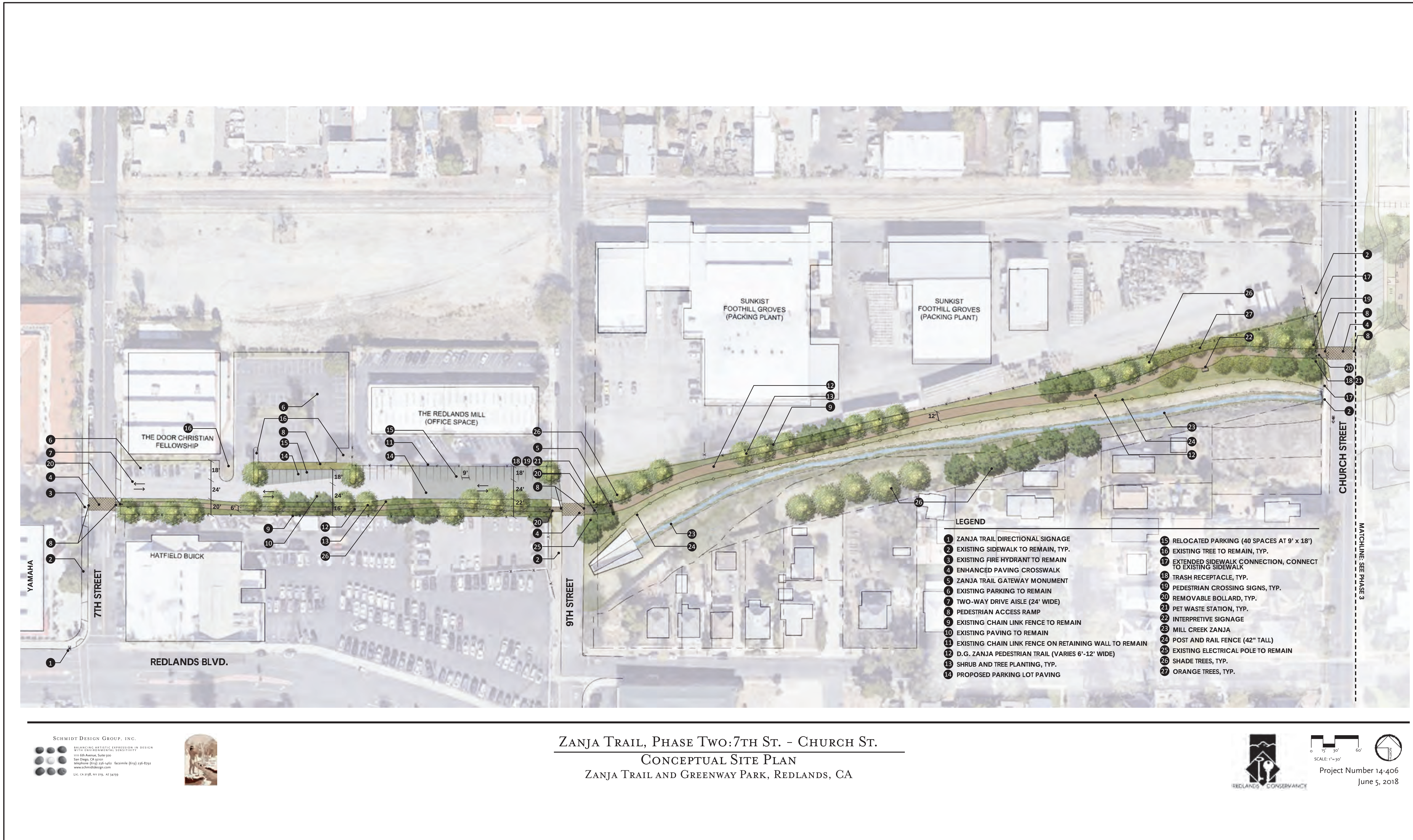
This trail segment would be approximately 1,050 feet long and extend from the western curb of 9th Street to the western curb of Church Street. This segment of the trail alignment would be constructed within an area owned by City of Redlands Successor Agency.

Improvements would include an enhanced pavement street crossing at 9th Street and Church Street. The proposed trail alignment would consist of a 12-foot-wide natural surface pedestrian trail. Along this segment, both the pedestrian trail would be located north of the Zanja channel with a 42 inch tall post and rail fence separating the path from the channel. Along the route, interpretive way-finding signs would be installed. Removable lockable bollards would be installed at the trail entrances at 9th Street and Church Street to deter motorized vehicles from entering the trail. If necessary, the pedestrian trail would also serve as an access road for San Bernardino Flood Control District vehicles. Trash receptacles and dog waste removal units would be installed at road crossings. Native plantings and shade trees would be planted along the route.

Proposed Project improvements would avoid work in the Zanja channel or the portions of its banks that have been designated as under the jurisdiction of the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and/or California Department of Fish and Wildlife (CDFW).

2.3 Project Timing

Project construction is anticipated to begin in December 2019 and take approximately 6 months.



Source: Schmidt Design Group, Inc. 2018

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Figure 3. Site Plan

2018-022 Zanja Trail Project

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2.4 Regulatory Requirements, Permits, and Approvals

The following approvals and regulatory permits would be required for implementation of the Proposed Project:

- City of Redlands
  - Design approval
  - Encroachment permit for work in 7th, 9th, and Church Streets
  - Building Permit

2.5 Consultation With California Native American Tribe(s)

The following California Native American tribes traditionally and culturally affiliated with the project area have been notified of the project: Morongo Band of Mission Indians; San Manuel Band of Mission Indians; Torres Martinez Desert Cahuilla Indians; Soboba Band of Luiseño Indians; and Gabrieleño Band of Mission Indians – Kizh Nation. The Morongo Band of Mission Indians, San Manuel Band of Mission Indians, and the Soboba Band of Luiseño Indians have requested consultation pursuant to Public Resources Code section 21080.3.1. A summary of the consultation process is provided in Section 4.18 of this Initial Study.

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SECTION 3.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED AND DETERMINATION

3.1 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
- ☐ Energy
- ☐ Geology and Soils
- ☐ Greenhouse Gas Emissions
- ☐ Hazards/Hazardous Materials
- ☐ Hydrology/Water Quality
- ☐ Land Use and Planning
- ☐ Mineral Resources
- ☐ Noise
- ☐ Paleontological Resources
- ☐ Population and Housing
- ☐ Public Services
- ☐ Recreation
- ☐ Transportation/Traffic
- ☐ Tribal Cultural Resources
- ☐ Utilities and Service Systems
- ☐ Wildfire
- ☐ Mandatory Findings of Significance

Determination

On the basis of this initial evaluation:

I find that the Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	☐
I find that although the 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 Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	☐
I find that the Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	☐
I find that although the 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 Project, nothing further is required.	☐

Tabitha Kevari
Senior Manager

10/21/19
Date

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SECTION 4.0 ENVIRONMENTAL CHECKLIST AND DISCUSSION

4.1 Aesthetics

4.1.1 Environmental Setting

State Scenic Highways

The California Scenic Highway Program protects and enhances the scenic beauty of California's highways and adjacent corridors. A highway can be designated as scenic based on how much natural beauty can be seen by users of the highway, the quality of the scenic landscape, and if development impacts the enjoyment of the view. There are no State Scenic Highways in the vicinity of the Proposed Project (Caltrans 2018).

City of Redlands General Plan

The project area is designated as a scenic trail in the City of Redlands General Plan (City of Redlands 2017). The City's General Plan Historic and Scenic Conservation element has also designated several scenic drives in the City; none of these are in proximity to the project site (City of Redlands 2017).

Visual Character of the Project Site

The Proposed Project would encompass an approximately 600 linear foot segment north of the Hatfield Buick property from 7th Street to 9th Street and an approximately 1,050 linear foot segment of the Mill Creek Zanja along its north side between 9th Street and Church Street. The project site from 7th Street to 9th Street consists of a paved parking lot. The project site from 9th Street to Church Street consists of an existing County of San Bernardino flood control access road adjacent to the Zanja from 9th Street to Church Street.

The proposed trail alignment between 9th Street and Church Street is located adjacent to multiple-family residential neighborhoods. The proposed trail alignment between 7th Street and 9th Street is located adjacent to commercial and office uses (Hatfield Buick dealer, The Door Christian Fellowship, and the Redlands Mill office building). The project site is largely unvegetated, covered in non-native grassland, and paved areas associated with the adjacent dealer and religious facility land uses. The Zanja channel is an unvegetated trapezoidal streambed that supports scattered disturbed riparian vegetation.

4.1.2 Aesthetics (I) Environmental Checklist and Discussion

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?	☐	☐	☐	☒

The Proposed Project is not located in proximity to a designated scenic drive in the City's General Plan. The Proposed Project would create a pedestrian and multipurpose trail segment of the Zanja Trail with associated landscaping in an area currently devoid of vegetation, improving the views from nearby properties. The Proposed Project would also improve the views of a designated scenic trail. A beneficial impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒

The Proposed Project would not be located within or near a State Scenic Highway (Caltrans 2018). No impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒

The project site is composed of unvegetated areas, areas covered in non-native grassland, and paved areas associated with the adjacent automobile dealer and religious facility land uses. As discussed previously, the Proposed Project would improve the visual character of the site, which is a designated scenic trail. A beneficial impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Would the project create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

The Proposed Project does not include lighting. Future lighting for security and safety may be included but would be shielded and directed downward to avoid spillover effects on surrounding properties. Impacts would be less than significant.

4.1.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.2 Agriculture and Forestry Resources

4.2.1 Environmental Setting

The project site is located in an area designated as Linear Park, Parks/Golf Courses, and Commercial/ Industrial land use by the City of Redlands General Plan (City of Redlands 2017). The majority of the project site is located adjacent to a multiple-family residential neighborhood with the exception of the Hatfield Buick dealer at the western end of the proposed alignment. The project site is designated as Urban and Built Up Land on the most recent California Department of Conservation Important Farmland and Williamson Act Maps (CDC 2016; 2017). The project site is zoned Specific Plan 45/Town Center and is not used for forestry.

4.2.2 Agriculture and Forestry Resources (II) Environmental Checklist and Discussion

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?	☐	☐	☐	☒

The project site is not located within any farmland uses (City of Redlands 2017). The California Mapping and Monitoring Program, Important Farmlands Map for San Bernardino County does not list the soils on the project site as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (CDC 2017). No impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

The project site is zoned Specific Plan 45/Town Center and not zoned for agricultural use (City of Redlands 2017). According to the California Department of Conservation Williamson Act Parcels Map for San Bernardino County, the project site is not subject to a Williamson Act Contract (CDC 2016). No impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
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))?	☐	☐	☐	☒

The project site is zoned Specific Plan 45/Town Center and not zoned for forest land or timberland (City of Redlands 2017). Surrounding areas are developed with commercial and residential uses. No impact would occur.

Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒

The project site is zoned Specific Plan 45/Town Center and not zoned for forest land (City of Redlands 2017). The project site is currently developed in some areas and does not contain forestland or timberland. Surrounding areas are developed with commercial and residential uses. No impact would occur.

Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒

The project site and surrounding properties are not currently used for agriculture. The Proposed Project would not result in the conversion of forest land to non-forest use. No impact would occur.

4.2.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.3 Air Quality

An air quality and greenhouse gas (GHG) report was recently prepared for the Zanja Trail and Greenway Project – Wabash Avenue to Lincoln Street (Rincon Consultants 2016). The Wabash Avenue to Lincoln Street segment of the Zanja Trail and Greenway Project is located approximately 1.25 miles east of the Proposed Project. A comparison of the scope of the Wabash Avenue to Lincoln Street segment and the Proposed Project is shown on Table 4.3-1.

Due to the close proximity of the two projects and because the Wabash Avenue to Lincoln Street segment includes a greater scope of work (see table 4.3-1), it was determined that the previously prepared air quality and GHG study would be a conservative representation of potential air quality and GHG impacts that would result from the Proposed Project. As such, the Proposed Project relies on the air quality and GHG report prepared for Wabash Avenue to Lincoln Street segment of the Zanja Trail and Greenway Project (Rincon Consultants 2016).

Table 4.3-1. Comparison of Wabash Avenue to Lincoln Street Segment and Proposed Project

Component	Wabash Avenue to Lincoln Street Segment (Representative Project)	Proposed Project
Pocket Park (Laramie)	1.2 acre	Not included
Trail Segment	3,300 linear feet	1,700 linear feet
Pocket Park (Wabash)	0.5 acre	Not Included

4.3.1 Environmental Setting

The Proposed Project is located in a portion of San Bernardino County that is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). This portion of the South Coast Air Basin is a non-attainment area for both the federal and state standards for ozone and particulates less than 10 microns and 2.5 microns in diameter (PM_{10} and $PM_{2.5}$).

4.3.2 Air Quality (III) Environmental Checklist and Discussion

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?	☐	☐	☐	☒

SCAQMD’s 2012 Air Quality Management Plan (AQMP) was designed to meet state and federal Clean Air Acts planning requirements for all areas within SCAQMD jurisdiction. The 2012 AQMP focuses on ozone and $PM_{2.5}$ and incorporates scientific data, emission inventories, ambient measurements, control strategies, and air quality modeling. The 2012 AQMP uses approved motor vehicle emissions model and planning assumptions. Per Section 40925 of the Health and Safety Code, the triennial updates to the

AQMP must incorporate new data and projections on rates of population-related, industry-related, and vehicle-related emissions growth actually experienced and projected for the future.

Projects consistent with the projections of employment and population growth in the 2012 AQMP would not interfere with attainment of air quality standards. The AQ/GHG report for the Wabash Avenue to Lincoln Street segment of the Zanja Trail and Greenway Project concluded that development of this portion of the Zanja Trail would be consistent with the City's General Plan and would not cause employment or population growth; and therefore, would be consistent with the 2012 AQMP (Rincon Consultants 2016). In comparison, the Proposed Project would develop a similar project with a smaller scope (see Table 4.3-1). Based on the previous analysis, it can be determined that the Proposed Project is less likely to obstruct implementation of an applicable air quality plan and would be consistent with the 2012 AQMP. No impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐

Construction Impacts

To provide a worst-case analysis of the Proposed Project the AQ/GHG report for the Wabash Avenue to Lincoln Street segment of the Zanja Trail and Greenway Project was used to determine AQ/GHG impacts for the Proposed Project. This representative project entails a typical (i.e., usual) construction scenario, including site preparation, grading, paving, and application of architectural coatings. Construction scenario assumptions were based on anticipated construction of a pocket park at the corner of Lincoln Street and Laramie Avenue, a 3,300-linear-foot multipurpose trail, and a pocket park at the trail terminus at Wabash Avenue. It should be noted that the representative project is greater in size and scope than the Proposed Project, as shown in Table 4.3-1.

The AQ/GHG report for the representative project determined that criteria pollutant emissions from construction of the representative project would not exceed the SCAQMD regional daily thresholds for reactive organic gases (ROG), nitrogen oxides (NO_X), carbon monoxide (CO), PM_{10}, or $PM_{2.5}$ as shown in Table 4.3-2.

Table 4.3-2. Estimated Maximum Daily Construction Emissions (Representative Project)

	Maximum Emissions (lbs/day)[1]				
	ROG	**NOx**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Maximum Daily Emissions	66.0	28.7	20.1	4.4	3.0
SCAQMD Regional Thresholds	75	100	550	150	55
Threshold Exceeded?	No	No	No	No	No
Maximum Daily Emissions (onsite only)[2]	n/a	28.6	19.0	4.3	2.9
Local Significance Threshold	n/a	170	1,174	7	5

	Maximum Emissions (lbs/day)[1]				
	ROG	NOx	CO	PM_{10}	$PM_{2.5}$
Threshold Exceeded?	n/a	No	No	No	No

Source: Rincon Consultants 2016

The Proposed Project's scope would be smaller compared to the representative project. Based on the previous analysis, it can be determined that impacts associated with construction of the Proposed Project would be the same or less than the representative project; and therefore, less than significant.

Long-Term Operational Impacts

Operational emissions associated with the representative project were modeled using CalEEMod. Because CalEEMod does not contain a trail project land use type, a city park land use type was used instead. This results in a very conservative air quality emissions increase, as many users of the Zanja trail are expected to be from nearby residential neighborhoods. Operational impacts can come from motor vehicle trips to and from the trailheads and emissions from equipment used to maintain landscaping and the decomposed granite trails. Note that the representative projects' operational emissions were only compared to SCAQMD's regional thresholds. LSTs do not apply to long-term operation of the trails and pocket parks because the majority of emissions would be generated by mobile sources, which are not considered by LSTs. Table 4.3-3 summarizes estimated operational emissions from the representative project.

Table 4.3-3. Estimated Maximum Daily Operational Emissions (Representative Project)

	Maximum Emissions (lbs/day)[1]				
	ROG	NOx	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	0.4	<0.1	<0.1	<0.1	<0.1
SCAQMD Regional Thresholds	55	55	550	150	55
Threshold Exceeded?	No	No	No	No	No

Source: Rincon Consultants 2016

Notes: [1]ROG = Reactive Organic Gases; NOx = oxides of nitrogen; CO = carbon monoxide; PM_{10}= particulate matter 10 microns in diameter; $PM_{2.5}$ = particulate matter 2.5 microns in diameter; n/a = not applicable

As shown in table 4.3-3 above, emissions for the representative project are anticipated to be lower than SCAQMD thresholds and would be less than significant.

As shown on Table 4.3-1, the Proposed Project does not include pocket parks and the proposed trails would only measure approximately 1,700 linear feet compared to 3,300 linear feet of the representative project. Based on the modeled operational emissions of the representative project and the smaller scope of the Proposed Project, it can be determined that impacts associated with the operation of the Proposed Project would be the same or less than the representative project. Impacts would be less than significant.

It should also be noted that the Proposed Project would provide an alternative mode of transportation which could potentially improve air quality.

Would the Project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐

The SCAQMD's approach for assessing cumulative impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and state Clean Air Acts. As previously discussed, the Proposed Project would be consistent with the AQMP, which is intended to bring the South Coast Air Basin into attainment for all criteria pollutants. Impacts would be less than significant.

Would the Project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
d)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

The Proposed Project would temporarily contribute to localized air pollutant emissions during short-term construction; however, the emissions are not anticipated to exceed daily emission thresholds for criteria pollutants (see response to question b, above). The Proposed Project would not create substantial pollutant concentrations. A less than significant impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
e)	Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Construction of the Proposed Project could result in minor amounts of odor compounds associated with diesel exhaust from heavy equipment. However, construction would be short-term. Impacts associated with odors during construction would be less than significant.

4.3.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.4 Biological Resources

The project site was surveyed for biological resources in March 2018 (ECORP 2018a).

4.4.1 *Environmental Setting*

Vegetation Communities

The project site contains only heavily disturbed habitat that is mostly void of vegetation and includes non-native grassland, disturbed habitat, and developed areas. Non-native grassland within the project area is sparse and occurs in upland areas south of the Zanja channel and immediately west and adjacent to Church Street, adjacent to residential neighborhoods. Dominant plants within the grassland community were nonnative grasses such as wild brome (*Bromus* sp.). Disturbed is not a vegetation classification, but rather a land use type. Disturbed areas located on the project site included the vacant lot west of 9th Street and other areas bordering the north side of the Zanja channel. Areas designated as developed have infrastructure present and any vegetation in the immediate surroundings represents ornamental landscaping. Developed is not a vegetation classification, but rather a land use type. Developed areas were located at the west end of the project site and consisted of a paved parking lot. The Zanja channel itself is generally void of vegetation as well, with only several occurrences of resprouting Mexican fan palm and one mulefat (*Baccharis salicifolia*). The re-sprouting vegetation is evidence that the channel is regularly cleared and maintained. Areas immediately surrounding the project site consist of disturbed habitat, non-native grassland, and urban commercial properties.

Wildlife

Wildlife species observed or detected within the project area were mostly native species typical of the surrounding urban and suburban environment. Species observed included western fence lizard (*Sceloporous occidentalis*), house finch (*Carpodacus mexicanus*), American crow (*Corvus brachyrhynchos*), and red-tailed hawk (*Buteo jamaicensis*). Coyote (*Canis latrans*) tracks were observed within sandy areas of the Zanja channel.

Special-Status Plants and Wildlife

Sensitive plants or wildlife were not observed or detected in the project area during the survey, and the area is currently considered likely to be unoccupied by sensitive plants and wildlife due to the high degree of disturbance present. Several of the trees, including gum, African sumac, and Peruvian pepper trees have potential to support raptor species and other nesting birds, but no existing nests or roosts were observed during the survey. The disturbed dirt and gravel portions of the project site provide suitable habitat for ground bird nesters, such as killdeer (*Charadrius vociferous*). These birds lay their eggs directly on compact or gravelly soil and remain there until the young hatch.

Burrowing owls, sign or potential burrows were not observed on the project site during the survey. The non-native grassland located southeast of the project site did not contain any abandoned California ground squirrel (*Otospermophilus beecheyi*) burrows that would facilitate burrowing owl occupancy. Although the project site may contain suitable foraging habitat for the species, it lacks suitable burrows or structures required for nesting and the species is not expected to occur.

The compact soils, gravelly areas, and lack of vegetation cover on the project site do not provide suitable habitat for San Bernardino kangaroo rat. The project site also occurs outside the known range of the species.

The federal Migratory Bird Treaty Act and California Fish and Game Code specify that migratory bird species are protected from being taken or possessed, including by indirect action due to tree removal, etc. Due to the number of trees and shrubs, and other potential nesting areas within and adjacent to the project area, there is a potential for birds to nest in and near the Project area. Birds nest seasonally, usually from around the beginning of March until the end of August.

Potential Waters of the U.S.

A jurisdictional delineation was prepared for the project site by Helix Environmental Planning (Helix 2015). The results of the jurisdictional delineation were reviewed for the preparation of this Initial Study, and conditions were determined to be the same. The Jurisdictional Delineation determined that the Zanja is a feature that contains areas jurisdictional to the USACE, CDFW, and RWQCB. The portion of the Zanja between 9th Street and Church Street is designated as a non-vegetated channel/streambed. Although no hydrophilic vegetation was evident within the channel during the survey, one re-sprouting mulefat was observed, which indicates that the channel is regularly cleared and maintained to prevent overgrowth of vegetation.

During ECORP's survey of the project area, the biologist identified a one-foot wide unvegetated erosional feature that originates from the road edge of Church Street. The feature conveys stormwater runoff from Church Street and runs west through the proposed location for the trail and north of the Zanja channel. The feature enters a damaged, but still functional, three-foot wide culvert in a dirt area of the proposed trail approximately 560 feet west of Church Street. The culvert conveys the feature south into the Zanja channel. It is probable that this erosional feature is non-jurisdictional due to it being a man-made channel located within an otherwise upland environment. This feature was not identified during Helix's jurisdictional delineation on the project in 2015.

Wildlife Movement Corridors

The Zanja was analyzed as a potential wildlife corridor because the channel traverses a heavily developed area, wildlife expected to potentially use the channel for movement would be those that are accustomed to the urban environment. Mammal species that could use such a corridor include mostly small to medium sized wildlife such as coyote (known due to evidence of tracks), desert cottontail (*Syvilagus audubonii*), raccoon (*Procyon lotor*), and opossum (*Didelphus virginiana*). Several bird species could use such a wildlife corridor as well, but would be left with fewer movement constraints than many species due to their ability to fly across different habitat zones. Larger wildlife such as deer (*Odocoileus hemionus*) and mountain lion (*Felix concolor*) would be unexpected to use an urban corridor because of the human presence nearby.

Wildlife movement corridors usually contain some degree of cover and connect regional open space or undeveloped lands. The Zanja provides intermittent water sources for wildlife and is connected to the east of the project area with more of the same channel and additional suburban areas. The depth of the trapezoidal channel can provide both topographic cover for wildlife and provide some limited vegetative cover. Both the configuration of the channel topography and the available water source are potential attractants to wildlife. Upstream and to the east, the Zanja connects with several residential areas, a golf course, and the University of Redlands. Downstream and west of 9th Street, the Zanja is subterranean through a concrete box culvert five feet high by 10 feet wide, which can serve as a wildlife movement corridor. These dimensions are generally not suitable for larger game mammals, but are suitable for smaller mammal, reptile, amphibian, and bird species. Further downstream, the Zanja resurfaces 0.5 mile to the west near Eureka Street, and eventually joins the concrete channel that flows northwest and into the Santa Ana River.

Due to its dimensions, surrounding land uses, and connection to open spaces both up and downstream, the Zanja is expected to serve as a wildlife corridor but its use is expected to be restricted to urban adapted wildlife species.

4.4.2 Biological Resources (IV) Environmental Checklist and Discussion

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 Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐

No plant or wildlife species listed as Threatened or Endangered by the U.S. Fish and Wildlife Service or CDFW were observed in the project area, and none are likely to be present due to the lack of native habitat. However, the project area has the potential to support nesting birds, including raptors and songbirds that are protected by the federal Migratory Bird Treaty Act and California Fish and Game Code. These laws specify that migratory bird species are protected from being taken or possessed, including by indirect action from tree removal, etc. If Proposed Project construction activities occur during the nesting bird season, there would be the potential for birds to be disturbed from any tree or shrub removal as well as noise, dust, etc. Mitigation Measure BIO-1 would ensure that impacts to nesting birds would be less than significant.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒

Within the project area the Zanja is regularly cleared and maintained to prevent overgrowth of vegetation; therefore, it does not contain riparian vegetation. No other sensitive natural communities were identified in the project area during the field survey conducted for the Proposed Project (ECORP 2018a). No impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐

The Zanja channel is a feature that contains areas jurisdictional to the USACE, CDFW, and RWQCB. The portion of the Zanja channel between 9th Street and Church Street is designated as a non-vegetated channel/streambed. As designed, the Proposed Project's elements would avoid the Zanja channel. Mitigation Measure BIO-2 would ensure that inadvertent disturbance of jurisdictional areas during construction is avoided.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐

As described previously, the Zanja likely serves as a wildlife corridor to many small- to medium-sized urban-adapted wildlife species, including smaller mammals, reptiles, and amphibians. During the six-month construction period, the use of the Zanja corridor for wildlife movement would be impeded. Although construction would only occur during the day, and no construction would occur in the channel itself, increased human presence may still deter some animals from using the corridor. This impact is expected to be less than significant, however, because the corridor would be available for use immediately after the end of construction.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒

As previously described, several ornamental non-native tree species surround the project site and include gum tree, African sumac, and Peruvian pepper tree. The current design of the Proposed Project would not remove any of these trees. No impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

The project area is not located in an area subject to a Habitat Conservation Plan. No impact would occur.

4.4.3 Mitigation Measures

BIO-1: If construction activities occur within the bird breeding season (February 1 through August 31) then a pre-construction nesting survey shall be conducted no more than 30 days prior to the start of construction by a qualified biologist. The nest survey shall include the project site and areas within 500 feet of the site that could be affected by construction activities that could generate indirect effects to nesting birds, such as noise, human activity, dust, etc. If active bird nests are found during the survey, and could be affected by construction activities, then the qualified biologist shall establish an appropriate buffer zone around the active nests based on the work activities, nesting species, and likelihood of the species being affected by construction activities. Buffers may typically be a 300-foot radius for songbirds and a 500-foot radius for raptors. Project activities shall be avoided within the buffer zone until the nest is deemed no longer active by the biologist. Weekly nesting surveys and biological monitoring may be necessary if nesting birds are found on the project site.

BIO-2: To ensure impacts to waters and habitats jurisdictional to the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife are avoided, an exclusion zone shall be staked by a qualified biologist prior to the commencement of ground-disturbing activities. The exclusion zone shall remain in place for the duration of construction, and the purpose of the exclusion zone shall be included in the construction worker daily briefings (tailgate meetings).

4.5 Cultural Resources

4.5.1 Environmental Setting

Cultural Resources

A Cultural Resources Inventory Report was prepared by ECORP Consulting, Inc. (ECORP 2018b) for the Proposed Project to determine if cultural resources were present in or adjacent to the Project area and assess the sensitivity of the Project area for undiscovered or buried cultural resources.

Literature Review. A cultural resources records search was conducted at the South Central Coastal Information Center (SCCIC) at California State University, Fullerton, and a search of the Sacred Lands File was requested from the Native American Heritage Commission (NAHC). The records search results indicated that two cultural resources were documented within the project area: the Mill Creek Zanja itself (CA-SBR-8092H/P36-008092), which is listed on the National Register of Historic Places (NRHP), and the San Bernardino Motor Line of the Southern Pacific Railroad (CA-SBR-31266H/P36-031266), which was recommended eligible for the California Register of Historical Resources (CRHR). An additional 673 resources have been documented within one-mile radius of the project area. Two national/state historic districts are located within one-mile of the project area, which include Smiley Park and the Redlands Santa Fe Depot Districts.

The records search indicated that the project area had been previously surveyed in 1937, 1985 and 1988, and 36 additional cultural resources investigations were conducted within the one-mile records search radius between 1937 and 2016. The results of the search of the Sacred Lands File by the NAHC indicated the presence of a Native American cultural resource within one mile of the project area. This resource was later identified by the San Manuel Band of Mission Indians as the Mill Creek Zanja (CA-SBR-8092H/P36-008092). In addition to the search of the Sacred Lands File, the NAHC identified 20 Native American groups and individuals with historical and traditional ties to the project area.

Field Survey. As a result of the field survey, three historic-period isolated finds (ZJ-001-I, ZJ-002-I and ZJ-003-I) were documented, and two previously recorded and evaluated resources, the Mill Creek Zanja and the San Bernardino Motor Line of the Southern Pacific Railroad, were field checked and updated.

Evaluation for the CRHR

Isolated Finds. An evaluation using CRHR eligibility criteria was carried out for isolated finds ZJ-001-I, ZJ-002-I, and ZJ- 003-I. Isolated finds are not eligible for inclusion in the CRHR, and are therefore not Historical Resources as defined by CEQA.

Mill Creek Zanja. The Mill Creek Zanja is a California Historical Landmark; a segment of the resource, located east of the project area, is listed on the NRHP (and is therefore eligible for the CRHR); and the entire length of the resource is considered a Sacred Land by local Native American communities. The section of the Mill Creek Zanja within the project site, located between 9th Street and Church Street in the City of Redlands, is not included in the NRHP-listed segment of this resource and has not been previously evaluated for inclusion in the CRHR. The NRHP Nomination Form ends the listed section at the western border of Sylvan Park arguing that west of Division Street the Zanja goes underground and no longer acts as a natural stream course. However, the portion of the Zanja within the current project site is still east of the area where the Zanja goes underground and retains a fair amount of integrity. Because of this, the portion of the Zanja within the project site was evaluated for eligibility for the CRHR.

The Zanja was constructed to provide irrigation water to the village of Guachama, and is among the earliest civil engineering projects in Southern California. In the latter part of the 19th century, settlement and development in the area occurred along the banks of the Zanja, as it was the only stable water source. Due to it being among the earliest civil engineering projects in the region, and its considerable impact on the development and settlement patterns of the area, the resource is evaluated as eligible for the CRHR under Criterion 1.

As stated in the NRHP Nomination Form, construction of the ditch was accomplished by Native Americans from the village of Guachama under their chief, Solano. Due to the association of the resource with the Native American residents of Guachama and their chief Solano, the resource is evaluated as eligible for the CRHR under Criterion 2.

This segment of the Zanja consists of a v-shaped ditch with earthen banks with steeply sloped sides and a flat-bottomed bed containing large cobbles and boulders. This segment of the Zanja is of utilitarian design and was not constructed to exhibit high aesthetic values. It is a typical example of an irrigation ditch with no unique architectural or engineering design characteristics. The feature does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of a master or possesses high artistic values. Therefore, the resource is evaluated as not eligible for the CRHR under Criterion 3.

Given the nature of the resource, it does not possess the potential to yield any additional information regarding the historical significance, construction, or design of the Mill Creek Zanja that is not already represented in the archival record. Therefore, the resource does not have the potential to yield information important in history and is not eligible for the CRHR under Criterion 4.

A study of maps and historic aerial photographs reveals that this section of the Zanja follows the original alignment and course of the resource and it still functions as a water conveyance feature. This segment of the Zanja has received minor alterations since the time of its original construction, but such alterations do not compromise the integrity or detract from the significance of the Zanja. This segment of the Zanja retains integrity of location, design, setting, materials, workmanship, feeling, and association.

The segment of the Mill Creek Zanja from Church Street to 9th Street is eligible for listing under Criterion 1, for its impact on settlement of the area, and Criterion 2, for its association with Guachama chief Solano. This portion of the Mill Creek Zanja retains integrity and is recommended as eligible for inclusion in the CRHR. Therefore, it is considered a Historical Resource under CEQA.

San Bernardino Motor Line of the Southern Pacific Railroad. The San Bernardino Motor Line of the Southern Pacific Railroad was constructed in the late 19th Century to serve the needs of citrus packing houses in Redlands. At the time, citrus was the main industry in the growing community. The segment of the San Bernardino Motor Line in the project area lacks integrity (the tracks have been removed) and therefore is not a Historical Resource as defined by CEQA.

Paleontological Resources

A paleontological assessment was prepared by the Vertebrate Paleontology Section of the Los Angeles County Natural History Museum (Natural History Museum of Los Angeles County 2018) for the Proposed Project to determine if paleontological resources were present in or adjacent to the project area and assess the sensitivity of the project area for undiscovered paleontological resources. The entire project area is composed of soil and younger Quaternary alluvium deposited from the Crafton Hills to the east.

Typically these types of deposits do not contain significant fossils and there are no vertebrate fossil records near the project site in these deposits.

4.5.2 Cultural Resources (V) Environmental Checklist and Discussion

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?	☐	☐	☒	☐

As previously described, the only historical resource as defined by CEQA located within the project site is the Mill Creek Zanja (ECORP 2018b). The Proposed Project would install a multi-use trail adjacent to the Zanja; therefore, the Proposed Project would not have any significant direct impacts on the Mill Creek Zanja. However, the Proposed Project has the potential to result in indirect impacts to the Mill Creek Zanja. Indirect impacts could include increased dust during trail installation, increased foot traffic and attention to the resource by the general public, and a change in the visual landscape/setting in the immediate vicinity of the resource. A temporary increase in dust is not likely to have a significant impact on the resource. The proposed foot trail may increase foot traffic and allow the public more accessibility to the resource; however, the area immediately surrounding the resource contains suburban developments and an informal walking path already exists alongside this portion of the Zanja. The small increase in pedestrian traffic would not likely create a significant impact on the resource. The Proposed Project would not result in a substantial change to the visual landscape or setting of the resource. The Proposed Project would not alter the features of the resource that make it eligible for the CRHR, its association with historical events. As such, although the Proposed Project may result in indirect impacts to the resource, these impacts would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐

The archaeological sensitivity of the project area is believed to be high. There may be subsurface historic–period artifacts or features within the project area related to the Zanja and the San Bernardino Motor Line of the Southern Pacific Railroad that may be disturbed during construction. Impacts would be less than significant with the implementation of CUL-1.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

The project site is located on younger Quaternary alluvium deposited from the Crafton Hills to the east. Excavations in this soil type are very unlikely to uncover any significant vertebrate fossils. Deeper excavations into older sedimentary deposits, however, could yield fossils. The project area has been disturbed from construction of the existing County flood control access road and paved parking lot, and the majority of project construction activities would not require very deep excavations. Impacts would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

In the unlikely event that human remains are discovered during construction, impacts would be less than significant with Mitigation Measure TCR-3.

4.5.3 Mitigation Measures

CUL-1: Archaeological Monitoring: Due to the heightened cultural sensitivity of the proposed project area, an archaeological monitor with at least 3 years of regional experience in archaeology shall be present for all ground-disturbing activities that occur within the proposed project. Ground disturbance is defined as any activity that compacts or disturbs the ground within a project area. The project area is defined as all areas where project activities will occur, including: the actual construction activities, permanent easements, temporary construction easements, staging areas for supplies and equipment, and borrow pits. Ground disturbance can also be caused by the use of hand tools (shovels, pick axe, posthole digger, etc.), heavy equipment (excavators, backhoes, bulldozers, trenching and earthmoving equipment, etc.), and heavy trucks (large four wheel drive trucks, dump trucks and tractor trailers, etc.). Trenching, bulldozing, excavating, scraping, and plowing are typical examples of ground disturbance activities. Project types that usually involve ground disturbance include acquisition/demolition/relocation of structures; vegetation management; landslide stabilization; and infrastructure projects such as utilities, storm water management, and flood control. However, any projects that include the installation of utilities, culverts, temporary roads or structures, permanent roads, foundations and footers all typically involve ground disturbance activities. A sufficient number of archaeological monitors shall be present each work day to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation ("Cultural Resources" and "Tribal Cultural Resources") shall be completed by the archaeologist and submitted to the Lead Agency for dissemination to the government representatives of consulting Tribes. Once all parties review and approve the plan, it shall be adopted by the Lead Agency – the plan must be adopted prior to permitting for the project. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.

4.6 Energy

4.6.1 Energy (VI) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐

Construction of the Proposed Project would take approximately 6 months. Due to the short-term nature of the proposed construction and scope of the Proposed Project it is anticipated that fuel consumption during project construction would have a nominal effect on local and regional energy supplies, especially over the long-term. Additionally, construction equipment fleet turnover and increasingly stringent state and federal regulations on engine efficiency combined with state regulations limiting engine idling times and require recycling of construction debris, would further reduce the amount of transportation fuel demand during project construction. For these reasons, it is expected that construction fuel consumption associated with the Proposed Project would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature. For these reasons, this impact would be less than significant.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

The Proposed Project would be designed in a manner that is consistent with relevant energy conservation plans designed to encourage development that results in the efficient use of energy resources. Relevant energy conservation plans specific to the City of Redlands include the City's General Plan, specifically the Sustainable Community chapter.

An overarching goal of this chapter is to encourage energy conservation activities throughout the City, to be achieved through several policy provisions. Specifically, the following policy:

- Policy 8-A.7 – Seek alternatives to reduce non-renewable energy consumption attributable to transportation within the Planning Area. Seek funding and other assistance from the South Coast Air Quality Management District (AQMD) for installation of electric vehicle charging stations at appropriate locations throughout the city.

The Proposed Project would create a pedestrian trail through the downtown portion of the City which would offer residents an alternative form of transportation that is not dependent on non-renewable energy sources.

All development in the City of Redlands, including the Proposed Project, is required to adhere to all City-adopted policy provisions, including those contained in the General Plan Sustainable Community chapter. The City ensures all provisions of these policy documents are incorporated into projects and their permits through development review and applications of conditions of approval as applicable. The Proposed Project would not conflict or obstruct any local or state plans for renewable energy or energy efficiency.

For these reasons, this impact would be less than significant.

4.6.2 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.7 Geology and Soils

4.7.1 Environmental Setting

The project is located in the upper Santa Ana Valley region of southwestern San Bernardino County in the southern part of the Bunker Hill-San Timoteo Basin. The basin formed as a rift between the San Andreas Fault Zone on the northeast and the San Jacinto Fault Zone on the southwest. The project area is not located in an area subject to geologic hazards (City of Redlands 2017). The project area is underlain by Hanford coarse sandy loam 2 to 9 percent slopes, a well-drained soil with a low shrink-swell potential (USDA 2018; 1979).

Regional Seismicity and Fault Zones

An “active fault,” according to California Department of Conservation, Division of Mines and Geology, is a fault that has indicated surface displacement within the last 11,000 years. A fault that has not shown geologic evidence of surface displacement in the last 11,000 years is considered “inactive.” The City of Redlands is bound by the San Andreas Fault Zone to the north and the San Jacinto Fault Zone to the southwest. The City of Redlands is traversed by the Crafton Hills Fault Zone through the southern portion of the City. The project area is not located on or near a fault zone. The closest fault to the project site is the Redlands Fault located approximately one mile southeast of the project site.

4.7.2 Geology and Soils (VI) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒

i through iv): The project site is located in the City of Redlands, which is between the active San Andreas and San Jacinto faults. Like most areas of southern California, the project site is subject to strong ground shaking during an earthquake. However, the project does not include housing or other habitable structures. Therefore, risk to people or structures from strong seismic ground shaking would be less than significant. The project site is not located within an Alquist-Priolo Zone or in an area subject to ground failure or landslide (City of Redlands 2017). No impact would occur from these hazards.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

Because the Proposed Project would disturb more than one acre, it would be required to prepare a Storm Water Pollution Prevention Plan (SWPPP), which would include Best Management Practices (BMPs) to manage erosion and the loss of topsoil during construction-related activities. Impacts would be less than significant. During operation, a decomposed granite path and landscaping would reduce erosion from existing conditions resulting in a beneficial impact.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒

The Proposed Project would not be located on unstable soil. According to the City of Redlands General Plan, the project area is not susceptible to landslide, lateral spreading, liquefaction, or collapse. No impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒

The project area is underlain by Hanford coarse sandy loam 2 to 9 percent slopes, a well-drained soil with a low shrink-swell potential (USDA 2018; 1979). Therefore, the Proposed Project would not be located on expansive soil. No impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

The Proposed Project does not include restrooms or otherwise require waste water disposal systems. No impact would occur.

4.7.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.8 Greenhouse Gas Emissions

As previously mentioned in Section 4.3 (Air Quality) of this Initial Study, an air quality and GHG report was recently prepared for the Zanja Trail and Greenway Project – Wabash Avenue to Lincoln Street (Rincon Consultants 2016). Due to the close proximity of this project, and because the Wabash Avenue to Lincoln Street segment includes a greater scope of work (see table 4.3-1), it was determined that the previously prepared air quality and GHG study would be a conservative representation of potential air quality and GHG impacts that would result from the Proposed Project.

4.8.1 Environmental Setting

Climate change refers to changes in climate (such as wind patterns, precipitation, and storm frequency/intensity) over an extended period of time resulting from observed increases in the average temperature of the Earth's atmosphere and oceans. Gases that absorb and re-emit infrared radiation in the atmosphere are called GHGs. The accumulation of GHGs in the atmosphere regulates the Earth's temperature. Because GHGs absorb different amounts of heat, a common reference gas, carbon dioxide, (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO_2e), and is the amount of a GHG emitted multiplied by its Global Warming Potential (GWP). Carbon dioxide has a 100-year GWP of one. By contrast, methane has a GWP of 25, meaning its global warming effect is 25 times greater than CO_2 on a molecule per molecule basis.

4.8.2 Greenhouse Gas Emissions (VII) Environmental Checklist and Discussion

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?	☐	☐	☒	☐

The air quality and GHG report prepared for the representative project found that the vast majority of individual projects do not generate sufficient GHG emissions to create significant project-specific environmental effects (Rincon Consultants 2016). However, a project's contribution towards climate change typically involves an analysis of whether or not the project's contribution toward climate change is cumulatively considerable. The GHG emissions associated with the representative project were calculated using CalEEMod. Because CalEEMod does not contain a trail project land use type, a city park land use type was used instead, which results in conservative GHG emissions would result from increases in vehicle miles traveled, water use, energy use, and landscape maintenance. Construction GHG emissions were estimated for the representative project at 83.5 metric tons CO_2e. Amortized over a 30-year period, construction of the representative project would generate approximately 2.8 metric tons CO_2e per year. Long term operational emissions were estimated to be approximately 4.2 metric tons CO_2e per year. Added together, the combined annual emissions would be approximately 15 metric tons CO_2e per year, well below the SCAQMD's recommended GHG threshold of 3,000 metric tons CO_2e per year (Rincon Consultants 2016). As shown in table 4.3-1 above, the Proposed Project includes a smaller scope of development compared to the representative project. Based on this previous analysis, it can be determined that GHG impacts associated with the construction and operation of the Proposed Project would be the same or less than the representative project; and therefore, less than significant.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

The City of Redlands has selected a goal to reduce its community GHG emissions to a level that is 15 percent below its 2008 GHG emissions levels by 2020 as part of the San Bernardino Association of Governments' San Bernardino County Regional Greenhouse Gas Reduction Plan. The representative project was determined not to conflict with the goals of this plan (Rincon Consultants 2016). The Proposed Project is a trail project like the representative project and is anticipated that it would result in the same or less GHG emissions compared to the representative project. As such, the Proposed Project would not conflict with goals of the San Bernardino County Regional Greenhouse Gas Reduction Plan. No impact would occur.

4.8.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.9 Hazards and Hazardous Materials

4.9.1 Environmental Setting

The project site is located adjacent to the Zanja channel in residential and commercial neighborhoods in the City of Redlands. There are no known hazardous materials sites on or near the project area (DTSC 2018). The closest airport is the Redlands Municipal Airport, located approximately 2.3 miles northeast of the proposed alignment.

4.9.2 Hazards and Hazardous Materials (VIII) Environmental Checklist and Discussion

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

Some hazardous materials, such as diesel fuel, would be used by heavy equipment at the site during construction. No fueling or maintenance of equipment would occur on the site. The use of such materials would not create a significant hazard to the public and impacts would be less than significant. No hazardous materials would be used after the construction of the Proposed Project. Impacts would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐

During construction, some hazardous materials, such as diesel fuel, would be used. No fueling, repair, or maintenance would occur at the project site. A SWPPP would be prepared for the Proposed Project, and would list BMPs to prevent construction pollutants and products from violating any water quality standard or waste discharge requirements in the event of an accidental spill. The release of hazardous materials would be prevented through the implementation of BMPs listed in the SWPPP. Daily operation of the Proposed Project would not result in a new hazard to the public or the environment. Impacts would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐

Redlands High School is located 0.1 mile from the eastern end of the proposed trail alignment. As discussed in Section 4.3 Air Quality of this Initial Study, emissions from the Proposed Project's construction and operation would be less than the Localized Significance Thresholds established by the SCAQMD. The Proposed Project does not include handling of hazardous or acutely hazardous materials, substances or waste. A less than significant impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒

A search of the Department of Toxic Substances Control EnviroStor database was conducted for the project area. The research revealed that no known hazardous material sites compiled pursuant to Government Code Section 65962.5 are located within the project area. As such, ground disturbing activities associated with the Proposed Project are not anticipated to encounter hazardous materials. No impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

The closest airport to the project site is Redlands Municipal Airport located approximately 2.3 miles northeast of the project site. The Proposed Project is not within any safety zones for the airport. No impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f) Within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

There are no private airstrips within the vicinity of the project site. No impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐

The Proposed Project would require temporary closure of portions of 7th Street, 9th Street, and Church Street for short periods of time during construction. Impacts would be less than significant with the implementation of Mitigation Measure HAZ-1.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to	☐	☐	☐	☒

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
urbanized areas or where residences are intermixed with wildlands?				

According to the City of Redlands General Plan, the project site is located in an area with a moderate fire threat level. However, the project site would be located in an urbanized area where wildland fires are not a risk. No impact would occur.

4.9.3 Mitigation Measures

HAZ-1: Prior to work in any City street, a Traffic Control Plan shall be submitted to the City of Redlands Engineering Department for review and approval. The Traffic Control Plan shall include measures to maintain emergency access to residences and structures in the vicinity of the project area.

4.10 Hydrology and Water Quality

4.10.1 Environmental Setting

The City of Redlands is in the Santa Ana River watershed, and all flows in the City's Planning Area eventually lead to the Santa Ana River. In the project area, runoff flows to the Zanja channel. The project area is within a 100-year flood zone (City of Redlands 2017).

4.10.2 Hydrology and Water Quality (IX) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐

The Proposed Project would not have storm water runoff issues that would violate any water quality standards or waste discharge requirements. A SWPPP, listing BMPs to prevent construction pollutants and products from violating any water quality standard or waste discharge requirements, would be prepared for the Proposed Project. Impacts would be less than significant. The Proposed Project would include a decomposed granite trail and landscaping, which would improve erosion conditions on the site during operation. A beneficial impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge	☐	☐	☒	☐

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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)?				

The Proposed Project would require water for landscaping, which would be obtained from the City's water supply. The Proposed Project would include drought tolerant landscaping, and it is not anticipated that groundwater supplies would be substantially depleted. A less than significant impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐

A SWPPP, listing BMPs to prevent construction pollutants and products from violating any water quality standard or waste discharge requirements, would be prepared for the Proposed Project. Impacts would be less than significant. The Proposed Project would include a decomposed granite trail and landscaping, which would improve erosion conditions on the site during operation. A beneficial impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	☐	☐	☐	☒

The Proposed Project would not alter the course of the Zanja channel, and drainage patterns would remain similar to existing conditions. The Proposed Project would not cause flooding on- or off-site. No impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e) Create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐

A SWPPP, listing BMPs to prevent construction pollutants and products from violating any water quality standard or waste discharge requirements, would be prepared for the Proposed Project. Impacts would be less than significant. The Proposed Project would include a decomposed granite trail and landscaping, which would improve erosion conditions on the site during operation. A beneficial impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐

The Proposed Project would implement a SWPPP listing BMPs to prevent construction pollutants and products from violating any water quality standards. Impacts would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒

The project site is within a 100-year flood hazard area, but would not include housing. No impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☒	☐

The Proposed Project would place structures related to multipurpose trail uses within the 100-year flood hazard area, including directional signage, gateway monument, post and rail fence, trash receptacle, and other park amenities. These structures would not impede or redirect flood flows. A less than significant impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐

The Proposed Project would be subject to flooding during a 100-year flood. However, flooding of the trails would not be expected to expose people or structures to a significant risk of loss, injury, or death. A less than significant impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
j) Be subject to inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

The project area is relatively flat and would not be located in an area subject to mudflow. The project area is located approximately 50 miles northeast of the Pacific Ocean. Due to the distance to the ocean the project area would not be subject to inundations from seiches or tsunamis. No impact would occur.

4.10.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.11 Land Use and Planning

4.11.1 Environmental Setting

The western half (7th Street to 9th Street) of the project area would be located in a paved parking lot and vacant disturbed lot north of the Hatfield Buick dealer and south of a religious facility and office building. The eastern half (9th Street to Church Street) of the project area would be located adjacent to the Zanja north of an established multiple-family residential neighborhood. This area currently contains an existing County flood control access road.

4.11.2 Land Use and Planning (X) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒

The Proposed Project would be located partially within an existing parking lot between 7th Street and 9th Street and follow an existing County flood control access road from 9th Street to Church Street. The

Proposed Project would not divide an established community. The Proposed Project would help connect residential neighborhoods to the downtown area of Redlands. A beneficial impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

The Proposed Project would be constructed in areas designated as Linear Park, Parks/Golf Courses, and Commercial/Industrial on the City General Plan. Trail uses are allowed in all of these land use types. The construction of the trail would help meet the goals of the General Plan. A beneficial impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☐

The City of Redlands is not subject to a habitat conservation plan or natural community conservation plan. No impact would occur.

4.11.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.12 Mineral Resources

4.12.1 Environmental Setting

The project site is not used for mining, and would not be located in a known Mineral Resources Zone (City of Redlands 2017).

4.12.2 Mineral Resources (XI) Environmental Checklist and Discussion

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?	☐	☐	☐	☒

According to the City of Redlands General Plan the project site is not located in a Mineral Resource Zone. The Proposed Project would begin at 7th Street and end at Church Street and would construct a pedestrian trail from 7th street to 9th street and a multipurpose trail from 9th street to Church Street. The Proposed Project would not include mining activities. No impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

The Proposed Project would not result in a loss of a locally-important mineral resource recovery site (City of Redlands 2018). No impact would occur.

4.12.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.13 Noise

Land uses sensitive to noise are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

The nearest sensitive receptors to the project site include the religious facility adjacent to the western half of the alignment between 7th Street and 9th Street and the residences south of the Zanja between 9th Street and Church Street.

4.13.1 Noise (XII) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒

Noise generated by the construction of the Proposed Project would be temporary and no permanent noise sources would be created. Construction activities would take places within permitted hours (7:00 A.M. to 6:00 P.M. Monday through Saturday) and would be exempt per the City of Redlands Municipal Code Noise Ordinance 8.06.120. Operation of the Proposed Project would not include noise sources that would generate noise levels in excess of standards established in the City's General Plan or noise ordinance. No impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒

The Proposed Project does not include elements that would generate groundborne vibration or noise. No impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒

Due to the temporary nature of construction activities, no permanent increases in ambient noise levels in the project area are expected. The Proposed Project does not include elements that would result in a substantial increase in ambient noise levels. Operational noise would be similar to current conditions. No impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d)	Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐

Construction of the Proposed Project would generate short-term noise levels associated with the use of heavy equipment and other construction activity. The nearest sensitive receptors to the project site include the religious facility adjacent to the western half of the alignment between 7th Street and 9th Street and the residences south of the Zanja between 9th Street and Church Street. Construction of the Proposed Project would take approximately 6 months. Mitigation Measure NOI-1 would reduce impacts from temporary construction noise to a less than significant level.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

The Proposed Project would not be located within the Airport Land Use Compatibility Plan for Redlands Municipal Airport. No impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

There are no private airstrips in the vicinity of the Proposed Project. No impact would occur.

4.13.2 Mitigation Measures

NOI-1: The applicant shall limit construction activities to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday with no construction activities permitted on weekends and Federal holidays. Project contractors shall ensure that all construction equipment, fixed or mobile, shall be operated with properly functioning and maintained mufflers, consistent with manufacturer standards. Stationary construction equipment shall be located as far away from residences or religious institutions as is practical.

4.14 Population and Housing

4.14.1 Population and Housing (XIII) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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)?	☐	☐	☐	☒

The Proposed Project does not include new homes or businesses. The Proposed Project would include new park infrastructure to serve existing neighborhoods. Substantial population growth would not occur. No impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

The Proposed Project would be located adjacent to the Zanja channel in disturbed and paved areas. The Proposed Project involves the construction of a trail segment and would not displace housing. No impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

The Proposed Project would not include the removal of housing; and therefore, would not displace people. No impact would occur.

4.14.2 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.15 Public Services

4.15.1 Environmental Setting

Police, fire and other public services in the project area are provided by the City of Redlands. School services are provided by the Redlands Unified School District.

4.15.2 Public Services (XIV) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
	Fire Protection?	☐	☐	☒	☐
	Police Protection?	☐	☐	☒	☐
	Schools?	☐	☐	☒	☐
	Parks?	☐	☐	☒	☐
	Other Public Facilities?	☐	☐	☒	☐

The Proposed Project would not create a substantial new fire or public safety hazard. The Proposed Project is the provision of a new City trail. The Proposed Project would be beneficial to the City of Redlands by providing updated public facilities. This facility is included in the City's General Plan, and accounted for when determining performance objectives for public services. The Proposed Project is not expected to induce population growth; therefore, there would be no additional demand for schools, parks, or other public facilities. The Proposed Project would not result in the need for new or physically altered government facilities nor affect response time or other performance objectives. A less than significant impact would occur.

4.15.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.16 Recreation

4.16.1 Environmental Setting

The Proposed Project is identified in the City's General Plan as a linear park (City of Redlands 2018). The closest existing park to the project site is Sylvan Park, located approximately 0.2 mile from the proposed Project.

4.16.2 Recreation (XV) Materials Checklist

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐

The Proposed Project would not increase the use of existing neighborhood or regional parks or other recreational facilities such that physical deterioration would occur or be accelerated. The proposed segment of the Zanja trail may increase use of the overall trail. However, this increase in use has been anticipated in the design of the trail, and a less than significant impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☒	☐	☐

The Proposed Project is the construction of new recreational facilities. The environmental impacts of construction and operation of the Proposed Project, including required mitigation measures, are discussed in this Initial Study.

4.16.3 Mitigation Measures

Mitigation measures required for the Proposed Project are provided in the appropriate sections of this Initial Study.

4.17 Transportation/Traffic

A traffic memorandum was prepared for the Proposed Project by Hernandez, Kroone & Associates (HKA 2018). The results of the traffic memorandum are summarized in the following responses.

4.17.1 Transportation/Traffic (XVI) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking	☐	☐	☒	☐

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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?				

The Proposed Project would not conflict with current applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system. Project trip generation was estimated to be less than 10 trips a weekday. This estimated trip generation is less than the average daily fluctuation of traffic volumes (HKA 2018). This low number of average daily vehicular trips would have minimum impact on intersections, streets, highways, freeways, pedestrian and bicycle paths, and mass transit. A less than significant impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐

The Proposed Project would comply with the San Bernardino Associated Government's (SANBAG's) Congestion Management Plan. The estimated trips are far below the average daily fluctuation of traffic counts. A less than significant impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒

There are no airport or air transit facilities near the project site. The Proposed Project would not include changes in air traffic patterns. No impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐

The Zanja Trail would intersect with 7th Street, 9th Street and Church Street which may result in an increase to potential hazards for trail users using these street crossings. With the implementation of Mitigation Measure TRANS-1 impacts would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e) Result in inadequate emergency access?	☐	☒	☐	☐

The Proposed Project would require temporary closure of portions of 7th Street, 9th Street, and Church Street for short periods of time during construction. Impacts would be less than significant with the implementation of Mitigation Measure HAZ-1 (see Section 4.8.3).

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

The nearest bus stop to the project site is OmniTrans Route 19 located on Citrus Avenue, about 1,000 feet south of Church Street at the Zanja Trail, and OminTrans Route 8 located on Orange Street, about 1,000 feet west of 7th Street at the Zanja Trail. Some pedestrian might use these transit routes and existing sidewalks or roads to reach the proposed trail. No impact would occur.

4.17.2 Mitigation Measures

TRANS-1: The final design of traffic and pedestrian control features at trail's intersection with 7th Street, 9th Street, and Church Street shall be approved by the City Engineer prior to encroachment permit issuance. These design features could include, but are not limited to, removable lockable bollards at the trail entrances, colored stamped concrete, and signage.

4.18 Tribal Cultural Resources

4.18.1 Environmental Setting

The project area is located within the territory known to have been occupied by the Serrano group of Native Americans at the time of contact with Europeans, around AD 1769. The Serrano occupied an area in and around the San Bernardino Mountains and northward into the Mojave Desert. Their territory also extended west along the north slope of the San Gabriel Mountains, east as far as Twentynine Palms, north into the Victorville and Lucerne Valley areas, and south to the Yucaipa Valley and San Jacinto Valley. The Serrano speakers in the Mojave Desert who lived along the Mojave River were known as Vanyume. Serrano is a language within the Takic family of the Uto-Aztecan language stock (ECORP 2018b).

The Serrano were mainly hunters and gatherers who occasionally fished. Game that was hunted included mountain sheep, deer, antelope, rabbits, small rodents, and various birds, particularly quail. Vegetable staples consisted of acorns, pinyon nuts, bulbs and tubers, shoots and roots, juniper berries, mesquite, barrel cacti, and Joshua tree (ECORP 2018b).

A variety of materials were used for hunting, gathering, and processing food, as well as for shelter, clothing, and luxury items. Shells, wood, bone, stone, plant materials, and animal skins and feathers were used for making baskets, pottery, blankets, mats, nets, bags and pouches, cordage, awls, bows, arrows, drills, stone pipes, musical instruments, and clothing (ECORP 2018b).

Settlement locations were determined by water availability, and most Serranos lived in villages near water sources. Houses and ramadas were round and constructed of poles covered with bark and tule mats. Most Serrano villages also had a ceremonial house used as a religious center. Other structures within the village might include granaries and sweathouses (ECORP 2018b).

Serrano social and political units were clans, patrilineal exogamous territorial groups. Each clan was led by a chief who had both political and ceremonial roles. The chief lived in a principal village within the clan's territory. The clans were part of a moiety system such that each clan was either a wildcat or coyote clan and marriages could only occur between members of opposite moieties. On the north side of the San Bernardino Mountains, clan villages were located along the desert-mountain interface on Deep Creek, on the upper Mojave River, in Summit Valley, and in Cajon Pass. The principal plant food available near these villages was juniper berries. These villages also had access to mountain resources, such as acorns and pinyon nuts.

Vanyume villages were located along the Mojave River from south of Victorville to Soda Lake. These river villages had populations of 40 to 80 people. Marriage ties between the Serrano foothill villages and Vanyume desert villages facilitated access to mountain resources, such as acorns and pinyon nuts, by the desert villages. The principal desert resources were mesquite beans, screw beans, tule reed roots, and carrizo grass sugar (produced by aphids that lived on the Carrizo grass). Animal resources were rabbits, jackrabbits, desert bighorn sheep, pronghorn, and desert tortoise. The Vanyume also collected salt from Soda Lake and from the Barstow-Daggett area to exchange for acorns and other resources from the mountains (ECORP 2018b).

Partly due to their mountainous and desert inland territory, contact between Serrano and European-Americans was minimal prior to the early 1800s. In 1819, an asistencia (mission outpost) was established near present-day Redlands and was used to help relocate many Serrano to Mission San Gabriel. However, small groups of Serrano remained in the area northeast of the San Gorgonio Pass and were able to preserve some of their native culture. Today, most Serrano live either on the Morongo or San Manuel reservations (ECORP 2018b).

4.18.2 Regulatory Setting

Assembly Bill 52

Effective July 1, 2015, Assembly Bill 52 (AB 52) amended CEQA to require that: 1) a lead agency provide notice to those California Native American tribes that requested notice of projects proposed by the lead agency; and 2) for any tribe that responded to the notice within 30 days of receipt with a request for consultation, the lead agency must consult with the tribe. Topics that may be addressed during consultation include Tribal Cultural Resources (TCRs), the potential significance of project impacts, type of environmental document that should be prepared, and possible mitigation measures and project alternatives.

Pursuant to AB 52, Section 21073 of the Public Resources Code defines California Native American tribes as "a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of the Statutes of 2004." This includes both federally and non-federally recognized tribes.

Section 21074(a) of the Public Resource Code defines TCRs for the purpose of CEQA as:

1. Sites, features, places, cultural landscapes (geographically defined in terms of the size and scope), sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

    a. included or determined to be eligible for inclusion in the California Register of Historical Resources; and/or

    b. included in a local register of historical resources as defined in subdivision (k) of Section 5020.1; and/or

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

Because criteria a and b also meet the definition of a historical resource under CEQA, a TCR may also require additional consideration as a historical resource. TCRs may or may not exhibit archaeological, cultural, or physical indicators.

Recognizing that California tribes are experts in their tribal cultural resources and heritage, AB 52 requires that CEQA lead agencies provide tribes that requested notification an opportunity to consult at the commencement of the CEQA process to identify TCRs. Furthermore, because a significant effect on a TCR is considered a significant impact on the environment under CEQA, consultation is used to develop appropriate avoidance, impact minimization, and mitigation measures.

4.18.3 Summary of AB 52 Consultation

The City of Redlands notified the Morongo Band of Mission Indians, the Gabrieleño Band of Mission Indians – Kizh Nation, the San Manuel Band of Mission Indians, the Soboba Band of Luiseño Indians, and the Torres Martinez Desert Cahuilla Indians of the Proposed Project in accordance to AB 52 via letters sent on May 28, 2019. Each recipient was provided a brief description of the project and its location, the lead agency contact information, and a notification that the tribe has 30 days to request consultation.

As a result of the initial notification letters, the Morongo Band of Mission Indians (Morongo), San Manuel Band of Mission Indians (San Manuel), and the Soboba Band of Luiseño Indians (Soboba) requested to consult with the City about the project pursuant to Public Resources Code section 21080.3.1. No responses to the notification letter were received from Gabrieleño Band of Mission Indians – Kizh Nation or the Torres Martinez Desert Cahuilla Indians.

Soboba. On July 1, 2019, the Soboba requested to consult on the project via an email and an attached letter. On July 8, 2019, the City initiated consultation with the Soboba via an initiation letter. On July, 29, 2019, the Tribe provided the City with mitigation measures taken from a 2016 IS/MND prepared for separate section of the Zanja Trail and Greenway Project. The City responded via an email on August 5, 2019 confirming receipt of the mitigation measures and informing the Tribe that more recent mitigation language for the project had been provided by San Manuel. The City asked the Soboba to review the San Manuel mitigation language to see if it met their requirements and provide comments. On August 5, 2019, the Soboba provided comments and edits to the new mitigation measures drafted by the San Manuel. On August 29, 2019, the City provided revised mitigation language to the Soboba for final review. The revised language incorporated all but one of the Soboba's requested additions and edits. The City did not remove the language requiring a rotating schedule for Tribal monitors as had been requested by the Tribe. The City cited concerns about the financial responsibility of this request. On September 16, 2019, the Soboba responded that they reviewed the revised mitigation measures and understood the City's concern regarding financial responsibility of removing the requirement for a rotating monitoring schedule. The Tribe did not agree with the rotating schedule but acknowledged that the City would likely move forward anyway. In that event, the Tribe requested that that the Soboba be included in the first round of the monitoring rotation, be included in the preparation of the Monitoring and Treatment Plan, and that the Tribe will receive a weekly summary of activities from the archaeologist during construction. On October 3, 2019, consultation was terminated without agreement via a letter sent to the Tribe containing the final mitigation measures. In the letter the City agreed to the three requests and confirmed that the that the Soboba will be included in the first round of the monitoring rotation, in the preparation of the Monitoring and Treatment Plan, and that the Tribe will receive a weekly summary emails during construction.

San Manuel. On June 6, 2019, the San Manuel responded to the notification letter, requested consultation and stated that the Mill Creek Zanja is a San Manuel Sacred Land and an NRHP-listed resource. In addition, they requested copies of the cultural report, paleontological report, geotechnical report, and plans for the project. On July 8, 2019, the City initiated consultation with the San Manuel via an initiation letter. Copies of the requested documents were supplied with the initiation letter. A meeting was scheduled between the City and Tribe for Monday July 29, 2019. On July 23, 2019, the San Manuel sent an email to the City stating that, following the review of the cultural resources report, they consider any impact to the Zanja, which is a TCR, to be significant, and that they agree with the recommendation for construction monitoring. In addition the Tribe provided mitigation measures for the project that would minimize impacts to the Zanja from the project. The meeting between the City and the Tribe was subsequently cancelled while the City reviewed the mitigation measures. On August 16, 2019, the City provided the San Manuel with a version of the mitigation measures that included revisions requested by the Soboba. On August 19, 2019, the Tribe accepted the mitigation measures with the revisions. The consultation was terminated via a letter sent on September 25, 2019, after the parties agreed to appropriate mitigation measures.

Morongo. On June 18, 2019, the Morongo requested to consult on the project via an email. In addition, they requested a copy of all cultural studies related to the project. On July 8, 2019, the City initiated consultation with the Morongo Band of Mission Indians via an initiation letter along with a copy of the cultural resources technical report for the project. A follow-up email was sent to the Tribe on July 23, 2019 checking in on their review of the project documents. On August 5, 2019, a second follow-up email was sent containing a copy of the proposed mitigation measures supplied by the San Manuel Band for the Tribe's review and comment. On August 7, 2019, the Tribe responded that they concurred with the language in the mitigation measures and they may conclude consultation. On August 16, 2019, revised mitigation measures with Soboba edits were sent to the Tribe for review. The Tribe responded on August 29, 2019 that the revised mitigation measures were acceptable. The consultation was terminated via a letter sent on September 25, 2019, after the parties agreed to appropriate mitigation measures.

4.18.4 Tribal Cultural Resources (XVII) Environmental Checklist and Discussion

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 tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local	☐	☐	☒	☐

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
register of historical resources as defined in Public Resources Code Section 5020.1(k), or				
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.	☐	☒	☐	☐

i. The project area includes a 1,016-foot long section of the Mill Creek Zanja. A six-mile segment of the Zanja located east of the project area is listed on the National Register of Historic Places (NRHP; NRHP-L-77-329) and is on the list of California Historical Landmarks (No. 43) (ECORP 2018b). The NRHP-listed segment stretches from the intake at Mill Creek and ends just west of Sylvan Park. The section of the Mill Creek Zanja within the project area, located between 9th Street and Church Street, is not included in the NRHP-listed segment of this resource. As part of the Proposed Project, this portion of the Mill Creek Zanja was updated and evaluated for inclusion in the CRHR. The evaluation recommended this resource as eligible for inclusion in the CRHR.

The Proposed Project would install a multi-use trail adjacent to the Zanja; therefore, the Proposed Project would not have any significant direct impacts on the Mill Creek Zanja. However, the Proposed Project has the potential to result in indirect impacts to the Mill Creek Zanja. Indirect impacts could include increased dust during trail installation, increased foot traffic and attention to the resource by the general public, and a change in the visual landscape/setting in the immediate vicinity of the resource. A temporary increase in dust is not likely to have a significant impact on the resource. The proposed foot trail may increase foot traffic and allow the public more accessibility to the resource; however, the area immediately surrounding the resource contains suburban developments and an informal walking path already exists alongside this portion of the Zanja. The small increase in pedestrian traffic would not likely create a significant impact on the resource. The Proposed Project would not result in a substantial change to the visual landscape or setting of the resource. The Proposed Project would not alter the features of the resource that make it eligible for the CRHR, its association with historical events. As such, although the Proposed Project may result in indirect impacts to the resource, these impacts would be less than significant.

ii. The Soboba and the Morongo identified the Zanja as a TCR and identified the project area as being sensitive with the potential to contain unknown TCRs. Significant impacts may occur from the disturbance of known and unknown TCRs during ground disturbing construction activities associated with the Proposed Project. Impacts to TCRs would be less than significant with the implementation of Mitigation Measures TCR-1, TCR-2, and TCR-3

4.18.5 Mitigation Measures

TCR-1: Tribal Monitoring: Due to the heightened cultural sensitivity of the proposed project area, Tribal monitors representing the consulting Tribes shall be present, on a rotating basis, for all ground-disturbing activities that occur within the proposed project. Ground disturbance is defined as any activity that compacts or disturbs the ground within a project area. The project area is defined as all areas where project activities will occur, including: the actual construction activities, permanent easements, temporary construction easements, staging areas for supplies and equipment, and borrow pits. Ground disturbance can also be caused by the use of hand tools (shovels, pick axe, posthole digger, etc.), heavy equipment (excavators, backhoes, bulldozers, trenching and earthmoving equipment, etc.), and heavy trucks (large four wheel drive trucks, dump trucks and tractor trailers, etc.). Trenching, bulldozing, excavating, scraping, and plowing are typical examples of ground disturbance activities. Project types that usually involve ground disturbance include acquisition/demolition/relocation of structures; vegetation management; landslide stabilization; and infrastructure projects such as utilities, storm water management, and flood control. However, any projects that include the installation of utilities, culverts, temporary roads or structures, permanent roads, foundations and footers all typically involve ground disturbance activities. A sufficient number of Tribal monitors shall be present each work day to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation ("Cultural Resources" and "Tribal Cultural Resources") shall be completed by the archaeologist, as detailed within CUL-1, and submitted to the Lead Agency for dissemination to the government representatives of consulting Tribes. Once all parties review and agree to the plan, it shall be adopted by the Lead Agency – the plan must be adopted prior to permitting for the project. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.

TCR-2: Treatment of Cultural Resources: If a pre-contact and/or post-contact cultural resource is discovered during project implementation, ground disturbing activities shall be suspended 60 feet around the resource(s) and an Environmentally Sensitive Area (ESA) physical demarcation/barrier constructed. Representatives from the consulting Tribal governments, the Archaeological Monitor/applicant, and the Lead Agency shall confer regarding treatment of the discovered resource, as detailed within the Monitoring and Treatment Plan. A research design shall be developed and will include a plan to evaluate the resource for significance under CRHR criteria, as well as its potential as a Tribal Cultural Resource (TCR).

Should any significant resource(s) not be a candidate for avoidance or preservation in place, and the removal of the resource(s) is necessary to mitigate impacts, the research design shall include a comprehensive discussion of limited non-destructive sampling strategies, resource processing, analysis, and reporting protocols/obligations. Removal of any cultural resource(s) shall be conducted with the presence of a Tribal monitor representing the consulting Tribes, unless otherwise decided by government representatives of the consulting Tribes. All plans for analysis shall be reviewed and approved by the applicant and government representatives of the consulting Tribes prior to implementation, and all removed material shall be temporarily curated on-site. It is the preference that removed cultural material be reburied as close to the original find location as possible. However, should reburial within/near the original find location during project implementation not be feasible, then a reburial location for future reburial shall be decided upon by the consulting Tribes, the landowner, and the Lead Agency, and all finds shall be reburied within this location. Additionally, in this case, reburial shall not occur until all ground-disturbing activities associated with the project have been completed, all monitoring has ceased, all cataloguing and basic recordation of cultural resources have been completed, and a final monitoring report has been issued to Lead Agency, CHRIS, and consulting Tribes. All reburials are subject to a reburial agreement that shall be developed between the landowner and government representatives of the consulting Tribes outlining the determined reburial process/location, and shall include measures and provisions to protect the reburial area from any future impacts (vis a vis project plans, conservation/preservation easements, etc.).

Should it occur that avoidance, preservation in place, and on-site reburial are not an option for treatment, the landowner shall relinquish all ownership and rights to this material and confer with government representatives of the consulting Tribes to identify an American Association of Museums (AAM)-accredited facility within the County that can accession the materials into their permanent collections and provide for the proper care of these objects in accordance with the 1993 CA Curation Guidelines. A curation agreement with an appropriate qualified repository shall be developed between the landowner and museum that legally and physically transfers the collections, along with title and associated records to the facility. This agreement shall stipulate the payment of fees necessary for permanent curation of the collections and associated records and the obligation of the Project developer/applicant to pay for those fees.

All draft records/reports containing the significance and treatment findings and data recovery results shall be prepared by the archaeologist and submitted to the Lead Agency and government representatives of the consulting Tribes for their review and comment within 30 days of receipt. After approval from all parties, the final reports and site/isolate records are to be submitted to the local CHRIS Information Center, the Lead Agency, and consulting Tribes.

TCR-3: Inadvertent Discoveries of Human Remains/Funerary Objects: In the event that any human remains are discovered within the project area, ground disturbing activities shall be suspended 100 feet around the resource(s) and an Environmentally Sensitive Area (ESA) physical demarcation/barrier constructed. The on-site lead/foreman shall then immediately notify the government representatives of the consulting Tribes, the applicant/developer, and the Lead Agency. The Lead Agency and the applicant/developer shall then immediately contact the County Coroner regarding the discovery. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the NAHC within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c). The NAHC-identified

Most Likely Descendant (MLD), shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and funerary objects shall be treated and disposed of with appropriate dignity. The MLD, Lead Agency, and landowner agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes. The MLD shall complete its inspection and make recommendations within forty-eight (48) hours of the site visit, as required by California Public Resources Code § 5097.98.

Reburial of human remains and/or funerary objects (those artifacts associated with any human remains or funerary rites) shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The MLD in consultation with the landowner, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains and funerary objects. All parties are aware that the MLD may wish to rebury the human remains and associated funerary objects on or near the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The applicant/developer/landowner should accommodate on-site reburial in a location mutually agreed upon by the Parties.

It is understood by all Parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r).

4.19 Utilities and Service Systems

4.19.1 Environmental Setting

Water, wastewater, and solid waste service in the project area are provided by the City of Redlands.

4.19.2 Utilities and Service Systems (XVIII) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒

The Proposed Project would not exceed wastewater treatment requirements of the Regional Water Quality Control Board. No impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒

The Proposed Project would require minimal water for landscaping. No restrooms are proposed. The Proposed Project would not require the construction of new water or wastewater treatment facilities or expansion of existing facilities. No impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒

The Proposed Project would not exceed the capacity of the existing stormwater system. No impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒

The Proposed Project would use City water for landscaping. No restrooms are proposed. Existing entitlements and resources are sufficient to serve the Proposed Project and no new or expanded entitlements are needed. No impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e)	Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments?	☐	☐	☐	☒

The Proposed Project does not include restrooms, and would not affect the wastewater treatment plant capacity. No impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐

The Proposed Project would include trash and dog waste receptacles. The City's landfill has sufficient permitted capacity to accommodate the Proposed Project's solid waste disposal needs. A less than significant impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

The Proposed Project would comply with federal, state, and local statutes and regulations related to solid waste during construction and operation. No impact would occur.

4.19.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.20 Wildfire

4.20.1 Environmental Setting

The project site is not located on land within a State Responsibility Area (SRA) (CAL FIRE 2019). According to the City of Redlands General Plan, the project site is located in an area with little or no fire threat (City of Redlands 2017).

4.20.2 Wildfire (XX) Environmental Checklist and Discussion

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

The project site is not located within or near a SRA (CAL FIRE 2019). Furthermore, the City of Redlands General Plan classifies the project area as "*Little or No Threat*" fire hazard (City of Redlands 2017). No impact would occur.

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒

The Proposed Project is located in a developed area characterized mostly commercial development. The project site is not located within or near a SRA (CAL FIRE 2019). Furthermore, the City of Redlands General Plan classifies the project area as "*Little or No Threat*" fire hazard (City of Redlands 2017). No impact would occur.

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒

The project site is not located within or near a SRA (CAL FIRE 2019). Furthermore, the City of Redlands General Plan classifies the project area as "*Little or No Threat*" fire hazard (City of Redlands 2017). No impact would occur.

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

The project site is not located within or near a SRA (CAL FIRE 2019). Furthermore, the City of Redlands General Plan classifies the project area as "*Little or No Threat*" fire hazard (City of Redlands 2017). No impact would occur.

4.21 Mandatory Findings of Significance

4.21.1 Mandatory Findings of Significance (XIX.) Environmental Checklist and Discussion

Does the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	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?	☐	☒	☐	☐

Impacts to biological resources and cultural resources are discussed above. Impacts would be less than significant with Mitigation Measures BIO-1, BIO-2, and CUL-1.

Does the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	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)?	☐	☒	☐	☐

Impacts from the Proposed Project would not be cumulatively considerable with the implementation of the Mitigation Measures listed in this Initial Study.

Does the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Direct and indirect impacts to human beings would be less than significant with the implementation of mitigation measures listed in this Initial Study.

SECTION 5.0 LIST OF PREPARERS

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SECTION 7.0 APPENDICES

Appendix A – Air Quality and Greenhouse Gas Study

Appendix B – Biological Resources Assessment

Appendix C – Jurisdictional Delineation Report

Appendix D – Cultural Resources Inventory and Evaluation

Appendix E – Paleontological Records Search

Appendix F – Traffic Memorandum

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APPENDIX A

Air Quality and Greenhouse Gas Study

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City of Redlands

Zanja Trail and Pocket Park

Air Quality and Greenhouse Gas Study

April 2016

rincon

Environmental Scientists Planners Engineers

Zanja Trail and Greenway Park Project
Air Quality and Greenhouse Gas Study

Prepared for:

City of Redlands

Prepared by:

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April 2016

Table of Contents

AIR QUALITY AND GREENHOUSE GAS STUDY ZANJA TRAIL AND GREENWAY PARK, CITY OF REDLANDS, CALIFORNIA

This report is an analysis of the air quality and greenhouse gas (GHG) impacts of the proposed trail and greenway pocket-parks along the Zanja channel in the City of Redlands, California. The report has been prepared by Rincon Consultants, Inc. under contract to ECORP Consulting, Inc. for use by the City of Redlands, in support of the environmental documentation being prepared pursuant to the California Environmental Quality Act (CEQA). The purpose of this study is to analyze the proposed project's air quality and GHG emissions and associated impacts. This study analyzes both temporary emissions impacts related to construction activity and possible long-term impacts associated with operation of the proposed project.

PROJECT DESCRIPTION

The proposed trail is approximately 3,300 feet long and would run along the Zanja channel from Wabash Ave. to Lincoln St. along an existing access road for the San Bernardino County flood Control District. The trail would incorporate a pedestrian crossing at Dearborn St. with removable bollards at trail entrance points to deter the use of motorized vehicles. The trail would be six feet wide, made from natural-colored decomposed granite, and incorporate fencing installed along the right-of-way boundary, with landscaping consisting of native vegetation and shade trees.

Greenway pocket parks would be constructed at each end of the trail. Laramie Pocket Park, approximately 1.2 acres in size, would be located at Lincoln and Laramie and would incorporate numerous amenities including landscaping, an exercise circuit, benches, play areas, interpretive signage, and a shade structure. Wabash Pocket Park, approximately 0.5 acres in size, would be located at the intersection of the Zanja channel and Wabash Ave. and would also incorporate amenities such as landscaping, interpretive signage, and a boulder seat-wall. Construction of the proposed project is expected to take approximately six months.

AIR QUALITY

This section analyzes the proposed project's temporary and long-term impacts to local and regional air quality. Both temporary impacts related to construction and long-term impacts associated with operation of the project are discussed.

Setting

Air Pollution Regulation

The federal and state governments have authority under the federal and state Clean Air Acts to regulate emissions of airborne pollutants and have established ambient air quality standards for the protection of public health. The U.S. Environmental Protection Agency (EPA) is the federal agency designated to administer air quality regulation, while the California Air Resources Board (ARB) is the state equivalent in California. Federal and state standards have been established for six criteria pollutants, including ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulates less than 10 and 2.5 microns in diameter (PM_{10} and $PM_{2.5}$), and lead (Pb). Table 1 lists the current federal and state standards for each of these pollutants. California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Standards have been set at levels intended to be protective of public health. California standards are more restrictive than federal standards for each of these pollutants except lead and the eight-hour average for CO.

Table 1
Current Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Primary Standards	California Standard
Ozone	1-Hour	---	0.09 ppm
	8-Hour	0.075 µg/m^3	0.070 µg/m^3
PM_{10}	24-Hour	150 µg/m^3	50 µg/m^3
	Annual	---	20 µg/m^3
$PM_{2.5}$	24-Hour	35 µg/m^3	---
	Annual	15 µg/m^3	12 µg/m^3
Carbon Monoxide	8-Hour	9.0 ppm	9.0 ppm
	1-Hour	35.0 ppm	20.0 ppm
Nitrogen Dioxide	Annual	0.053 ppm	0.030 ppm
	1-Hour	0.100 ppm	0.18 ppm
Sulfur Dioxide	24-Hour	---	0.04 ppm
	1-Hour	0.075 ppm (primary)	0.25 ppm
Lead	30-Day Average	---	1.5 µg/m^3
	3-Month Average	0.15 µg/m^3	---

ppm = parts per million µg/m^3 = micrograms per cubic meter
Source: California Air Resources Board, http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, October 1, 2015

The ARB provides local air quality management through county-level or regional (multi-county) Air Pollution Control Districts (APCDs). The ARB establishes air quality standards and is responsible for control of mobile emission sources, while the local APCDs are responsible for enforcing standards and regulating stationary sources. The ARB has established 14 air basins statewide. This portion of San Bernardino County is located within the South Coast Air Basin (Basin), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD is required to monitor air pollutant levels to ensure that air quality standards are met and, if they are not met, to develop strategies to meet the standards. Depending on whether the standards are met or exceeded, the local air basin is classified as being in "attainment" or "non-attainment." The South Coast Air Basin is a non-attainment area for both the federal and state standards for ozone and PM_{10}. The Basin is in attainment of the state and federal standards for nitrogen dioxide and carbon monoxide. Characteristics of ozone, carbon monoxide, nitrogen dioxide, and suspended particulates are described below.

Ozone

Ozone is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides (NO_X) and reactive organic gases (ROG). Nitrogen oxides are formed during the combustion of fuels, while reactive organic compounds are formed during combustion and evaporation of organic solvents. Because ozone requires sunlight to form, it mostly occurs in concentrations considered serious between the months of April and October. Ozone is a pungent, colorless, toxic gas with direct health effects on humans including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to ozone include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

Carbon Monoxide

Carbon monoxide (CO) is a local pollutant that is found in high concentrations only near the source. The major source of CO, a colorless, odorless, poisonous gas, is automobile traffic. Elevated concentrations, therefore, are usually only found near areas of high traffic volumes. CO's health effects are related to its affinity for hemoglobin in the blood. At high concentrations, CO reduces the amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity and impaired mental abilities.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a by-product of fuel combustion, with the primary source being motor vehicles and industrial boilers and furnaces. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts rapidly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. Nitrogen dioxide is an acute irritant. A relationship between NO_2 and chronic pulmonary fibrosis may exist, and an increase in bronchitis in young children at concentrations below 0.3 parts per million (ppm) may occur. Nitrogen dioxide absorbs blue light and causes a reddish brown cast to the atmosphere and reduced visibility. It can also contribute to the formation of PM_{10} and acid rain.

Suspended Particulates

PM_{10} is particulate matter measuring no more than 10 microns in diameter, while $PM_{2.5}$ is fine particulate matter measuring no more than 2.5 microns in diameter. Suspended particulates are mostly dust particles, nitrates and sulfates. Both PM_{10} and $PM_{2.5}$ are by-products of fuel combustion and wind erosion of soil and unpaved roads, and are directly emitted into the atmosphere through these processes. Suspended particulates are also created in the atmosphere through chemical reactions. The characteristics, sources, and potential health effects associated with the small particulates (those between 2.5 and 10 microns in diameter) and fine particulates ($PM_{2.5}$) can be very different. The small particulates generally come from windblown dust and dust kicked up from mobile sources. The fine particulates are generally associated with combustion processes as well as being formed in the atmosphere as a secondary pollutant through chemical reactions. Fine particulate matter is more likely to penetrate deeply into the lungs and poses a health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the small and fine particulate matter that is inhaled into the lungs remains there. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

Local Air Quality

California's weather is heavily influenced by a semi-permanent high-pressure system west of the Pacific Ocean. The Mediterranean climate of the region and the coastal influence produce moderate temperatures year round, with rainfall concentrated in the winter months. The sea breeze, which is the predominant wind, is a primary factor in creating this climate and typically flows from the west-southwest in a day-night cycle with speeds generally ranging from 5 to 15 miles per hour. The sea breeze maintains the cool temperatures and clean air circulation and generally prevents warmer inland temperatures and air pollution from permeating into the peninsula, except under certain seasonal conditions such as the offshore Santa Ana winds.

Air quality in the South Coast Air Basin is affected by the emission sources located in the region, as well as by three natural factors:

1. A **natural terrain barrier** to emission dispersion north and east of the metropolitan Los Angeles area.
2. A **dominant on-shore flow** transports and disperses air pollution by driving air pollution originating in industrial areas along the coast toward the natural terrain barrier, limiting horizontal dispersion. The effect of this flow is a gradual degradation of air quality from coastal to inland areas. The greatest impacts can be seen in the San Gabriel Valley and near Riverside at the foot of the San Gabriel Mountains.
3. **Atmospheric inversions** limit dispersion of air pollution on a vertical scale. Temperature typically decreases with altitude. However, under inversion conditions temperature begins to increase at some height above the ground. This height is called the base of the inversion. The temperature increase continues through an unspecified layer after which the temperature change with height returns to standard conditions. The inversion layer is typically very stable and acts as a cap to the vertical dispersions of pollutants.

The SCAQMD operates a network of air monitoring stations throughout the Basin. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the California and federal standards. The air quality monitoring station located nearest to the project site is the Redlands-Dearborn station, located at 500 North Dearborn Street, approximately 0.7 miles northwest of the project site. The Redlands-Dearborn station does not record N_2O or $PM_{2.5}$, so the next closest location (San Bernardino-4th Street) was used for this data. Table 2 indicates the number of days that each of the state and federal standards has been exceeded at the closest monitoring stations.

The ozone concentration exceeded the state and federal standards on 43 days in 2013, on 47 days in 2014, and on 44 days in 2015. The PM_{10} concentration exceeded state standards on 11.8 days in 2013 and 12 days in 2014. PM_{10} concentrations did not exceed federal standards in 2013, 2014, or 2015. The $PM_{2.5}$ concentration exceeded federal standards on 3.3 days in 2013 and on 6.9 days in 2015. In addition, N_2O concentrations exceeded the state standards by 70 days in 2013, 2014, and 2015. There was no representative data available for CO in the year range and location

Table 2
Ambient Air Quality Data

Pollutant	2013	2014	2015
Ozone, ppm - Worst Hour	0.133	0.128	0.137
Number of days of State exceedances (>0.09 ppm)	43	47	44
Number of days of Federal exceedances (>0.12 ppm)	3	2	2
Carbon Monoxide, ppm - Worst 8 Hours	*	*	*
Number of days of State/Federal exceedances (>9.0 ppm)	*	*	*
Nitrogen Dioxide, ppm - Worst Hour	72.1	72.6	71.4
Number of days of State exceedances (>0.25 ppm)	70	70	70
Particulate Matter <10 microns, $\mu g/m^3$ Worst 24 Hours	72.0	62.0	45.0
Number of samples of State exceedances (>50 $\mu g/m^3$)	11.8	12.0	*
Number of samples of Federal exceedances (>150 $\mu g/m^3$)	0	0	*
Particulate Matter <2.5 microns, $\mu g/m^3$ Worst 24 Hours	55.3	73.9	53.5
Number of samples of Federal exceedances (>35 $\mu g/m^3$)	3.3	*	6.9

**Insufficient data available.*

Redlands-Dearborn monitoring station and San Bernardino-4th Street monitoring station

PM_{10} and N_2O data taken from San Bernardino-4th Street monitoring station (Not available at West Los Angeles)
Source: California Air Resources Board, available at http://www.arb.ca.gov/adam/topfour/topfour1.php

Sensitive Receptors

Ambient air quality standards have been established to represent the levels of air quality considered sufficient, with an adequate margin of safety, to protect public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress, such as children under 14; persons over 65; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases. The majority of sensitive receptor locations are therefore schools and hospitals. Nearby sensitive receptors include the adjacent residential units along the length of the trail, which includes Herrington Drive, Hamstead Circle, Sylvan Boulevard, and Laramie Avenue.

Impact Analysis

Methodology and Significance Thresholds

This air quality analysis conforms to the methodologies recommended in the SCAQMD's *CEQA Air Quality Handbook* (1993). The handbook includes thresholds for emissions associated with both construction and operation of proposed projects.

Construction activities would generate diesel emissions and dust. Construction equipment that would generate criteria air pollutants includes excavators, graders, dump trucks, and loaders.

Some of this equipment would be used during grading activities as well as when structures are constructed. It is assumed that all construction equipment used would be diesel-powered. Regional construction emissions associated with development of the proposed project were calculated using the California Emissions Estimator Model (CalEEMod) software and estimates of the types and number of pieces of equipment that would be used on-site during each of the construction phases. Construction emissions are analyzed based on the regional thresholds established by the SCAQMD and published in the *CEQA Air Quality Handbook*. The highest emissions from the output were included in this analysis. In this case, the highest emissions are from the Winter Output.

Operational emissions associated with on-site development were also estimated using CalEEMod. Operational emissions include mobile source emissions and area source emissions. Mobile source emissions are generated by the increase in motor vehicle trips to and from the project site. This emissions estimate is considered conservative because the project is expected to provide recreational opportunities for residences that currently border the site. Area source emissions are generated by landscape maintenance equipment, consumer products and architectural coating. To determine whether a regional air quality impact would occur, the increase in emissions would be compared with the SCAQMD's recommended regional thresholds for operational emissions. Because CalEEMod does not contain a *trail project* land use type a *city park* land use type was used instead, which results in conservative air quality emissions estimates resulting from increases in vehicle miles traveled (VMT), water use, energy use, solid waste, and landscape maintenance.

Regional Thresholds

To determine whether a proposed project would have a significant impact to air quality, Appendix G of the *CEQA Guidelines* questions whether a project would:

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 in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
d) Expose sensitive receptors to substantial pollutant concentrations; or
e) Create objectionable odors affecting a substantial number of people.

The SCAQMD has established the following significance thresholds for construction activities and project operations within the South Coast Air Basin:

Construction Thresholds
- *75 pounds per day of ROG*
- *100 pounds per day of NOx*
- *550 pounds per day of CO*
- *150 pounds per day of PM10*
- *55 pounds per day of PM2.5*

Operation Thresholds
- *55 pounds per day of ROG*
- *55 pounds per day of NO_X*
- *550 pounds per day of CO*
- *150 pounds per day of SO_X*
- *150 pounds per day of PM_{10}*
- *55 pounds per day of $PM_{2.5}$*

Localized Significance Thresholds

In addition to the above thresholds, the SCAQMD has developed Localized Significance Thresholds (LSTs) in response to the Governing Board's Environmental Justice Enhancement Initiative (1-4), which was prepared to update the *CEQA Air Quality Handbook*. LSTs were devised in response to concern regarding exposure of individuals to criteria pollutants in local communities. LSTs represent the maximum emissions from a project that will not cause or contribute to an air quality exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest sensitive receptor, taking into consideration ambient concentrations in each source receptor area (SRA), project size, and distance to the sensitive receptor, etc. However, LSTs only apply to emissions within a fixed stationary location, including idling emissions during both project construction and operation. According to the SCAQMD's publication *Final Localized Significant (LST) Thresholds Methodology*, the use of LSTs is voluntary, to be implemented at the discretion of local agencies.

The project site is located in Source Receptor Area 35 (SRA-35), which is designated by the SCAQMD as East San Bernardino Valley. LSTs have been developed for NO_X, CO, PM_{10} and $PM_{2.5}$. LSTs do not apply to mobile sources such as cars on a roadway (SCAQMD, June 2003). As such, LSTs for operational emissions do not apply to long-term operation of on-site development since the majority of emissions would be generated by cars on the roadways. LSTs have been developed for emissions within construction areas up to five acres in size. The SCAQMD provides lookup tables for project sites that measure one, two, or five acres. The project involves approximately 2.11 acres of on-site construction. Therefore, the thresholds for a 2-acre site were used in the analysis. The calculated LSTs are provided for receptors at a distance of 82 to 1,640 feet (25 to 500 meters) from the project site boundary. According to the LST methodology document, projects with boundaries located closer than 82 feet to the nearest receptor should use the LSTs for receptors located at 82 feet. Because the nearest sensitive receptor is an adjacent residential property, the LSTs for receptors located at 82 feet and closer are used to determine significance.

Table 3
SCAQMD LSTs for Construction

Pollutant	Allowable emissions in SRA-35 at a distance of 82 feet (lbs/day)
Gradual conversion of NO_x to NO_2	170
CO	1,174
PM_{10}	7
$PM_{2.5}$	5

Source: SCAQMD, June 2003, Revised October 2009, http://www.aqmd.gov/CEQA/handbook/LST/appC.pdf, accessed online September 2015.

Construction Impacts

Project construction would generate temporary air pollutant emissions. These impacts are associated with fugitive dust (PM_{10} and $PM_{2.5}$) and exhaust emissions from heavy construction vehicles, in addition to ROG that would be released during the drying phase upon application of architectural coatings. Construction would generally consist of site preparation, grading, paving, and architectural coating.

The site preparation phase would involve the greatest amount of heavy equipment and the most substantial generation of fugitive dust. It was assumed that the project would comply with the SCAQMD Rule 403, which identifies measures to reduce fugitive dust and is required to be implemented at all construction sites located within the South Coast Air Basin. Therefore, the following conditions, which would be required to reduce fugitive dust in compliance with SCAQMD Rule 403, were included in CalEEMod for the site preparation and grading phases of construction.

1. **Minimization of Disturbance.** Construction contractors should minimize the area disturbed by clearing, grading, earth moving, or excavation operations to prevent excessive amounts of dust.
2. **Soil Treatment.** Construction contractors should treat all graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved on-site roadways to minimize fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally safe soil stabilization materials, and/or roll compaction as appropriate. Watering shall be done as often as necessary, and at least twice daily, preferably in the late morning and after work is done for the day.
3. **Soil Stabilization.** Construction contractors should monitor all graded and/or excavated inactive areas of the construction site at least weekly for dust stabilization. Soil stabilization methods, such as water and roll compaction, and environmentally safe dust control materials, shall be applied to portions of the construction site that are inactive for over four days. If no further grading or excavation operations are planned for the area, the area shall be seeded and watered until landscape growth is evident, or periodically treated with environmentally safe dust suppressants, to prevent excessive fugitive dust.
4. **No Grading During High Winds.** Construction contractors should stop all clearing, grading, earth moving, and excavation operations during periods of high winds (20 miles per hour or greater, as measured continuously over a one-hour period).
5. **Street Sweeping.** Construction contractors should sweep all on-site driveways and adjacent streets and roads at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads.

The emissions modeling also includes the use of low-VOC paint (150 g/L for nonflat coatings) as required by SCAQMD Rule 1113. Construction emissions estimates for the proposed project are conservative in nature because they include emissions associated with a city park that may not be included in the proposed project, including restrooms and other buildings on-site. Table 4 summarizes the estimated maximum daily emissions of air pollutants during construction.

Table 4
Estimated Maximum Daily Construction Emissions

Construction Phase	Maximum Emissions (lbs/day)				
	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Construction Emissions	**66.0**	**28.7**	**20.1**	**4.4**	**3.0**
SCAQMD Regional Thresholds	*75*	*100*	*550*	*150*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**
Maximum lbs/day (on-site only)	*n/a*	**28.6**	**19.0**	**4.3**	**2.9**
Local Significance Threshold [1] (on-site only)	*n/a*	*170*	*1,174*	*7*	*5*
Threshold Exceeded?	**n/a**	**No**	**No**	**No**	**No**

Notes: All calculations were made using the CalEEMod software. See the Appendix for calculations. Totals include worker trips, construction vehicle emissions and fugitive dust.

Grading phase incorporates anticipated emissions reductions include the conditions listed above, which are required by SCAQMD Rule 403 to reduce fugitive dust.

Architectural Coating phase anticipated emissions reductions include the standards in SCAQMD Rule 1113, and the phase is assumed to occur over last 60 days of building construction phase.

[1] LSTs are for a two-acre project in SRA-35 within a distance of 82 feet from the site boundary.

With the use of low-VOC paint according to SCAQMD Rule 1113, temporary ROG emissions would not exceed SCAQMD regional thresholds. Maximum daily emissions of NO_X and CO would not exceed SCAQMD or LST thresholds. With adherence to the conditions listed above, as required by SCAQMD Rule 403, maximum daily emissions of fugitive dust (PM_{10} and $PM_{2.5}$) would not exceed SCAQMD or LST thresholds. Therefore, construction-related emissions would be less than significant.

Long-Term Regional Impacts

Table 5 summarizes estimated emissions associated with operation of the proposed project. The majority of project-related operational emissions would be due to area emissions and vehicle trips to and from the site. CalEEMod default traffic numbers were used for the mid-rise apartment land use type. Project traffic is estimated at 788,153 annual vehicle trips.

Table 5
Estimated Operational Emissions

Operational Phase	Estimated Emissions (lbs/day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Area	0.4	<0.1	<0.1	<0.1	<0.1	<0.1
Energy	N/A	N/A	N/A	N/A	N/A	N/A
Mobile	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Maximum lbs/day	**0.4**	<0.1	<0.1	<0.1	<0.1	<0.1
SCAQMD Thresholds	**55**	**55**	**550**	**150**	**150**	**55**
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

See Appendix for CalEEMod computer model output. Winter emissions shown.

Project-generated emissions would not exceed SCAQMD thresholds for ROG, CO, SO_X, PM_{10} or $PM_{2.5}$. Therefore, the project's long-term regional air quality impacts (including impacts related to criteria pollutants, sensitive receptors and violations of air quality standards) would be less than significant.

GREENHOUSE GASES

This section analyzes greenhouse gas (GHG) emissions associated with the proposed project and potential impacts related to climate change.

Setting

Climate Change and Greenhouse Gases

Climate change refers to changes in climate (such as wind patterns, precipitation, and storm frequency/intensity) over an extended period of time resulting from observed increases in the average temperature of the Earth's atmosphere and oceans. The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising average temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming during the past 150 years. Per the United Nations Intergovernmental Panel on Climate Change (IPCC, 2013), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (95 percent or greater chance) that the global average net effect of human activities has been the dominant cause of warming since the mid-20th century (IPCC, 2013).

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases GHGs. The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. Observations of CO_2 concentrations, globally-averaged temperature, and sea level rise are generally well within the range of the extent of the earlier IPCC projections. The recently observed increases in CH_4 and N_2O concentrations are smaller than those assumed in the scenarios in the previous assessments. Each IPCC assessment has used new projections of future climate change that have become more detailed as the models have become more advanced.

Man-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and sulfur hexafluoride (SF_6) (California Environmental Protection Agency [CalEPA], 2006). Different types of GHGs have varying global warming potentials (GWPs). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as “carbon dioxide equivalent” (CO_2e), and is the amount of a GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane CH_4 has a GWP of 25, meaning its global warming effect is 25 times greater than carbon dioxide on a molecule per molecule basis (IPCC, 2007).

The accumulation of GHGs in the atmosphere regulates the earth’s temperature. Without the natural heat trapping effect of GHGs, Earth’s surface would be about 34° C cooler (CalEPA, 2006). However, it is believed that emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

Greenhouse Gas Emissions Inventory

Worldwide anthropogenic emissions of GHGs were approximately 46,000 million metric tons (MMT, or gigatonne) CO_2e in 2010 (IPCC, 2014). CO_2 emissions from fossil fuel combustion and industrial processes contributed about 65 percent of total emissions in 2010. Of anthropogenic GHGs, CO_2 was the most abundant accounting for 76 percent of total 2010 emissions. CH_4emissions accounted for 16 percent of the 2010 total, while N_2O and fluorinated gases account for 6 and 2 percent respectively (IPCC, 2014).

Total U.S. GHG emissions were 6,673.0 MMT CO_2e in 2013 (U.S. EPA, 2015). Total U.S. emissions have increased by 5.9 percent since 1990; emissions increased by 2.0 percent from 2012 to 2013 (U.S. EPA, 2014). The increase from 2012 to 2013 was due to an increase in the carbon intensity of fuels consumed to generate electricity due to an increase in coal consumption, with decreased natural gas consumption. Additionally, relatively cool winter conditions resulted in an overall increase in fuels for the residential and commercial sectors for heating. Since 1990, U.S. emissions have increased at an average annual rate of 0.3 percent. In 2013, industrial and transportation end-use sectors accounted for 28.8 percent and 27.1 percent of CO_2 emissions (with electricity-related emissions distributed), respectively. Meanwhile, the residential and commercial end-use sectors accounted for 16.9 percent of CO_2 emissions each (U.S. EPA, 2015).

Based upon the California Air Resources Board (ARB) California Greenhouse Gas Inventory for 2000-2013, California produced 459.3 MMT CO_2e in 2013 (ARB, 2015). The major source of GHG in California is transportation, contributing 37 percent of the state's total GHG emissions. Industrial sources are the second largest source of the state's GHG emissions (CARB, 2015). California emissions are due in part to its large size and large population compared to other states. However, per capita emissions are lower than in many other states. A factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. The ARB has projected statewide unregulated GHG emissions for the year 2020 will be 509.4 MMT CO_2e (ARB, 2014). These projections represent the emissions that would be expected to occur in the absence of any GHG reduction actions.

Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air, land, and water temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Long-term trends have found that each of the past three decades has been warmer than all the previous decades in the instrumental record, and the decade from 2000 through 2010 has been the warmest. The global combined land and ocean temperature data show an increase of about 0.89°C (0.69°C–1.08°C) over the period 1901–2012 and about 0.72°C (0.49°C–0.89°C) over the period 1951–2012 when described by a linear trend. Several independently analyzed data records of global and regional Land-Surface Air Temperature (LSAT) obtained from station observations are in agreement that LSAT, as well as sea surface temperatures, has increased. In addition to these findings, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades (IPCC, 2013).

According to the CalEPA's *2010 Climate Action Team Biennial Report*, potential impacts of climate change in California may include decreased snow pack, sea level rise, and increase in extreme heat days per year, high ground-level ozone days, large forest fires, and drought (CalEPA, 2010). Below is a summary of some of the potential impacts that could be experienced in California as a result of climate change.

<u>Air Quality</u>

Higher temperatures, which are conducive to air pollution formation, could worsen air quality in many areas of California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (California Energy Commission [CEC], 2009).

Water Supply

Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future water supplies in California. However, the average early spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage. During the same period, sea level rose eight inches along California's coast. California's temperature has risen 1°F, mostly at night and during the winter, with higher elevations experiencing the highest increase. Many Southern California cities have experienced their lowest recorded annual precipitation twice within the past decade. In a span of only two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR], 2008; CCCC, 2009).

This uncertainty complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The Sierra snowpack provides the majority of California's water supply by accumulating snow during the state's wet winters and releasing it slowly during the state's dry springs and summers. Based upon historical data and modeling DWR projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050. Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack (DWR, 2008).

Hydrology and Sea Level Rise

As discussed above, climate change could potentially affect: the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. According to The Impacts of Sea-Level Rise on the California Coast, prepared by the California Climate Change Center (CCCC) (CCCC, 2009), climate change has the potential to induce substantial sea level rise in the coming century. The rising sea level increases the likelihood and risk of flooding. The rate of increase of global mean sea levels over the 2001-2010 decade, as observed by satellites, ocean buoys and land gauges, was approximately 3.2 mm per year, which is double the observed 20th century trend of 1.6 mm per year (World Meteorological Organization [WMO], 2013). As a result, sea levels averaged over the last decade were about 8 inches higher than those of 1880 (WMO, 2013). Sea levels are rising faster now than in the previous two millennia, and the rise is expected to accelerate, even with robust GHG emission control measures. The most recent IPCC report (2013) predicts a mean sea–level rise of 11-38 inches by 2100. This prediction is more than 50 percent higher than earlier projections of 7-23 inches, when comparing the same emissions scenarios and time periods. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply due to salt water intrusion. I*n addition, i*ncreased CO_2

emissions can cause oceans to acidify due to the carbonic acid it forms. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture

California has a $30 billion annual agricultural industry that produces half of the country's fruits and vegetables. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater air pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (CCCC, 2006).

Ecosystems and Wildlife

Climate change and the potential resulting changes in weather patterns could have ecological effects on the local and global levels. Increasing concentrations of GHGs are likely to accelerate the rate and severity of climate change impacts. Scientists project that the average global surface temperature could rise by 1.0-4.5°F (0.6-2.5°C) in the next 50 years, and 2.2-10°F (1.4-5.8°C) during the next century, with substantial regional variation. Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan, 2006).

Regulatory Setting

The following regulations address both climate change and GHG emissions.

Federal Regulations

The United States Supreme Court in *Massachusetts et al. v. Environmental Protection Agency et al.* ([2007] 549 U.S. 05-1120) held that the U.S. EPA has the authority to regulate tail pipe emissions from motor-vehicles under the federal Clean Air Act.

The U.S. EPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions. The first annual reports for these sources were due in March 2011.

On May 13, 2010, the U.S. EPA issued a Final Rule that took effect on January 2, 2011, setting a threshold of 75,000 tons CO_2e/year for GHG emissions. New and existing industrial facilities that meet or exceed that threshold will require a permit after that date. On November 10, 2010, the U.S. EPA published the "PSD and Title V Permitting Guidance for Greenhouse Gases." The U.S. EPA's guidance document is directed at state agencies responsible for air pollution permits under the Federal Clean Air Act to help them understand how to implement GHG reduction requirements while mitigating costs for industry. It is expected that most states will use the U.S. EPA's new guidelines when processing new air pollution permits for power plants, oil refineries, cement manufacturing, and other large pollution point sources.

On January 2, 2011, the U.S. EPA implemented the first phase of the Tailoring Rule for GHG emissions Title V Permitting. Under the first phase of the Tailoring Rule, all new sources of emissions are subject to GHG Title V permitting if they are otherwise subject to Title V for another air pollutant and they emit at least 75,000 tons CO_2e/year. Under Phase 1, no sources were required to obtain a Title V permit solely due to GHG emissions. Phase 2 of the Tailoring Rule went into effect July 1, 2011. At that time new sources were subject to GHG Title V permitting if the source emits 100,000 tons CO_2e/year, or they are otherwise subject to Title V permitting for another pollutant and emit at least 75,000 tons CO_2e/year.

On July 3, 2012 the U.S. EPA issued the final rule that retains the GHG permitting thresholds that were established in Phases 1 and 2 of the GHG Tailoring Rule. These emission thresholds determine when Clean Air Act permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities.

<u>California Regulations</u>

California Air Resources Board (ARB) is responsible for the coordination and oversight of State and local air pollution control programs in California. California has a numerous regulations aimed at reducing the state's GHG emissions. These initiatives are summarized below.

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires ARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, U.S. EPA granted the waiver of Clean Air Act preemption to California for its greenhouse gas emission standards for motor vehicles beginning with the 2009 model year. Pavley I took effect for model years starting in 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" will cover 2017 to 2025. Fleet average emission standards would reach 22 percent reduction from 2009 levels by 2012 and 30 percent by 2016. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles (LEV), Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs and would provide major reductions in GHG emissions. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels (ARB, 2011).

In 2005, former Governor Schwarzenegger issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent below 1990 levels (CalEPA, 2006). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA, 2006). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These are strategies that could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, etc. In April 2015 Governor Brown issued EO B-30-15, calling for a new target of 40percent below 1990 levels by 2030.

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006," signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 (essentially a 15 percent reduction below 2005 emission levels; the same requirement as under S-3-05), and requires ARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires ARB to adopt regulations to require reporting and verification of statewide GHG emissions.

After completing a comprehensive review and update process, ARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO_2e. The Scoping Plan was approved by ARB on December 11, 2008, and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted over the last five years. Implementation activities are ongoing and ARB is currently the process of updating the Scoping Plan.

In May 2014, ARB approved the first update to the AB 32 Scoping Plan. The 2013 Scoping Plan update defines ARB's climate change priorities for the next five years and sets the groundwork to reach post-2020 goals set forth in EO S-3-05. The update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluates how to align the State's longer-term GHG reduction strategies with other State policy priorities, such as for water, waste, natural resources, clean energy and transportation, and land use (ARB, 2014).

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

ARB Resolution 07-54 establishes 25,000 MT of GHG emissions as the threshold for identifying the largest stationary emission sources in California for purposes of requiring the annual reporting of emissions. This threshold is just over 0.005 percent of California's total inventory of GHG emissions for 2004.

Senate Bill (SB) 375, signed in August 2008, enhances the state's ability to reach AB 32 goals by directing ARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles for 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPO) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On September 23, 2010, ARB adopted final regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035.

The Southern California Association of Governments (SCAG) was assigned targets of an 8 percent reduction in GHGs from transportation sources by 2020 and a 13 percent reduction in GHGs from transportation sources by 2035. In the SCAG region, SB 375 also provides the option for the coordinated development of subregional plans by the subregional councils of governments and the county transportation commissions to meet SB 375 requirements.

In April 2011, Governor Brown signed SB 2X, requiring California to generate 33 percent of its electricity from renewable energy by 2020. On April 29, 2015, Governor Brown issued an executive order establishing a statewide mid-term GHG reduction target of 40 percent below 1990 levels by 2030. According to CARB, reducing GHG emissions by 40 percent below 1990 levels in 2030 ensures that California will continue its efforts to reduce carbon pollution and help to achieve federal health-based air quality standards. Setting clear targets beyond 2020 also provides market certainty to foster investment and growth in a wide array of industries throughout the State, including clean technology and clean energy. CARB is currently working to update the Scoping Plan to provide a framework for achieving the 2030 target. The updated Scoping Plan is expected to be completed and adopted by CARB in 2016 (CARB 2015).

For more information on the Senate and Assembly Bills, Executive Orders, and reports discussed above, and to view reports and research referenced above, please refer to the following websites: www.climatechange.ca.gov and www.arb.ca.gov/cc/cc.htm.

California Environmental Quality Act

Pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the *State CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted *CEQA Guidelines* provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, a variety of air districts have adopted quantitative significance thresholds for GHGs. The SCAQMD threshold, which was adopted in December 2008, considers emissions of over 10,000 MT CO_2e/year to be significant. However, the SCAQMD's threshold applies only to stationary sources and is expressly intended to apply only when the SCAQMD is the CEQA lead agency. Although not yet adopted, the SCAQMD recommends a quantitative threshold for all land use types of 3,000 MT CO_2e /year (SCAQMD, "Proposed Tier 3 Quantitative Thresholds – Option 1", September 2010). Note that no air district has the power to establish definitive thresholds that will completely relieve a lead agency of the obligation to determine significance on a case-by-case basis for a specific project.

Local Regulations

The San Bernardino Associated Governments (SANBAG) adopted the San Bernardino County Regional Greenhouse Gas Reduction Plan on March 5, 2014. The plan includes a regional greenhouse gas inventory and summarizes actions that participating jurisdictions have selected in order to reduce GHG emissions. As part of the plan, the City of Redlands (City) established a goal to reduce its community GHG emissions to a level that is 15 percent below its 2008 GHG emissions levels by 2020. Although the City will be able to exceed its stated goal using only state/county level actions, it has nevertheless committed to additional local GHG emission reduction measures and supports all applicable regional GHG emission reduction measures. Additional GHG emission reduction measures include implementing SB X7-7 to reduce water use in the City, encouraging the installation of solar energy collectors (e.g., photovoltaics) on existing housing, and working with the City's wastewater treatment provider to upgrade to more energy efficient equipment at the wastewater treatment plant.

Impact Analysis

Significance Thresholds

Based on Appendix G of the *State CEQA Guidelines*, impacts related to GHG emissions from the proposed project would be significant if the project would:

- *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or*
- *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.*

The vast majority of individual projects do not generate sufficient GHG emissions to create significant project-specific environment effects. However, the environmental effects of a project's GHG emissions can contribute incrementally to cumulative environmental effects that are significant, contributing to climate change, even if an individual project's environmental effects are limited (CEQA Guidelines, §15064[h][1]). The issue of a project's environmental effects and contribution towards climate change typically involves an analysis of whether or not a project's contribution towards climate change is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (CEQA Guidelines, §15064[h][1]).

The significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds, or consistency with respect to a regional GHG emissions reduction plan (such as a Climate Action Plan). Although not yet adopted, the SCAQMD has a recommended quantitative GHG emissions threshold for all land use types of 3,000 MT CO_2e/year (SCAQMD, "Proposed Tier 3 Quantitative Thresholds – Option 1", September 2010).

Because the SCAQMD has not formally adopted GHG emissions thresholds that apply to land use projects where the SCAQMD is not the lead agency, and no GHG emissions thresholds have been adopted by the City, the proposed project was evaluated based on the SCAQMD's recommended/preferred option GHG emissions threshold for all land use types of 3,000 MT CO_2e/year (SCAQMD, "Proposed Tier 3 Quantitative Thresholds – Option 1", September 2010).

Study Methodology

Calculations of CO_2, CH_4, and N_2O emissions are provided to identify the magnitude and nature of the proposed project's potential GHG emissions and environmental effects. The analysis focuses on CO_2, CH_4, and N_2O because these make up 98.9 percent of all GHG emissions by volume (IPCC, 2007) and are the GHG emissions that the project would emit in the largest quantities. Fluorinated gases, such as HFCs, PFCs, and SF_6, were also considered for the analysis, but because the project is a trail and greenway park development, the quantity of fluorinated gases would not be significant since fluorinated gases are primarily associated with industrial processes. Emissions of all GHGs are converted into their equivalent GWP in MT CO_2e. Small amounts of other GHGs (such as chlorofluorocarbons [CFCs]) would also be emitted; however, these other GHG emissions would not substantially add to the total GHG emissions. Calculations are based on the methodologies discussed in the California Air Pollution Control Officers Association (CAPCOA) *CEQA and Climate Change* white paper

(CAPCOA, 2008) and included the use of the California Climate Action Registry (CCAR) General Reporting Protocol (CCAR, 2009).

GHG emissions associated with the proposed project were calculated using the California Emissions Estimator Model (CalEEMod) version 2013.2.2. Because CalEEMod does not contain a *trail project* land use type a *city park* land use type was used instead, which results in conservative GHG emissions estimates resulting from increases in vehicle miles traveled (VMT), water use, energy use, solid waste, and landscape maintenance.

<u>Operational Emissions</u>

The proposed project would generate operational emissions from moving water to the site, general landscape maintenance, waste management, and vehicle miles traveled to get to the project site. Emissions associated with operation of the project were calculated using CalEEMod, which calculates CO_2, N_2O, and CH_4. Emissions from energy use would not be generated by the project and, as such are not included in the analysis below. The project would include a streetlight; however, the streetlight is already operational onsite and would not result in new emissions.

Emissions associated with area sources include consumer products, landscape maintenance, and architectural coating were calculated in CalEEMod using standard emission rates from ARB, U.S. EPA, and emission factor values provided by the local air district (CalEEMod User Guide, 2013).

Emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste (CalEEMod User Guide, 2013). Waste disposal rates by land use and overall composition of municipal solid waste in California were primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle).

Emissions related to water usage calculated in CalEEMod were based on the default electricity intensity from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Northern and Southern California.

For mobile sources, CO_2 and CH_4 emissions were also quantified in CalEEMod. Because CalEEMod does not calculate N_2O emissions from mobile sources, N_2O emissions were quantified using the California Climate Action Registry General Reporting Protocol (CAPCOA, 2009) direct emissions factors for mobile combustion. The estimate of total daily trips associated with the proposed project was based on the standard Institute of Transportation Engineers (ITE) vehicle trip rates and was calculated and extrapolated to derive total annual mileage in CalEEMod. Emission rates for N_2O emissions were based on the vehicle mix output generated by CalEEMod and the emission factors found in the California Climate Action Registry General Reporting Protocol.

A limitation of the quantitative analysis of emissions from mobile combustion is that emission models, such as CalEEMod, evaluate aggregate emissions, meaning that all vehicle trips and related emissions assigned to a project are assumed to be new trips and emissions generated by the project itself. Such models do not demonstrate, with respect to a regional air quality impact, what proportion of these emissions are actually "new" emissions, specifically attributable to the project in question. For most projects, the main contributor to regional air quality emissions is from motor vehicles; however, the quantity of vehicle trips appropriately characterized as "new" is usually uncertain as traffic associated with a project may be relocated trips from other locales. In other words, vehicle trips associated with the project may include trips relocated from other existing locations, as people begin to use the proposed project instead of similar existing land uses. Therefore, because the proportion of "new" versus relocated trips is unknown, the VMT estimate generated by CalEEMod is used as a conservative, "worst-case" estimate.

<u>Construction Emissions</u>

Although construction activity is addressed in this analysis, CAPCOA does not discuss whether any of the suggested threshold approaches adequately address impacts from temporary construction activity. As stated in the *CEQA and Climate Change* white paper, "more study is needed to make this assessment or to develop separate thresholds for construction activity" (CAPCOA, 2008). In accordance with SCAQMD's recommendation, GHG emissions from construction of the proposed project are amortized over a 30 year period and added to annual operating emissions to determine whether or not the annual GHG emissions from the proposed project would be significant.

Construction of the proposed project would generate GHG emissions, primarily due to the operation of construction equipment and truck trips. Project construction is estimated to take approximately six months. For this analysis, it was assumed that construction would commence in January 2017 and would be completed in May of 2017. Emissions associated with the construction period were estimated using CalEEMod, based on the default equipment that would be used onsite at one time. Complete CalEEMod results and assumptions, including types and numbers of construction equipment, can be viewed in the Appendix.

Project Impacts

The following summarizes the proposed project and compares calculated emissions to the SCAQMD's recommended GHG emissions threshold of 3,000 MT CO_2e (see Appendix for full CalEEMod worksheets).

<u>Construction Emissions</u>

Construction activity is assumed to occur over a period of approximately six months. Based on CalEEMod results, construction activity for the project would generate an estimated 83.5 MT CO_2e (see Table 6). Amortized over a 30-year period, the assumed life of the project, construction of the proposed project would generate approximately 2.8 MT CO_2e/year.

Table 6
Estimated Construction Emissions of Greenhouse Gases

Year	Annual Emissions MT CO_2e/year
2017	83.5
Total	**83.5**
Amortized over 30 years	2.8

See Appendix for CalEEMod Results.

Operational Emissions

Long-term emissions relate to area source emissions, energy use, solid waste, water use, and transportation. Specifically, operational emissions associated with the proposed project relate to landscape maintenance equipment, solid waste disposal, and vehicle miles traveled. Each of these operational emission sources is discussed below.

Area Source Emissions

The CalEEMod model was used to calculate direct sources of GHG emissions from the proposed project. These included consumer product use, architectural coatings, and landscape maintenance equipment. GHG emissions from area sources were calculated to be less than 0.1 MT CO_2e/year.

Energy Use

Combustion of any type of fuel emits GHG emissions directly into the atmosphere; when this occurs on a project site, the project is a direct emission source. Operation of the proposed project would not require the use of a generator. Therefore, GHG emissions would only result from mobile and area emissions associated with the project.

Solid Waste Emissions

As shown in Table 2, CalEEMod estimated the proposed project would generate less than 0.1 MT CO_2e year from solid waste.

Water Use Emissions

CalEEMod estimated that the proposed project would use approximately 2.5 million gallons of water per year, which is a conservative estimate, considering that the proposed project's water use would be limited to watering of landscaping much of which is draught tolerant. Based on the amount of electricity needed to supply this amount of water, the CalEEMod estimated the proposed project would generate approximately 8.0 MT CO_2e/year.

Transportation Emissions

CalEEMod estimates for mobile source GHG emissions were estimated using the total vehicle miles traveled (VMT) estimated in CalEEMod. Based on the CalEEMod estimates, onsite development would generate an estimated 9,654 VMT per year. As noted above, CalEEMod does not calculate N_2O emissions related to mobile sources. As such, N_2O emissions were calculated based on the project's estimated VMT using calculation methods provided by the California Climate Action Registry General Reporting Protocol (January, 2009). As shown in Table 2, the project would generate approximately 4.2 MT CO_2e/year from mobile emissions.

Combined Operational and Construction Emissions

Table 7 combines the construction, operational, and mobile source GHG emissions associated with the proposed project. Emissions resulting from construction activity (approximately 83.5 MT CO_2e) were amortized over 30 years, the anticipated life of the project, resulting in 2.8 MT CO_2e/year. The combined long-term annual emissions associated with the proposed project would total approximately 15.0 MT CO_2e/year.

Table 7
Combined Annual Emissions of Greenhouse Gases

Emission Source	Annual Emissions MT CO_2e/year
Construction	2.8
Operational	
Area	<0.1
Solid Waste	<0.1
Water	8.0
Mobile	
CO_2 and CH_4	4.4
N_2O	0.2
Total	**15.4**

Sources: See Appendix for calculations and for GHG emission factor assumptions.
Note: All numbers may not add due to rounding.

The estimated total GHG emissions from the construction and operation of the proposed project are well below the recommended SCAQMD's GHG emissions threshold of 3,000 MT CO_2e. Therefore, the GHG emissions environmental impact of the proposed project would be less than significant.

GHG Cumulative Significance

As discussed under "Local Regulations," the City of Redlands has selected a goal to reduce its community GHG emissions to a level that is 15 percent below its 2008 GHG emissions levels by 2020 as part of SANBAG's San Bernardino County Regional Greenhouse Gas Reduction Plan, released on March 5, 2014. The City of Redlands exceeds the goal using only state/county level actions, but has committed to additional GHG emissions reductions through local measures. The proposed project's consistency with local measures is described in Table 8.

Table 8
Project Consistency with SANBAG's San Bernardino County Regional Greenhouse Gas Reduction Plan

Strategy	Project Consistency
Building Energy	
Water Conveyance	
Water-4 Implement SB X7-7 SB X7-7, the Water Conservation Act of 2009, requires urban water agencies throughout California to increase conservation to achieve a statewide goal of a 20% reduction in urban per capita use (compared to nominal 2005 levels) by December 31, 2020. Each urban water retailer in the county subject to the law has established a 2020 per-capita urban water use target to meet this goal.	**Consistent** The project would be required to comply with the City's water use restrictions on time, area, frequency, and duration of specified allowable water usages. The project also includes drought tolerant landscaping throughout the project site, which would further reduce water use.

As part of the San Bernardino County Regional Greenhouse Gas Reduction Plan, the City also supports the following applicable regional measures:

- Measure Wastewater-3: Recycled Water [V] establishes the goal of 50 percent of water use for non-potable water sources, such as landscaping, to be supplied by recycled, and treated, wastewater.
- Measure Water-1: requires the adoption of voluntary CALGreen water efficiency measures for new construction, such as use of low-water irrigation systems.
- Measure Water-3: encourages the use of water-efficient landscaping practices.
- Measure Land Use-1: establishes city-wide tree planting goal to decrease heat island effects.
- Measure Off-Road-2: limits the idling time for heavy-duty construction equipment, beyond CARB or local air district regulations, to 3 minutes.
- Measure Off-Road-3: reduces the use of gasoline-powered landscaping equipment use and/or the number and operating time of such equipment, and requires a certain percentage of participating cities' landscaping equipment to be electric by 2020 and 100 percent by 2030.

The proposed project would not conflict with any of these regional regulations intended to reduce GHG emissions.

As discussed under "Greenhouse Gas Emissions Background," the 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. The strategies include the reduction of passenger and light duty truck emissions, reduction of energy and water use, and increased recycling. In addition, in 2008 the California Attorney General published Addressing Global Warming Impacts at the Local Agency Level (California Attorney General's Office, 2008). The proposed project would meet many objectives set forth in the CAT Report and by the Attorney General's Office through compliance with City of Redland standards as described in Table 9 and Table 10. Therefore, the proposed project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Table 9
Project Consistency with 2006 CAT Report
Greenhouse Gas Emission Reduction Strategies

Strategy	Project Consistency
California Air Resources Board	
Vehicle Climate Change Standards AB 143 (Pavley) required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by the ARB I September 2004.	**Consistent** The vehicles that travel to and from the project site on public roadways would be in compliance with ARB vehicle standards that are in effect at the time of vehicle purchase.
Diesel Anti-Idling In July 2004, the ARB adopted a measure to limit diesel-fueled commercial motor vehicle idling	**Consistent** Current state law restricts diesel truck idling to five minutes or less. Diesel trucks operating on the project site during construction are subject to this statewide law.
Alternative Fuels: Biodiesel Blends ARB would develop regulations to require the use of 1 to 4 percent biodiesel displacement of California diesel fuel.	**Consistent** The ARB is in the process of developing regulations that would increase the use of biodiesel for transportation uses. Currently, it is unknown when such regulations would be implemented; however, it is expected that upon implementation of such a regulation that would require increase biodiesel blends, the diesel fueled vehicles that travel to and from the project site would be replaced by vehicles using biodiesel.
Heavy-Duty Vehicle Emission Reduction Measures Increased efficiency in the design of heavy duty vehicles and an education program for the heavy-duty vehicle sector.	**Consistent** The heavy-duty vehicles that travel to and from the project site on public roadways would be subject to all applicable ARB efficiency standards that are in effect at the time of vehicle manufacture.
Achieving 50% Statewide Recycling Goal Achieving the State's 50% waste reduction mandate as established by the Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989), will reduce climate change emissions, associated with energy intensive material extraction and production, as well as methane emission from landfills. A per-capita diversion rate of 65% has been achieved on a statewide basis, consistent with AB 939.	**Consistent** The City of Redlands has enacted numerous programs to achieve the mandated 50% diversion. It is anticipated that the proposed project would participate in the City's waste diversion programs and would similarly divert at least 50% of its solid waste. The project would also be subject to all applicable State and City requirements for solid waste reduction as they change in the future.
Department of Forestry	
Urban Forestry A new statewide goal of planning 5 million trees in urban areas by 2020 would be achieved through the expansion of local urban forestry programs.	**Consistent** The landscaping proposed for the project would include tree planting trees and would therefore help move toward this statewide goal.
Department of Water Resources	
Water Use Efficiency Approximately 19 percent of all electricity, 30 percent of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Increasing the efficiency of water transport and reducing water use would reduce greenhouse gas emissions.	**Consistent** The proposed project would include drought-tolerant landscaping.

Table 101
Project Consistency with Applicable Attorney General Greenhouse Gas Reduction Measures

Strategy	Project Consistency
Transportation-Related Emissions	
Diesel Anti-Idling Set specific limits on idling time for commercial vehicles, including delivery vehicles.	**Consistent** Currently, the ARB's Airborne Toxic Control Measure (ATCM) to Limit Diesel-Fueled Commercial Motor Vehicle Idling restricts diesel truck idling to five minutes or less. Diesel powered construction vehicles are subject to this regulation and thus would comply with the applicable provisions.
Transportation Emissions Reduction Incorporate bike lanes into the project circulation system.	**Consistent** The trail and greenway system would include bike racks and provide a trial for cyclists to utilize.
Solid Waste and Energy Emissions	
Solid Waste Reduction Strategy Project construction shall require reuse and recycling of construction and demolition waste.	**Consistent** It is anticipated that the proposed project would participate in the City's waste diversion programs and would similarly divert at least 50% of its solid waste from construction. The project would also be subject to all applicable State and City requirements for solid waste reduction as they change in the future.
Water Use Efficiency Require measures that reduce the amount of water sent to the sewer system – see examples in CAT standard above. Reduction in water volume sent to the sewer system means less water has to be treated and pumped to the end user, thereby saving energy.	**Consistent** As described above, the proposed project would include water saving features such as a landscape palette that includes drought tolerant/ low water use species.

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Appendix A

Air Quality and Greenhouse Gas Emissions Modeling Results

Zanja Trail and Greenway Park

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	2.11	Acre	2.11	91,911.60	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 31

Climate Zone 10 **Operational Year** 2014

Utility Company Southern California Edison

CO2 Intensity (lb/MWhr) 630.89 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Grading - Site is approx 2.11 acres total

Architectural Coating - Use of low VOC paint (150 g/L for non-flat) coatings as req by SCAQMD Rule 1113

Area Coating - Use of low VOC paint (150 g/L for non-flat coatings) as req by SCAQMD Rule 1113

Area Mitigation - Use of low VOC paint (150 g/L for non-flat) coatings as req by SCAQMD Rule 1113

Waste Mitigation -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	150.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	150
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	250	150
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	220.00	20.00
tblConstructionPhase	NumDays	6.00	20.00
tblConstructionPhase	NumDays	3.00	20.00
tblConstructionPhase	PhaseEndDate	5/5/2017	4/28/2017
tblConstructionPhase	PhaseStartDate	3/25/2017	3/27/2017
tblConstructionPhase	PhaseStartDate	2/25/2017	2/27/2017
tblConstructionPhase	PhaseStartDate	1/28/2017	1/30/2017
tblConstructionPhase	PhaseStartDate	4/22/2017	4/17/2017
tblGrading	AcresOfGrading	10.00	2.11
tblGrading	AcresOfGrading	30.00	2.11

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.7399	0.9168	0.6591	9.4000e-004	0.0713	0.0512	0.1226	0.0357	0.0478	0.0836	0.0000	83.0967	83.0967	0.0204	0.0000	83.5256
Total	**0.7399**	**0.9168**	**0.6591**	**9.4000e-004**	**0.0713**	**0.0512**	**0.1226**	**0.0357**	**0.0478**	**0.0836**	**0.0000**	**83.0967**	**83.0967**	**0.0204**	**0.0000**	**83.5256**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.7399	0.9168	0.6591	9.4000e-004	0.0370	0.0512	0.0882	0.0174	0.0478	0.0652	0.0000	83.0966	83.0966	0.0204	0.0000	83.5255
Total	**0.7399**	**0.9168**	**0.6591**	**9.4000e-004**	**0.0370**	**0.0512**	**0.0882**	**0.0174**	**0.0478**	**0.0652**	**0.0000**	**83.0966**	**83.0966**	**0.0204**	**0.0000**	**83.5255**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**48.16**	**0.00**	**28.03**	**51.34**	**0.00**	**21.95**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4280	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	6.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	2.5700e-003	7.4200e-003	0.0288	5.0000e-005	3.6600e-003	1.1000e-004	3.7600e-003	9.8000e-004	1.0000e-004	1.0800e-003	0.0000	4.4762	4.4762	2.1000e-004	0.0000	4.4806
Waste						0.0000	0.0000		0.0000	0.0000	0.0365	0.0000	0.0365	2.1600e-003	0.0000	0.0819
Water						0.0000	0.0000		0.0000	0.0000	0.0000	7.9929	7.9929	3.7000e-004	8.0000e-005	8.0242
Total	**0.4306**	**7.4200e-003**	**0.0288**	**5.0000e-005**	**3.6600e-003**	**1.1000e-004**	**3.7600e-003**	**9.8000e-004**	**1.0000e-004**	**1.0800e-003**	**0.0365**	**12.4692**	**12.5057**	**2.7400e-003**	**8.0000e-005**	**12.5867**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3960	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	6.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	2.5700e-003	7.4200e-003	0.0288	5.0000e-005	3.6600e-003	1.1000e-004	3.7600e-003	9.8000e-004	1.0000e-004	1.0800e-003	0.0000	4.4762	4.4762	2.1000e-004	0.0000	4.4806
Waste						0.0000	0.0000		0.0000	0.0000	0.0365	0.0000	0.0365	2.1600e-003	0.0000	0.0819
Water						0.0000	0.0000		0.0000	0.0000	0.0000	7.9929	7.9929	3.7000e-004	8.0000e-005	8.0242
Total	**0.3986**	**7.4200e-003**	**0.0288**	**5.0000e-005**	**3.6600e-003**	**1.1000e-004**	**3.7600e-003**	**9.8000e-004**	**1.0000e-004**	**1.0800e-003**	**0.0365**	**12.4692**	**12.5057**	**2.7400e-003**	**8.0000e-005**	**12.5867**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**7.42**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/2/2017	1/27/2017	5	20	
2	Grading	Grading	1/30/2017	2/24/2017	5	20	
3	Building Construction	Building Construction	2/27/2017	3/24/2017	5	20	
4	Architectural Coating	Architectural Coating	3/27/2017	4/21/2017	5	20	
5	Paving	Paving	4/17/2017	4/28/2017	5	10	

Acres of Grading (Site Preparation Phase): 2.11

Acres of Grading (Grading Phase): 2.11

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 137,867; Non-Residential Outdoor: 45,956 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Scrapers	1	8.00	361	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	226	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	39.00	15.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1200e-003	0.0000	1.1200e-003	1.2000e-004	0.0000	1.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0253	0.2862	0.1713	2.4000e-004		0.0140	0.0140		0.0129	0.0129	0.0000	22.1302	22.1302	6.7800e-003	0.0000	22.2726
Total	**0.0253**	**0.2862**	**0.1713**	**2.4000e-004**	**1.1200e-003**	**0.0140**	**0.0151**	**1.2000e-004**	**0.0129**	**0.0130**	**0.0000**	**22.1302**	**22.1302**	**6.7800e-003**	**0.0000**	**22.2726**

3.2 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	4.3000e-004	4.4200e-003	1.0000e-005	8.8000e-004	1.0000e-005	8.8000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7908	0.7908	4.0000e-005	0.0000	0.7916
Total	**2.9000e-004**	**4.3000e-004**	**4.4200e-003**	**1.0000e-005**	**8.8000e-004**	**1.0000e-005**	**8.8000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**0.7908**	**0.7908**	**4.0000e-005**	**0.0000**	**0.7916**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.0000e-004	0.0000	5.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0253	0.2862	0.1713	2.4000e-004		0.0140	0.0140		0.0129	0.0129	0.0000	22.1302	22.1302	6.7800e-003	0.0000	22.2726
Total	**0.0253**	**0.2862**	**0.1713**	**2.4000e-004**	**5.0000e-004**	**0.0140**	**0.0145**	**5.0000e-005**	**0.0129**	**0.0129**	**0.0000**	**22.1302**	**22.1302**	**6.7800e-003**	**0.0000**	**22.2726**

3.2 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	4.3000e-004	4.4200e-003	1.0000e-005	8.8000e-004	1.0000e-005	8.8000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7908	0.7908	4.0000e-005	0.0000	0.7916
Total	**2.9000e-004**	**4.3000e-004**	**4.4200e-003**	**1.0000e-005**	**8.8000e-004**	**1.0000e-005**	**8.8000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**0.7908**	**0.7908**	**4.0000e-005**	**0.0000**	**0.7916**

3.3 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0613	0.0000	0.0613	0.0332	0.0000	0.0332	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0270	0.2816	0.1897	2.1000e-004		0.0156	0.0156		0.0143	0.0143	0.0000	19.0924	19.0924	5.8500e-003	0.0000	19.2152
Total	**0.0270**	**0.2816**	**0.1897**	**2.1000e-004**	**0.0613**	**0.0156**	**0.0769**	**0.0332**	**0.0143**	**0.0475**	**0.0000**	**19.0924**	**19.0924**	**5.8500e-003**	**0.0000**	**19.2152**

3.3 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	5.3000e-004	5.5300e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9884	0.9884	5.0000e-005	0.0000	0.9895
Total	**3.6000e-004**	**5.3000e-004**	**5.5300e-003**	**1.0000e-005**	**1.1000e-003**	**1.0000e-005**	**1.1100e-003**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9884**	**0.9884**	**5.0000e-005**	**0.0000**	**0.9895**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0276	0.0000	0.0276	0.0150	0.0000	0.0150	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0270	0.2816	0.1897	2.1000e-004		0.0156	0.0156		0.0143	0.0143	0.0000	19.0924	19.0924	5.8500e-003	0.0000	19.2152
Total	**0.0270**	**0.2816**	**0.1897**	**2.1000e-004**	**0.0276**	**0.0156**	**0.0432**	**0.0150**	**0.0143**	**0.0293**	**0.0000**	**19.0924**	**19.0924**	**5.8500e-003**	**0.0000**	**19.2152**

3.3 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	5.3000e-004	5.5300e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9884	0.9884	5.0000e-005	0.0000	0.9895
Total	**3.6000e-004**	**5.3000e-004**	**5.5300e-003**	**1.0000e-005**	**1.1000e-003**	**1.0000e-005**	**1.1100e-003**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9884**	**0.9884**	**5.0000e-005**	**0.0000**	**0.9895**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0333	0.2286	0.1625	2.5000e-004		0.0146	0.0146		0.0140	0.0140	0.0000	21.1814	21.1814	4.7100e-003	0.0000	21.2803
Total	**0.0333**	**0.2286**	**0.1625**	**2.5000e-004**		**0.0146**	**0.0146**		**0.0140**	**0.0140**	**0.0000**	**21.1814**	**21.1814**	**4.7100e-003**	**0.0000**	**21.2803**

3.4 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2200e-003	0.0124	0.0166	3.0000e-005	9.2000e-004	1.9000e-004	1.1100e-003	2.6000e-004	1.7000e-004	4.4000e-004	0.0000	2.9108	2.9108	2.0000e-005	0.0000	2.9113
Worker	1.4000e-003	2.0700e-003	0.0216	5.0000e-005	4.2800e-003	4.0000e-005	4.3100e-003	1.1400e-003	3.0000e-005	1.1700e-003	0.0000	3.8549	3.8549	2.0000e-004	0.0000	3.8591
Total	**2.6200e-003**	**0.0145**	**0.0381**	**8.0000e-005**	**5.2000e-003**	**2.3000e-004**	**5.4200e-003**	**1.4000e-003**	**2.0000e-004**	**1.6100e-003**	**0.0000**	**6.7657**	**6.7657**	**2.2000e-004**	**0.0000**	**6.7704**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0333	0.2286	0.1625	2.5000e-004		0.0146	0.0146		0.0140	0.0140	0.0000	21.1814	21.1814	4.7100e-003	0.0000	21.2802
Total	**0.0333**	**0.2286**	**0.1625**	**2.5000e-004**		**0.0146**	**0.0146**		**0.0140**	**0.0140**	**0.0000**	**21.1814**	**21.1814**	**4.7100e-003**	**0.0000**	**21.2802**

3.4 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2200e-003	0.0124	0.0166	3.0000e-005	9.2000e-004	1.9000e-004	1.1100e-003	2.6000e-004	1.7000e-004	4.4000e-004	0.0000	2.9108	2.9108	2.0000e-005	0.0000	2.9113
Worker	1.4000e-003	2.0700e-003	0.0216	5.0000e-005	4.2800e-003	4.0000e-005	4.3100e-003	1.1400e-003	3.0000e-005	1.1700e-003	0.0000	3.8549	3.8549	2.0000e-004	0.0000	3.8591
Total	**2.6200e-003**	**0.0145**	**0.0381**	**8.0000e-005**	**5.2000e-003**	**2.3000e-004**	**5.4200e-003**	**1.4000e-003**	**2.0000e-004**	**1.6100e-003**	**0.0000**	**6.7657**	**6.7657**	**2.2000e-004**	**0.0000**	**6.7704**

3.5 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6390					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.3200e-003	0.0219	0.0187	3.0000e-005		1.7300e-003	1.7300e-003		1.7300e-003	1.7300e-003	0.0000	2.5533	2.5533	2.7000e-004	0.0000	2.5589
Total	**0.6423**	**0.0219**	**0.0187**	**3.0000e-005**		**1.7300e-003**	**1.7300e-003**		**1.7300e-003**	**1.7300e-003**	**0.0000**	**2.5533**	**2.5533**	**2.7000e-004**	**0.0000**	**2.5589**

3.5 Architectural Coating - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	4.3000e-004	4.4200e-003	1.0000e-005	8.8000e-004	1.0000e-005	8.8000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7908	0.7908	4.0000e-005	0.0000	0.7916
Total	**2.9000e-004**	**4.3000e-004**	**4.4200e-003**	**1.0000e-005**	**8.8000e-004**	**1.0000e-005**	**8.8000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**0.7908**	**0.7908**	**4.0000e-005**	**0.0000**	**0.7916**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6390					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.3200e-003	0.0219	0.0187	3.0000e-005		1.7300e-003	1.7300e-003		1.7300e-003	1.7300e-003	0.0000	2.5533	2.5533	2.7000e-004	0.0000	2.5589
Total	**0.6423**	**0.0219**	**0.0187**	**3.0000e-005**		**1.7300e-003**	**1.7300e-003**		**1.7300e-003**	**1.7300e-003**	**0.0000**	**2.5533**	**2.5533**	**2.7000e-004**	**0.0000**	**2.5589**

3.5 Architectural Coating - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	4.3000e-004	4.4200e-003	1.0000e-005	8.8000e-004	1.0000e-005	8.8000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7908	0.7908	4.0000e-005	0.0000	0.7916
Total	**2.9000e-004**	**4.3000e-004**	**4.4200e-003**	**1.0000e-005**	**8.8000e-004**	**1.0000e-005**	**8.8000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**0.7908**	**0.7908**	**4.0000e-005**	**0.0000**	**0.7916**

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.2000e-003	0.0823	0.0603	9.0000e-005		5.1100e-003	5.1100e-003		4.7100e-003	4.7100e-003	0.0000	8.0625	8.0625	2.4200e-003	0.0000	8.1134
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.2000e-003**	**0.0823**	**0.0603**	**9.0000e-005**		**5.1100e-003**	**5.1100e-003**		**4.7100e-003**	**4.7100e-003**	**0.0000**	**8.0625**	**8.0625**	**2.4200e-003**	**0.0000**	**8.1134**

3.6 Paving - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7000e-004	4.0000e-004	4.1400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7413	0.7413	4.0000e-005	0.0000	0.7421
Total	**2.7000e-004**	**4.0000e-004**	**4.1400e-003**	**1.0000e-005**	**8.2000e-004**	**1.0000e-005**	**8.3000e-004**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7413**	**0.7413**	**4.0000e-005**	**0.0000**	**0.7421**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.2000e-003	0.0823	0.0603	9.0000e-005		5.1100e-003	5.1100e-003		4.7100e-003	4.7100e-003	0.0000	8.0625	8.0625	2.4200e-003	0.0000	8.1134
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.2000e-003**	**0.0823**	**0.0603**	**9.0000e-005**		**5.1100e-003**	**5.1100e-003**		**4.7100e-003**	**4.7100e-003**	**0.0000**	**8.0625**	**8.0625**	**2.4200e-003**	**0.0000**	**8.1134**

3.6 Paving - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7000e-004	4.0000e-004	4.1400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7413	0.7413	4.0000e-005	0.0000	0.7421
Total	**2.7000e-004**	**4.0000e-004**	**4.1400e-003**	**1.0000e-005**	**8.2000e-004**	**1.0000e-005**	**8.3000e-004**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7413**	**0.7413**	**4.0000e-005**	**0.0000**	**0.7421**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.5700e-003	7.4200e-003	0.0288	5.0000e-005	3.6600e-003	1.1000e-004	3.7600e-003	9.8000e-004	1.0000e-004	1.0800e-003	0.0000	4.4762	4.4762	2.1000e-004	0.0000	4.4806
Unmitigated	2.5700e-003	7.4200e-003	0.0288	5.0000e-005	3.6600e-003	1.1000e-004	3.7600e-003	9.8000e-004	1.0000e-004	1.0800e-003	0.0000	4.4762	4.4762	2.1000e-004	0.0000	4.4806

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	3.35	3.35	3.35	9,654	9,654
Total	3.35	3.35	3.35	9,654	9,654

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.516610	0.060517	0.179979	0.140587	0.041566	0.006616	0.015092	0.027587	0.001923	0.002530	0.004314	0.000602	0.002075

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3960	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	6.0000e-005
Unmitigated	0.4280	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	6.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0959					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3321					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	6.0000e-005
Total	**0.4280**	**0.0000**	**3.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0000**	**6.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0639					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3321					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	6.0000e-005
Total	**0.3960**	**0.0000**	**3.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0000**	**6.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.9929	3.7000e-004	8.0000e-005	8.0242
Unmitigated	7.9929	3.7000e-004	8.0000e-005	8.0242

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 2.51403	7.9929	3.7000e-004	8.0000e-005	8.0242
Total		**7.9929**	**3.7000e-004**	**8.0000e-005**	**8.0242**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 2.51403	7.9929	3.7000e-004	8.0000e-005	8.0242
Total		**7.9929**	**3.7000e-004**	**8.0000e-005**	**8.0242**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0365	2.1600e-003	0.0000	0.0819
Unmitigated	0.0365	2.1600e-003	0.0000	0.0819

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.18	0.0365	2.1600e-003	0.0000	0.0819
Total		**0.0365**	**2.1600e-003**	**0.0000**	**0.0819**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.18	0.0365	2.1600e-003	0.0000	0.0819
Total		**0.0365**	**2.1600e-003**	**0.0000**	**0.0819**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Zanja Trail and Greenway Park

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	2.11	Acre	2.11	91,911.60	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 31

Climate Zone 10 **Operational Year** 2014

Utility Company Southern California Edison

CO2 Intensity (lb/MWhr) 630.89 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Grading - Site is approx 2.11 acres total

Architectural Coating - Use of low VOC paint (150 g/L for non-flat) coatings as req by SCAQMD Rule 1113

Area Coating - Use of low VOC paint (150 g/L for non-flat coatings) as req by SCAQMD Rule 1113

Area Mitigation - Use of low VOC paint (150 g/L for non-flat) coatings as req by SCAQMD Rule 1113

Waste Mitigation -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	150.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	150
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	250	150
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	220.00	20.00
tblConstructionPhase	NumDays	6.00	20.00
tblConstructionPhase	NumDays	3.00	20.00
tblConstructionPhase	PhaseEndDate	5/5/2017	4/28/2017
tblConstructionPhase	PhaseStartDate	3/25/2017	3/27/2017
tblConstructionPhase	PhaseStartDate	2/25/2017	2/27/2017
tblConstructionPhase	PhaseStartDate	1/28/2017	1/30/2017
tblConstructionPhase	PhaseStartDate	4/22/2017	4/17/2017
tblGrading	AcresOfGrading	10.00	2.11
tblGrading	AcresOfGrading	30.00	2.11

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	65.9600	28.6606	19.9458	0.0337	6.2458	1.5559	7.8017	3.3520	1.4315	4.7834	0.0000	3,103.0335	3,103.0335	0.7519	0.0000	3,118.8242
Total	**65.9600**	**28.6606**	**19.9458**	**0.0337**	**6.2458**	**1.5559**	**7.8017**	**3.3520**	**1.4315**	**4.7834**	**0.0000**	**3,103.0335**	**3,103.0335**	**0.7519**	**0.0000**	**3,118.8242**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	65.9600	28.6606	19.9458	0.0337	2.8721	1.5559	4.4280	1.5247	1.4315	2.9561	0.0000	3,103.0335	3,103.0335	0.7519	0.0000	3,118.8242
Total	**65.9600**	**28.6606**	**19.9458**	**0.0337**	**2.8721**	**1.5559**	**4.4280**	**1.5247**	**1.4315**	**2.9561**	**0.0000**	**3,103.0335**	**3,103.0335**	**0.7519**	**0.0000**	**3,118.8242**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	54.02	0.00	43.24	54.51	0.00	38.20	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.3451	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.6000e-004	4.6000e-004	0.0000		4.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0143	0.0380	0.1588	3.0000e-004	0.0205	6.0000e-004	0.0211	5.4600e-003	5.5000e-004	6.0100e-003		28.1985	28.1985	1.2700e-003		28.2251
Total	**2.3594**	**0.0380**	**0.1590**	**3.0000e-004**	**0.0205**	**6.0000e-004**	**0.0211**	**5.4600e-003**	**5.5000e-004**	**6.0100e-003**		**28.1989**	**28.1989**	**1.2700e-003**	**0.0000**	**28.2256**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.1700	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.6000e-004	4.6000e-004	0.0000		4.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0143	0.0380	0.1588	3.0000e-004	0.0205	6.0000e-004	0.0211	5.4600e-003	5.5000e-004	6.0100e-003		28.1985	28.1985	1.2700e-003		28.2251
Total	**2.1843**	**0.0380**	**0.1590**	**3.0000e-004**	**0.0205**	**6.0000e-004**	**0.0211**	**5.4600e-003**	**5.5000e-004**	**6.0100e-003**		**28.1989**	**28.1989**	**1.2700e-003**	**0.0000**	**28.2256**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	7.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/2/2017	1/27/2017	5	20	
2	Grading	Grading	1/30/2017	2/24/2017	5	20	
3	Building Construction	Building Construction	2/27/2017	3/24/2017	5	20	
4	Architectural Coating	Architectural Coating	3/27/2017	4/21/2017	5	20	
5	Paving	Paving	4/17/2017	4/28/2017	5	10	

Acres of Grading (Site Preparation Phase): 2.11

Acres of Grading (Grading Phase): 2.11

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 137,867; Non-Residential Outdoor: 45,956 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Scrapers	1	8.00	361	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	226	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	39.00	15.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1119	0.0000	0.1119	0.0121	0.0000	0.0121			0.0000			0.0000
Off-Road	2.5289	28.6230	17.1310	0.0238		1.3967	1.3967		1.2850	1.2850		2,439.436 0	2,439.436 0	0.7474		2,455.132 2
Total	**2.5289**	**28.6230**	**17.1310**	**0.0238**	**0.1119**	**1.3967**	**1.5086**	**0.0121**	**1.2850**	**1.2971**		**2,439.436 0**	**2,439.436 0**	**0.7474**		**2,455.132 2**

3.2 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0299	0.0376	0.4696	1.1300e-003	0.0894	7.2000e-004	0.0901	0.0237	6.6000e-004	0.0244		91.5246	91.5246	4.5000e-003		91.6192
Total	**0.0299**	**0.0376**	**0.4696**	**1.1300e-003**	**0.0894**	**7.2000e-004**	**0.0901**	**0.0237**	**6.6000e-004**	**0.0244**		**91.5246**	**91.5246**	**4.5000e-003**		**91.6192**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0504	0.0000	0.0504	5.4400e-003	0.0000	5.4400e-003			0.0000			0.0000
Off-Road	2.5289	28.6230	17.1310	0.0238		1.3967	1.3967		1.2850	1.2850	0.0000	2,439.4360	2,439.4360	0.7474		2,455.1322
Total	**2.5289**	**28.6230**	**17.1310**	**0.0238**	**0.0504**	**1.3967**	**1.4471**	**5.4400e-003**	**1.2850**	**1.2904**	**0.0000**	**2,439.4360**	**2,439.4360**	**0.7474**		**2,455.1322**

3.2 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0299	0.0376	0.4696	1.1300e-003	0.0894	7.2000e-004	0.0901	0.0237	6.6000e-004	0.0244		91.5246	91.5246	4.5000e-003		91.6192
Total	**0.0299**	**0.0376**	**0.4696**	**1.1300e-003**	**0.0894**	**7.2000e-004**	**0.0901**	**0.0237**	**6.6000e-004**	**0.0244**		**91.5246**	**91.5246**	**4.5000e-003**		**91.6192**

3.3 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1340	0.0000	6.1340	3.3223	0.0000	3.3223			0.0000			0.0000
Off-Road	2.6973	28.1608	18.9679	0.0206		1.5550	1.5550		1.4306	1.4306		2,104.5737	2,104.5737	0.6448		2,118.1153
Total	**2.6973**	**28.1608**	**18.9679**	**0.0206**	**6.1340**	**1.5550**	**7.6890**	**3.3223**	**1.4306**	**4.7529**		**2,104.5737**	**2,104.5737**	**0.6448**		**2,118.1153**

3.3 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0374	0.0470	0.5870	1.4200e-003	0.1118	9.0000e-004	0.1127	0.0296	8.3000e-004	0.0305		114.4058	114.4058	5.6300e-003		114.5239
Total	**0.0374**	**0.0470**	**0.5870**	**1.4200e-003**	**0.1118**	**9.0000e-004**	**0.1127**	**0.0296**	**8.3000e-004**	**0.0305**		**114.4058**	**114.4058**	**5.6300e-003**		**114.5239**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7603	0.0000	2.7603	1.4950	0.0000	1.4950			0.0000			0.0000
Off-Road	2.6973	28.1608	18.9679	0.0206		1.5550	1.5550		1.4306	1.4306	0.0000	2,104.5737	2,104.5737	0.6448		2,118.1153
Total	**2.6973**	**28.1608**	**18.9679**	**0.0206**	**2.7603**	**1.5550**	**4.3153**	**1.4950**	**1.4306**	**2.9257**	**0.0000**	**2,104.5737**	**2,104.5737**	**0.6448**		**2,118.1153**

3.3 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0374	0.0470	0.5870	1.4200e-003	0.1118	9.0000e-004	0.1127	0.0296	8.3000e-004	0.0305		114.4058	114.4058	5.6300e-003		114.5239
Total	**0.0374**	**0.0470**	**0.5870**	**1.4200e-003**	**0.1118**	**9.0000e-004**	**0.1127**	**0.0296**	**8.3000e-004**	**0.0305**		**114.4058**	**114.4058**	**5.6300e-003**		**114.5239**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.3275	22.8585	16.2492	0.0249		1.4621	1.4621		1.3998	1.3998		2,334.8503	2,334.8503	0.5189		2,345.7479
Total	**3.3275**	**22.8585**	**16.2492**	**0.0249**		**1.4621**	**1.4621**		**1.3998**	**1.3998**		**2,334.8503**	**2,334.8503**	**0.5189**		**2,345.7479**

3.4 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1149	1.1862	1.4071	3.2600e-003	0.0938	0.0189	0.1127	0.0267	0.0174	0.0441		322.0007	322.0007	2.2700e-003		322.0484
Worker	0.1460	0.1834	2.2894	5.5200e-003	0.4359	3.5100e-003	0.4394	0.1156	3.2300e-003	0.1188		446.1824	446.1824	0.0220		446.6434
Total	**0.2608**	**1.3695**	**3.6966**	**8.7800e-003**	**0.5297**	**0.0224**	**0.5521**	**0.1423**	**0.0206**	**0.1629**		**768.1832**	**768.1832**	**0.0242**		**768.6918**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.3275	22.8585	16.2492	0.0249		1.4621	1.4621		1.3998	1.3998	0.0000	2,334.8503	2,334.8503	0.5189		2,345.7479
Total	**3.3275**	**22.8585**	**16.2492**	**0.0249**		**1.4621**	**1.4621**		**1.3998**	**1.3998**	**0.0000**	**2,334.8503**	**2,334.8503**	**0.5189**		**2,345.7479**

3.4 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1149	1.1862	1.4071	3.2600e-003	0.0938	0.0189	0.1127	0.0267	0.0174	0.0441		322.0007	322.0007	2.2700e-003		322.0484
Worker	0.1460	0.1834	2.2894	5.5200e-003	0.4359	3.5100e-003	0.4394	0.1156	3.2300e-003	0.1188		446.1824	446.1824	0.0220		446.6434
Total	**0.2608**	**1.3695**	**3.6966**	**8.7800e-003**	**0.5297**	**0.0224**	**0.5521**	**0.1423**	**0.0206**	**0.1629**		**768.1832**	**768.1832**	**0.0242**		**768.6918**

3.5 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	63.9015					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733		281.4481	281.4481	0.0297		282.0721
Total	**64.2338**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**		**281.4481**	**281.4481**	**0.0297**		**282.0721**

3.5 Architectural Coating - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0299	0.0376	0.4696	1.1300e-003	0.0894	7.2000e-004	0.0901	0.0237	6.6000e-004	0.0244		91.5246	91.5246	4.5000e-003		91.6192
Total	**0.0299**	**0.0376**	**0.4696**	**1.1300e-003**	**0.0894**	**7.2000e-004**	**0.0901**	**0.0237**	**6.6000e-004**	**0.0244**		**91.5246**	**91.5246**	**4.5000e-003**		**91.6192**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	63.9015					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733	0.0000	281.4481	281.4481	0.0297		282.0721
Total	**64.2338**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**	**0.0000**	**281.4481**	**281.4481**	**0.0297**		**282.0721**

3.5 Architectural Coating - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0299	0.0376	0.4696	1.1300e-003	0.0894	7.2000e-004	0.0901	0.0237	6.6000e-004	0.0244		91.5246	91.5246	4.5000e-003		91.6192
Total	**0.0299**	**0.0376**	**0.4696**	**1.1300e-003**	**0.0894**	**7.2000e-004**	**0.0901**	**0.0237**	**6.6000e-004**	**0.0244**		**91.5246**	**91.5246**	**4.5000e-003**		**91.6192**

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6402	16.4619	12.0566	0.0176		1.0230	1.0230		0.9423	0.9423		1,777.4745	1,777.4745	0.5344		1,788.6966
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6402**	**16.4619**	**12.0566**	**0.0176**		**1.0230**	**1.0230**		**0.9423**	**0.9423**		**1,777.4745**	**1,777.4745**	**0.5344**		**1,788.6966**

3.6 Paving - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0561	0.0705	0.8806	2.1200e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2400e-003	0.0457		171.6086	171.6086	8.4400e-003		171.7859
Total	**0.0561**	**0.0705**	**0.8806**	**2.1200e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2400e-003**	**0.0457**		**171.6086**	**171.6086**	**8.4400e-003**		**171.7859**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6402	16.4619	12.0566	0.0176		1.0230	1.0230		0.9423	0.9423	0.0000	1,777.474 5	1,777.474 5	0.5344		1,788.696 6
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6402**	**16.4619**	**12.0566**	**0.0176**		**1.0230**	**1.0230**		**0.9423**	**0.9423**	**0.0000**	**1,777.474 5**	**1,777.474 5**	**0.5344**		**1,788.696 6**

3.6 Paving - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0561	0.0705	0.8806	2.1200e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2400e-003	0.0457		171.6086	171.6086	8.4400e-003		171.7859
Total	**0.0561**	**0.0705**	**0.8806**	**2.1200e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2400e-003**	**0.0457**		**171.6086**	**171.6086**	**8.4400e-003**		**171.7859**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0143	0.0380	0.1588	3.0000e-004	0.0205	6.0000e-004	0.0211	5.4600e-003	5.5000e-004	6.0100e-003		28.1985	28.1985	1.2700e-003		28.2251
Unmitigated	0.0143	0.0380	0.1588	3.0000e-004	0.0205	6.0000e-004	0.0211	5.4600e-003	5.5000e-004	6.0100e-003		28.1985	28.1985	1.2700e-003		28.2251

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	3.35	3.35	3.35	9,654	9,654
Total	3.35	3.35	3.35	9,654	9,654

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.516610	0.060517	0.179979	0.140587	0.041566	0.006616	0.015092	0.027587	0.001923	0.002530	0.004314	0.000602	0.002075

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.1700	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.6000e-004	4.6000e-004	0.0000		4.9000e-004
Unmitigated	2.3451	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.6000e-004	4.6000e-004	0.0000		4.9000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5252					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8199					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.0000e-005	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.6000e-004	4.6000e-004	0.0000		4.9000e-004
Total	**2.3451**	**0.0000**	**2.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**4.6000e-004**	**4.6000e-004**	**0.0000**		**4.9000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3502					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8199					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.0000e-005	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.6000e-004	4.6000e-004	0.0000		4.9000e-004
Total	**2.1700**	**0.0000**	**2.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**4.6000e-004**	**4.6000e-004**	**0.0000**		**4.9000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Zanja Trail and Greenway Park

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	2.11	Acre	2.11	91,911.60	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2014
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Grading - Site is approx 2.11 acres total

Architectural Coating - Use of low VOC paint (150 g/L for non-flat) coatings as req by SCAQMD Rule 1113

Area Coating - Use of low VOC paint (150 g/L for non-flat coatings) as req by SCAQMD Rule 1113

Area Mitigation - Use of low VOC paint (150 g/L for non-flat) coatings as req by SCAQMD Rule 1113

Waste Mitigation -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	150.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	150
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	250	150
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	220.00	20.00
tblConstructionPhase	NumDays	6.00	20.00
tblConstructionPhase	NumDays	3.00	20.00
tblConstructionPhase	PhaseEndDate	5/5/2017	4/28/2017
tblConstructionPhase	PhaseStartDate	3/25/2017	3/27/2017
tblConstructionPhase	PhaseStartDate	2/25/2017	2/27/2017
tblConstructionPhase	PhaseStartDate	1/28/2017	1/30/2017
tblConstructionPhase	PhaseStartDate	4/22/2017	4/17/2017
tblGrading	AcresOfGrading	10.00	2.11
tblGrading	AcresOfGrading	30.00	2.11

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	65.9617	28.6643	20.0570	0.0333	6.2458	1.5559	7.8017	3.3520	1.4315	4.7834	0.0000	3,072.5560	3,072.5560	0.7519	0.0000	3,088.3468
Total	**65.9617**	**28.6643**	**20.0570**	**0.0333**	**6.2458**	**1.5559**	**7.8017**	**3.3520**	**1.4315**	**4.7834**	**0.0000**	**3,072.5560**	**3,072.5560**	**0.7519**	**0.0000**	**3,088.3468**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	65.9617	28.6643	20.0570	0.0333	2.8721	1.5559	4.4280	1.5247	1.4315	2.9561	0.0000	3,072.5560	3,072.5560	0.7519	0.0000	3,088.3468
Total	**65.9617**	**28.6643**	**20.0570**	**0.0333**	**2.8721**	**1.5559**	**4.4280**	**1.5247**	**1.4315**	**2.9561**	**0.0000**	**3,072.5560**	**3,072.5560**	**0.7519**	**0.0000**	**3,088.3468**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	54.02	0.00	43.24	54.51	0.00	38.20	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.3451	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.6000e-004	4.6000e-004	0.0000		4.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0149	0.0400	0.1567	2.9000e-004	0.0205	6.0000e-004	0.0211	5.4600e-003	5.5000e-004	6.0200e-003		26.8064	26.8064	1.2700e-003		26.8330
Total	**2.3600**	**0.0400**	**0.1569**	**2.9000e-004**	**0.0205**	**6.0000e-004**	**0.0211**	**5.4600e-003**	**5.5000e-004**	**6.0200e-003**		**26.8069**	**26.8069**	**1.2700e-003**	**0.0000**	**26.8335**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.1700	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.6000e-004	4.6000e-004	0.0000		4.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0149	0.0400	0.1567	2.9000e-004	0.0205	6.0000e-004	0.0211	5.4600e-003	5.5000e-004	6.0200e-003		26.8064	26.8064	1.2700e-003		26.8330
Total	**2.1849**	**0.0400**	**0.1569**	**2.9000e-004**	**0.0205**	**6.0000e-004**	**0.0211**	**5.4600e-003**	**5.5000e-004**	**6.0200e-003**		**26.8069**	**26.8069**	**1.2700e-003**	**0.0000**	**26.8335**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	7.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/2/2017	1/27/2017	5	20	
2	Grading	Grading	1/30/2017	2/24/2017	5	20	
3	Building Construction	Building Construction	2/27/2017	3/24/2017	5	20	
4	Architectural Coating	Architectural Coating	3/27/2017	4/21/2017	5	20	
5	Paving	Paving	4/17/2017	4/28/2017	5	10	

Acres of Grading (Site Preparation Phase): 2.11

Acres of Grading (Grading Phase): 2.11

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 137,867; Non-Residential Outdoor: 45,956 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Scrapers	1	8.00	361	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	226	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	39.00	15.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1119	0.0000	0.1119	0.0121	0.0000	0.0121			0.0000			0.0000
Off-Road	2.5289	28.6230	17.1310	0.0238		1.3967	1.3967		1.2850	1.2850		2,439.436 0	2,439.436 0	0.7474		2,455.132 2
Total	**2.5289**	**28.6230**	**17.1310**	**0.0238**	**0.1119**	**1.3967**	**1.5086**	**0.0121**	**1.2850**	**1.2971**		**2,439.436 0**	**2,439.436 0**	**0.7474**		**2,455.132 2**

3.2 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0305	0.0413	0.4314	1.0600e-003	0.0894	7.2000e-004	0.0901	0.0237	6.6000e-004	0.0244		85.8277	85.8277	4.5000e-003		85.9222
Total	**0.0305**	**0.0413**	**0.4314**	**1.0600e-003**	**0.0894**	**7.2000e-004**	**0.0901**	**0.0237**	**6.6000e-004**	**0.0244**		**85.8277**	**85.8277**	**4.5000e-003**		**85.9222**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0504	0.0000	0.0504	5.4400e-003	0.0000	5.4400e-003			0.0000			0.0000
Off-Road	2.5289	28.6230	17.1310	0.0238		1.3967	1.3967		1.2850	1.2850	0.0000	2,439.4360	2,439.4360	0.7474		2,455.1322
Total	**2.5289**	**28.6230**	**17.1310**	**0.0238**	**0.0504**	**1.3967**	**1.4471**	**5.4400e-003**	**1.2850**	**1.2904**	**0.0000**	**2,439.4360**	**2,439.4360**	**0.7474**		**2,455.1322**

3.2 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0305	0.0413	0.4314	1.0600e-003	0.0894	7.2000e-004	0.0901	0.0237	6.6000e-004	0.0244		85.8277	85.8277	4.5000e-003		85.9222
Total	**0.0305**	**0.0413**	**0.4314**	**1.0600e-003**	**0.0894**	**7.2000e-004**	**0.0901**	**0.0237**	**6.6000e-004**	**0.0244**		**85.8277**	**85.8277**	**4.5000e-003**		**85.9222**

3.3 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1340	0.0000	6.1340	3.3223	0.0000	3.3223			0.0000			0.0000
Off-Road	2.6973	28.1608	18.9679	0.0206		1.5550	1.5550		1.4306	1.4306		2,104.5737	2,104.5737	0.6448		2,118.1153
Total	**2.6973**	**28.1608**	**18.9679**	**0.0206**	**6.1340**	**1.5550**	**7.6890**	**3.3223**	**1.4306**	**4.7529**		**2,104.5737**	**2,104.5737**	**0.6448**		**2,118.1153**

3.3 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0382	0.0516	0.5392	1.3300e-003	0.1118	9.0000e-004	0.1127	0.0296	8.3000e-004	0.0305		107.2846	107.2846	5.6300e-003		107.4028
Total	**0.0382**	**0.0516**	**0.5392**	**1.3300e-003**	**0.1118**	**9.0000e-004**	**0.1127**	**0.0296**	**8.3000e-004**	**0.0305**		**107.2846**	**107.2846**	**5.6300e-003**		**107.4028**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7603	0.0000	2.7603	1.4950	0.0000	1.4950			0.0000			0.0000
Off-Road	2.6973	28.1608	18.9679	0.0206		1.5550	1.5550		1.4306	1.4306	0.0000	2,104.5737	2,104.5737	0.6448		2,118.1153
Total	**2.6973**	**28.1608**	**18.9679**	**0.0206**	**2.7603**	**1.5550**	**4.3153**	**1.4950**	**1.4306**	**2.9257**	**0.0000**	**2,104.5737**	**2,104.5737**	**0.6448**		**2,118.1153**

3.3 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0382	0.0516	0.5392	1.3300e-003	0.1118	9.0000e-004	0.1127	0.0296	8.3000e-004	0.0305		107.2846	107.2846	5.6300e-003		107.4028
Total	**0.0382**	**0.0516**	**0.5392**	**1.3300e-003**	**0.1118**	**9.0000e-004**	**0.1127**	**0.0296**	**8.3000e-004**	**0.0305**		**107.2846**	**107.2846**	**5.6300e-003**		**107.4028**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.3275	22.8585	16.2492	0.0249		1.4621	1.4621		1.3998	1.3998		2,334.8503	2,334.8503	0.5189		2,345.7479
Total	**3.3275**	**22.8585**	**16.2492**	**0.0249**		**1.4621**	**1.4621**		**1.3998**	**1.3998**		**2,334.8503**	**2,334.8503**	**0.5189**		**2,345.7479**

3.4 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1255	1.2154	1.7049	3.2400e-003	0.0938	0.0191	0.1128	0.0267	0.0175	0.0442		319.2958	319.2958	2.3400e-003		319.3450
Worker	0.1489	0.2014	2.1030	5.1700e-003	0.4359	3.5100e-003	0.4394	0.1156	3.2300e-003	0.1188		418.4099	418.4099	0.0220		418.8708
Total	**0.2743**	**1.4168**	**3.8078**	**8.4100e-003**	**0.5297**	**0.0226**	**0.5523**	**0.1423**	**0.0208**	**0.1631**		**737.7057**	**737.7057**	**0.0243**		**738.2158**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.3275	22.8585	16.2492	0.0249		1.4621	1.4621		1.3998	1.3998	0.0000	2,334.850 3	2,334.850 3	0.5189		2,345.747 9
Total	**3.3275**	**22.8585**	**16.2492**	**0.0249**		**1.4621**	**1.4621**		**1.3998**	**1.3998**	**0.0000**	**2,334.850 3**	**2,334.850 3**	**0.5189**		**2,345.747 9**

3.4 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1255	1.2154	1.7049	3.2400e-003	0.0938	0.0191	0.1128	0.0267	0.0175	0.0442		319.2958	319.2958	2.3400e-003		319.3450
Worker	0.1489	0.2014	2.1030	5.1700e-003	0.4359	3.5100e-003	0.4394	0.1156	3.2300e-003	0.1188		418.4099	418.4099	0.0220		418.8708
Total	**0.2743**	**1.4168**	**3.8078**	**8.4100e-003**	**0.5297**	**0.0226**	**0.5523**	**0.1423**	**0.0208**	**0.1631**		**737.7057**	**737.7057**	**0.0243**		**738.2158**

3.5 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	63.9015					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733		281.4481	281.4481	0.0297		282.0721
Total	**64.2338**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**		**281.4481**	**281.4481**	**0.0297**		**282.0721**

3.5 Architectural Coating - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0305	0.0413	0.4314	1.0600e-003	0.0894	7.2000e-004	0.0901	0.0237	6.6000e-004	0.0244		85.8277	85.8277	4.5000e-003		85.9222
Total	**0.0305**	**0.0413**	**0.4314**	**1.0600e-003**	**0.0894**	**7.2000e-004**	**0.0901**	**0.0237**	**6.6000e-004**	**0.0244**		**85.8277**	**85.8277**	**4.5000e-003**		**85.9222**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	63.9015					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733	0.0000	281.4481	281.4481	0.0297		282.0721
Total	**64.2338**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**	**0.0000**	**281.4481**	**281.4481**	**0.0297**		**282.0721**

3.5 Architectural Coating - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0305	0.0413	0.4314	1.0600e-003	0.0894	7.2000e-004	0.0901	0.0237	6.6000e-004	0.0244		85.8277	85.8277	4.5000e-003		85.9222
Total	**0.0305**	**0.0413**	**0.4314**	**1.0600e-003**	**0.0894**	**7.2000e-004**	**0.0901**	**0.0237**	**6.6000e-004**	**0.0244**		**85.8277**	**85.8277**	**4.5000e-003**		**85.9222**

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6402	16.4619	12.0566	0.0176		1.0230	1.0230		0.9423	0.9423		1,777.4745	1,777.4745	0.5344		1,788.6966
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6402**	**16.4619**	**12.0566**	**0.0176**		**1.0230**	**1.0230**		**0.9423**	**0.9423**		**1,777.4745**	**1,777.4745**	**0.5344**		**1,788.6966**

3.6 Paving - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0573	0.0775	0.8088	1.9900e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2400e-003	0.0457		160.9269	160.9269	8.4400e-003		161.1042
Total	**0.0573**	**0.0775**	**0.8088**	**1.9900e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2400e-003**	**0.0457**		**160.9269**	**160.9269**	**8.4400e-003**		**161.1042**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6402	16.4619	12.0566	0.0176		1.0230	1.0230		0.9423	0.9423	0.0000	1,777.4745	1,777.4745	0.5344		1,788.6966
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6402**	**16.4619**	**12.0566**	**0.0176**		**1.0230**	**1.0230**		**0.9423**	**0.9423**	**0.0000**	**1,777.4745**	**1,777.4745**	**0.5344**		**1,788.6966**

3.6 Paving - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0573	0.0775	0.8088	1.9900e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2400e-003	0.0457		160.9269	160.9269	8.4400e-003		161.1042
Total	**0.0573**	**0.0775**	**0.8088**	**1.9900e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2400e-003**	**0.0457**		**160.9269**	**160.9269**	**8.4400e-003**		**161.1042**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0149	0.0400	0.1567	2.9000e-004	0.0205	6.0000e-004	0.0211	5.4600e-003	5.5000e-004	6.0200e-003		26.8064	26.8064	1.2700e-003		26.8330
Unmitigated	0.0149	0.0400	0.1567	2.9000e-004	0.0205	6.0000e-004	0.0211	5.4600e-003	5.5000e-004	6.0200e-003		26.8064	26.8064	1.2700e-003		26.8330

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	3.35	3.35	3.35	9,654	9,654
Total	3.35	3.35	3.35	9,654	9,654

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.516610	0.060517	0.179979	0.140587	0.041566	0.006616	0.015092	0.027587	0.001923	0.002530	0.004314	0.000602	0.002075

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.1700	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.6000e-004	4.6000e-004	0.0000		4.9000e-004
Unmitigated	2.3451	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.6000e-004	4.6000e-004	0.0000		4.9000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5252					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8199					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.0000e-005	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.6000e-004	4.6000e-004	0.0000		4.9000e-004
Total	**2.3451**	**0.0000**	**2.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**4.6000e-004**	**4.6000e-004**	**0.0000**		**4.9000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3502					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8199					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.0000e-005	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.6000e-004	4.6000e-004	0.0000		4.9000e-004
Total	**2.1700**	**0.0000**	**2.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**4.6000e-004**	**4.6000e-004**	**0.0000**		**4.9000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Greenhouse Gas Emission Worksheet
N20 Mobile Emissions

From URBEMIS 2007 Vehicle Fleet Mix Output:

Annual VMT: 9,654

Vehicle Type	Percent Type	CH4 Emission Factor (g/mile)*	CH4 Emission (g/mile)**	N2O Emission Factor (g/mile)*	N2O Emission (g/mile)**
Light Auto	46.0%	0.04	0.0184	0.04	0.0184
Light Truck < 3750 lbs	10.3%	0.05	0.00515	0.06	0.00618
Light Truck 3751-5750 lbs	23.2%	0.05	0.0116	0.06	0.01392
Med Truck 5751-8500 lbs	12.2%	0.12	0.01464	0.2	0.0244
Lite-Heavy Truck 8501-10,000 lbs	2.1%	0.12	0.00252	0.2	0.0042
Lite-Heavy Truck 10,001-14,000 lbs	0.5%	0.09	0.00045	0.125	0.000625
Med-Heavy Truck 14,001-33,000 lbs	1.0%	0.06	0.0006	0.05	0.0005
Heavy-Heavy Truck 33,001-60,000 lbs	2.9%	0.06	0.00174	0.05	0.00145
Other Bus	0.1%	0.06	0.00006	0.05	0.00005
Urban Bus	0.1%	0.06	0.00006	0.05	0.00005
Motorcycle	1.1%	0.09	0.00099	0.01	0.00011
School Bus	0.1%	0.06	0.00006	0.05	0.00005
Motor Home	0.4%	0.09	0.00036	0.125	0.0005
Total	**100.0%**		**0.05663**		**0.070435**

Total Emissions (metric tons) =
Emission Factor by Vehicle Mix (g/mi) x Annual VMT(mi) x 0.000001 metric tons/g

Conversion to Carbon Dioxide Equivalency (CO2e) Units based on Global Warming Potential (GWP)

CH4	21	GWP
N2O	310	GWP
1 ton (short, US) =	0.90718474	metric ton

Annual Mobile Emissions:

	Total Emissions		Total CO2e units	
N20 Emissions:	0.0007	metric tons N2O	**0.21**	metric tons CO2e
		Project Total:	***0.21***	***metric tons CO2e***

References

* from Table C.4: Methane and Nitrous Oxide Emission Factors for Mobile Sources by Vehicle and Fuel Type (g/mile).
in California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.
Assume Model year 2000-present, gasoline fueled.

** Source: California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.

*** From URBEMIS 2007 results for mobile sources

APPENDIX B

Biological Resources Assessment

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March 16, 2018
(2018-022)

Sherli Leonard
Redlands Conservancy
via e-mail: sleonard32@verizon.net

RE: Biological Resources Assessment Report for the Zanja Trail Project in Redlands, San Bernardino County, California

Dear Ms. Leonard:

This letter provides the results of a literature search and biological resources assessment of a 1,800-foot portion of the Zanja Trail Project (Project) conducted by ECORP Consulting, Inc. (ECORP). The Project follows the course of the Mill Creek Zanja/Mission Creek (Zanja) north of East Redlands Boulevard from the east side of 7th Street to the west side of Church Street.

The assessment was conducted to identify any biological concerns on the Project. In 2015, Helix Environmental Planning, Inc. (Helix) conducted a jurisdictional delineation of the Project area, and a part of ECORP's field assessment was a review of the results of the Helix delineation and comparison with the ground conditions observed. Current Project plans were also reviewed for analysis of potential Project impacts. The results of the biological resources assessment are presented in this report.

Project Location

As shown on the United States Geological Survey (USGS) 7.5-minute Redlands, California topographic quadrangle map (1996), the Project is located in an unsectioned area of the San Bernardino Land Grant, Township 1 South, Range 3 West, of the San Bernardino Base and Meridian (Attachments 1 and 2). The Project area is located between commercial properties and parking lots from 7th Street to 9th Street, and parallels a segment of the Zanja channel along its north side between 9th Street and Church Street.

Project Description

The proposed Project would begin at 7th Street and end at Church Street. The proposed Project includes two elements, a Zanja Trail Gateway Monument at its westernmost end at 7th Street, and a 0.4-mile trail from 7th Street to Church Street. The trail is characterized as a pedestrian trail from 7th Street to 9th Street and a multipurpose trail from 9th Street to Church Street.

Environmental Setting

The Zanja was built originally by Spanish settlers to the area during the 1800s, consisting of stonework walls with an enclosed channel ranging from a few feet to over 10 feet wide. The word "Zanja" indicates an irrigation canal, which was the original purpose of the channel. The canal was constructed to intercept flows from Mill Creek and direct them through the developing citrus groves and other agricultural areas within Redlands to provide irrigation. Portions of the canal have been rebuilt over the years into more modern trapezoidal earthen channels, due to degradation of the original stonework and the need for improved flood control, but portions of the original channel remain and the channel still roughly follows its original alignment through most of its length. Within the Project area, most of the Zanja consists of an earthen trapezoidal channel.

The first modern land uses within the Project area consisted of citrus groves. There also was an underground reservoir built in the early part of the 20th century just north of the Zanja and east of Dearborn Street. The groves persisted as the only land use until the 1950s when the first residential and commercial developments near the Project area were built north and south of the Project site. During the 1960s, most of the remaining citrus groves were replaced by residential developments. These land uses persist today as the dominant surrounding use.

The Project area is largely unvegetated, with seldom occurrences of non-native vegetation, and is bordered by landscaped ornamental vegetation associated with residential and commercial land uses. The Zanja is mostly unvegetated throughout the length of the Project site. Within the previous jurisdictional delineation, the majority of the Zanja was mapped as supporting unvegetated streambed with scattered disturbed riparian scrub and disturbed freshwater marsh. However, in its current state, the channel is primarily unvegetated, having been cleared of vegetation as a management activity. Based on historic photograph interpretation, the Zanja historically supported riparian woodland and scrub along its length throughout the Project area. The elevation within the Project site ranges between approximately 1,375 and 1,400 feet above mean sea level.

Methods

Prior to conducting any field work, an ECORP biologist researched special-status plant and wildlife species that have been previously recorded within the Project site, including the USGS Redlands Quadrangle and the surrounding eight quadrangles (San Bernardino North, San Bernardino South, Riverside East, Sunnymead, El Casco, Yucaipa, Keller Peak, and Harrison Mountain). An ECORP biologist also reviewed the 2015 Helix Jurisdictional Delineation Report, California Native Plant Society's Inventory of Rare and Endangered Plants, and the National Wetlands Inventory.

Using the results of the data base searches, an ECORP biologist conducted a biological survey of the Project site to identify potential biological constraints and to verify the results of the existing jurisdictional delineation for the Project. All trees and vegetation within and adjacent to the Project site were scanned with binoculars. Vegetation communities and habitats within the Project site and in the surrounding area were documented. A complete list of all plants and wildlife observed or detected during the survey were recorded. Representative photographs of the Project area were taken to document conditions at the time of the survey.

Any potential raptor nests or evidence of breeding raptors, special-status plants and wildlife, and other biological concerns encountered during the survey were fully recorded using Global Positioning System (GPS) technology, photography, and field notes. In addition, areas that were suitable habitat for burrowing owl (*Athene cunicularia*) were scanned for potential presence and/or sign (burrows, pellets, tracks, whitewash, bones, feathers, etc.) of the species. Burrowing owls are a state Species of Special Concern. The Project site is considered outside the range of San Bernardino kangaroo rat (*Dipodomys merriami parvus*), but the site was evaluated for the presence of this species.

Results

ECORP biologist Jon Renard conducted the biological survey on March 6, 2018. Survey timing and weather conditions are provided in Table 1. Results of the survey are depicted on an aerial map and are included in Attachment 3.

Table 1: Summary of Biological Survey Weather Conditions

Date	Time		Temperature (°F)		Cloud Cover (%)		Wind Speed (mph)	
	Start	End	Start	End	Start	End	Start	End
3/6/2018	1015	1120	66	68	0	0	0	0-1

Vegetation Communities

The Project site contains only heavily disturbed habitat that is mostly void of vegetation and includes non-native grassland, disturbed habitat, and developed areas. Each vegetation community or land cover type is described in detail below. Representative photographs of the Project site are included in Attachment 4.

<u>Non-native Grassland</u>

Non-native grassland is common in disturbed areas adjacent to development or near urbanization, especially within former agricultural areas. Non-native grassland within the project area is sparse and occurs in upland areas south of the Zanja channel and immediately west and adjacent to Church Street, adjacent to residential neighborhoods. Dominant plants within the grassland community were non-native grasses such as wild brome (*Bromus* sp.).

<u>Disturbed</u>

The disturbed classification includes areas where the vegetation cover has has been heavily reduced by human actions, such as grading, trash dumping, and off-highway vehicle (OHV) use, but that lack paved surfaces or structures. Disturbed is not a vegetation classification, but rather a land use type and is not restricted to a known elevation. Disturbed areas located on the Project site included the vacant lot west of 9th Street and other areas bordering the north side of the Zanja.

<u>Developed</u>

Areas designated as developed have infrastructure present and any vegetation in the immediate surroundings represents ornamental landscaping. Developed is not a vegetation classification, but rather a land use type and is not restricted to a known elevation. Developed areas were located at the west end of the Project site and consisted of a paved parking lot.

The Zanja channel itself is generally void of vegetation as well, with only several occurrences of re-sprouting Mexican fan palm and one mulefat (*Baccharis salicifolia*). The re-sprouting vegetation is evidence that the channel is regularly mowed and maintained.

Areas immediately surrounding the Project site consist of disturbed habitat, non-native grassland, and urban commercial properties.

Plants

Plants observed in the Project area were mostly typical of those in an urban and suburban environment. The majority of the vegetation observed within the Project footprint was the non-native Russian thistle and Mexican fan palm. Several ornamental tree species surrounded the Project site and included gum tree (*Eucalyptus* sp.), African sumac (*Rhus lancea*), and Peruvian pepper tree (*Schinus molle*). A complete list of plant species observed during the survey is provided in Attachment 5.

Wildlife

Wildlife species observed or detected within the Project area were mostly native species typical of the surrounding urban and suburban environment. Species observed included Western fence lizard (*Sceloporous occidentalis*), house finch (*Carpodacus mexicanus*), American crow (*Corvus brachyrhynchos*), and red-tailed hawk (*Buteo jamaicensis*). Coyote (*Canis latrans*) tracks were observed within sandy areas of the Zanja channel. A complete list of wildlife species observed or detected during the survey is provided in Attachment 5.

Wildlife Corridors

The Zanja was analyzed as a potential wildlife corridor. Because the channel traverses a heavily developed area, wildlife expected to potentially use the channel for movement would be those that are accustomed to the urban environment. Mammal species that could use such a corridor include mostly small to medium sized wildlife such as coyote (known due to evidence of tracks), desert cottontail (*Syvilagus audubonii*), raccoon (*Procyon lotor*), and opossum (*Didelphus virginiana*). Several bird species could use such a wildlife corridor as well, but would be left with fewer movement constraints than many species due to their ability to fly across different habitat zones. Larger wildlife such as deer (*Odocoileus hemionus*) and mountain lion (*Felix concolor*) would be unexpected to use an urban corridor because of the human presence nearby.

Wildlife movement corridors usually contain some degree of cover and connect regional open space or undeveloped lands. The Zanja channel provides intermittent water sources for wildlife and is connected to the east of the Project area with more of the same channel and additional suburban areas. The depth of the trapezoidal channel can provide both topographic cover for wildlife and provide some limited vegetative cover. Both the configuration of the channel topography and the available water source are potential attractants to wildlife. Upstream and to the east, the Zanja connects with several residential areas, a golf course, and the University of Redlands. Downstream and west of 9th Street, the Zanja channel is subterranean through a concrete box culvert five feet high by 10 feet wide, which can serve as a wildlife movement corridor. These dimensions are generally not suitable for larger game mammals, but are suitable for smaller mammal, reptile, amphibian, and bird species. Further downstream, the Zanja resurfaces 0.5 mile to the west near Eureka Street, and eventually joins the Mission Creek Flood Control District's concrete channel that flows northwest and into the Santa Ana River.

Due to its dimensions, surrounding land uses, and connection to open spaces both up and downstream, the Zanja is expected to serve as a wildlife corridor but its use is expected to be restricted to urban-adapted wildlife species.

Sensitive Plants and Wildlife

Sensitive plants or wildlife were not observed or detected in the Project area during the survey, and the area is currently considered likely to be unoccupied by sensitive plants and wildlife due to the high degree of disturbance present. Several of the trees, including gum, African sumac, and Peruvian pepper trees have potential to support raptor species and other nesting birds, but no existing nests or roosts were observed during the survey. The disturbed dirt and gravel portions of the Project site provide suitable habitat for ground bird nesters, such as killdeer (*Charadrius vociferous*). These birds lay their eggs directly on compact or gravelly soil and remain there until the young hatch.

Burrowing owls, sign or potential burrows were not observed on the Project site during the survey. The non-native grassland located southeast of the Project site did not contain any abandoned California ground squirrel (*Otospermophilus beecheyi*) burrows that would facilitate burrowing owl occupancy. Although the Project site may contain suitable foraging habitat for the species, it lacks suitable burrows or structures required for nesting and the species is not expected to occur.

The compact soils, gravelly areas, and lack of vegetation cover on the Project site do not provide suitable habitat for San Bernardino kangaroo rat. The Project site also occurs outside the known range of the species.

The federal Migratory Bird Treaty Act and California Fish and Game Code specify that migratory bird species are protected from being taken or possessed, including by indirect action due to tree removal, etc. Due to the number of trees and shrubs, and other potential nesting areas within and adjacent to the Project area, there is a potential for birds to nest in and near the Project area. Birds nest seasonally, usually from around the beginning of March until the end of August.

Jurisdictional Delineation

Based on the review of the previous jurisdictional delineation, the Zanja is a feature that contains areas jurisdictional to the U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and State Water Resources Control Board (SWRCB). The jurisdictional findings of that previous report appear to remain valid. The portion of the Zanja between 9th Street and Church Street is designated as a non-vegetated channel/streambed, which is consistent with the findings of Helix in 2015 (Attachment 6). Although no hydrophilic vegetation was evident within the channel during the survey, one re-sprouting mulefat was observed, which indicates that the channel is regularly mowed and maintained to prevent overgrowth of vegetation.

During ECORP's survey of the Project area, the biologist identified a one-foot wide unvegetated erosional feature that originates from the road edge of Church Street. The feature conveys stormwater runoff from Church Street and runs west through the proposed location for the trail and north of the Zanja. The feature enters a damaged, but still functional, three-foot wide culvert in a dirt area of the proposed trail approximately 560 feet west of Church Street. The culvert conveys the feature south into the Zanja. It is probable that this erosional feature is non-jurisdictional due to it being a man-made channel located within an otherwise upland environment. This feature was not identified during Helix's jurisdictional delineation on the Project in 2015.

Conclusions and Recommendations

In summary, the proposed Project occurs within an urban corridor having limited natural resources or sensitive biological resources. There is a potential for nesting bird species along portions of the Zanja, where vegetation and trees are present. Burrowing owls are not expected to be present within site since no burrows of suitable size were observed during the survey.

Due to the potential for nesting birds to occur on the site, we recommend conducting a general nesting bird survey prior to ground disturbance or vegetation trimming/removal, if either of these is proposed to occur during the bird nesting season (i.e., between March 1 and August 31).

Based on the current Project plans, the jurisdictional portions of the Zanja would be avoided by the Project configuration. However, the erosional feature mentioned will likely be impacted; however, this feature is unlikely to be considered jurisdictional to the USACE, CDFW and/or RWQCB.

Prior to the initiation of Project construction, it is recommended that the exclusion zones be established to avoid jurisdictional areas within the Zanja and that the importance of maintaining the exclusion zones be included in any worker education (tailgate meetings) for the Project. If the jurisdictional areas are not avoided by the Project, then permitting may be required with the regulatory agencies for the impact.

If you have any questions regarding the information we have provided in this letter, or if you need further assistance, please contact Scott Taylor at (909) 307-0046.

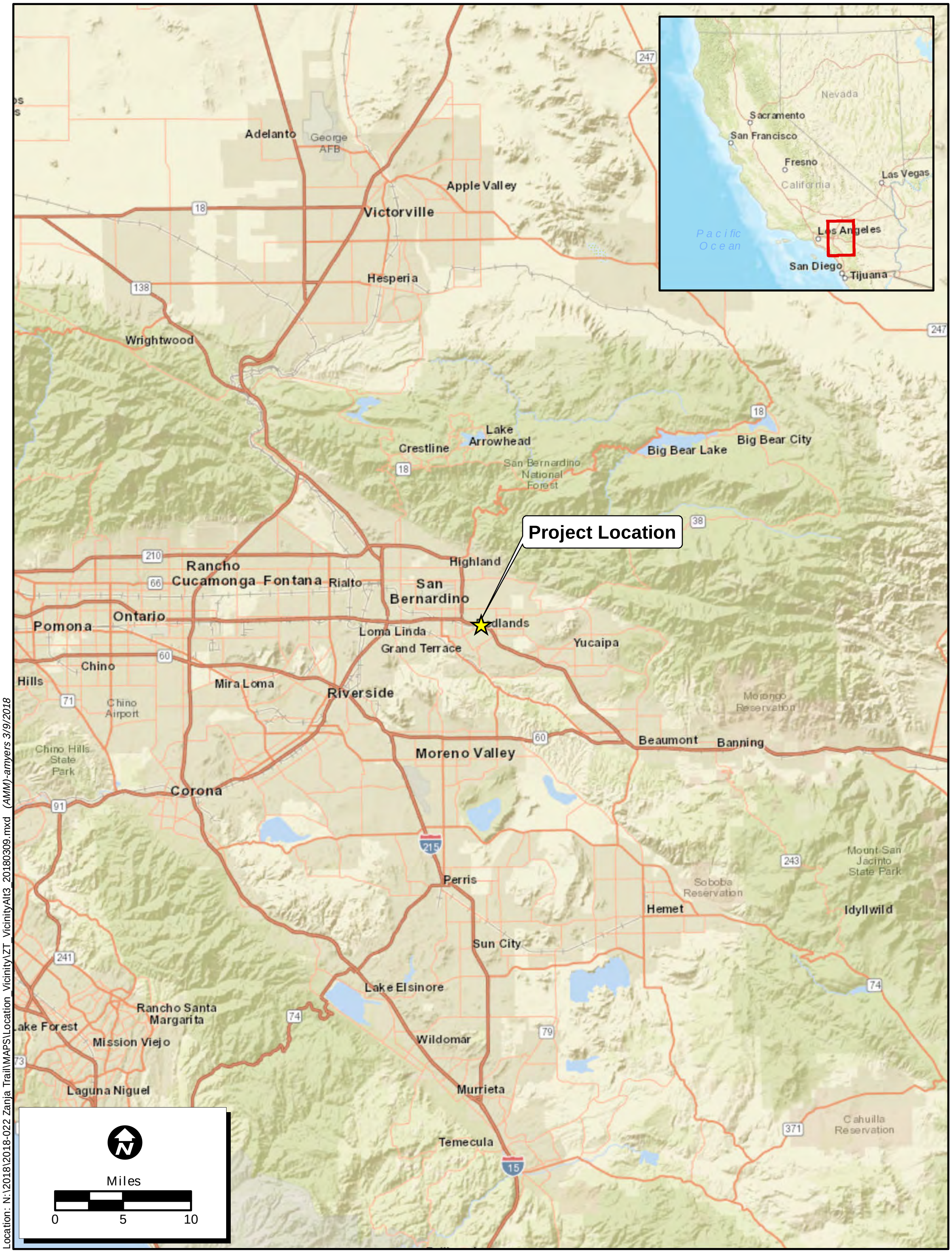
Sincerely,

ECORP Consulting, Inc.

Jon Renard
Staff Biologist

Attachments: as stated

Attachment 1: Project Vicinity



Location: N:\2018\2018-022 Zanja Trail\MAPS\Location_Vicinity\ZT_VicinityAlt3_20180309.mxd (AMM)-amyers 3/9/2018

Map Date: 3/9/2018

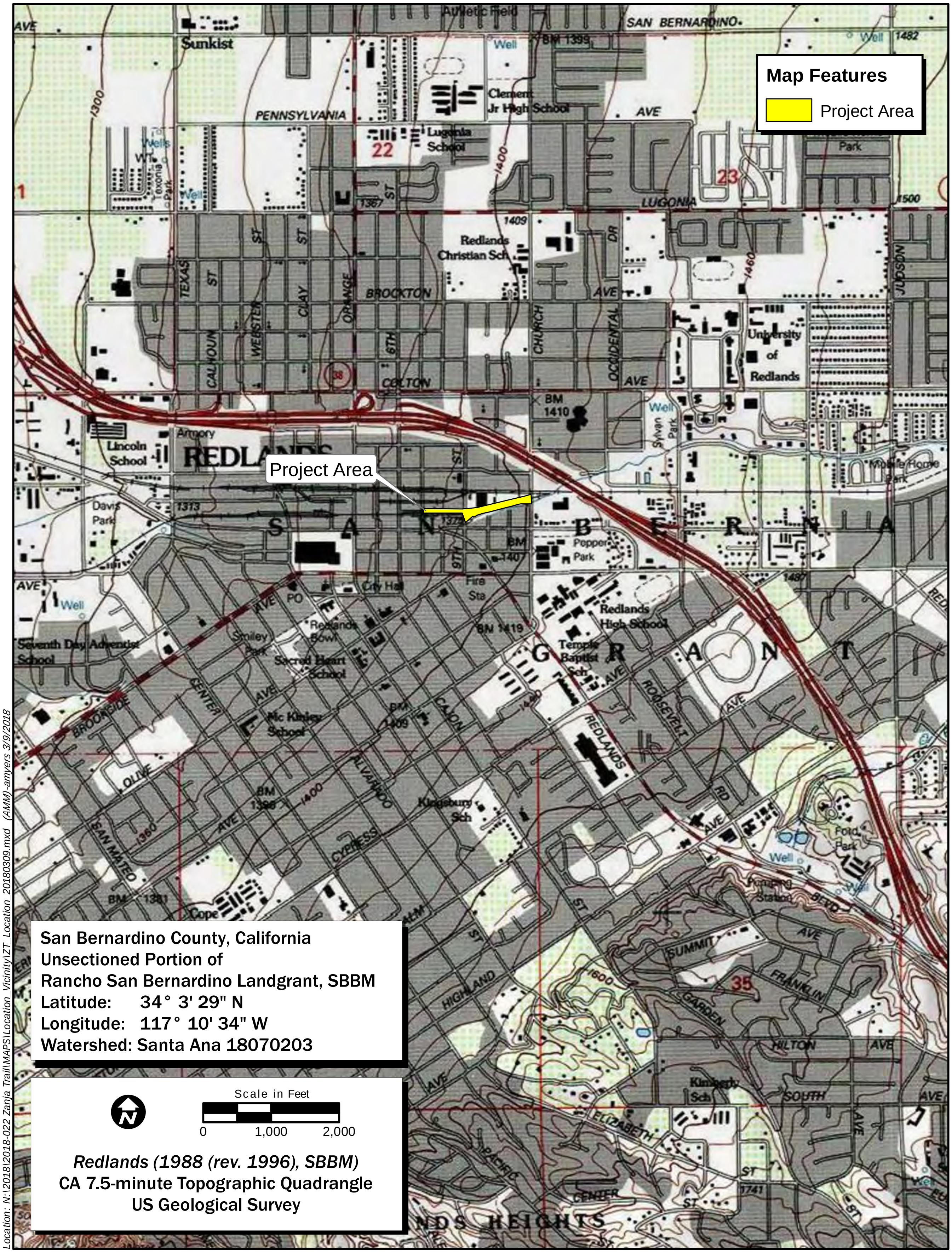
Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 1. Project Vicinity

2018-022 Zanja Trail Project

Attachment 2: Project Location



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Map Date: 3/9/2018

iService Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed

Figure 2. Project Location

2018-022 Zanja Trail Project

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Attachment 3: Survey Results

Location: N:\2018\2018-022 Zanja Trail\MAPS\Jurisdictional_Delineation\Assessment_Level\Current\v1\ZT_PrelimJD_20180315.mxd (AMM, 3/15/2018) - amyers

Map Date: 3/15/2018
Photo Source: ESRI Service Layer Accessed 3-15-2018
*Obtained from Helix 2015 Jurisdictional Delineation

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 3. Biological Resources Assessment Results

Zanja Trail 2018-022

Attachment 4: Photo Compendium

Photo 1: Developed area at west end of Project area; facing east.

Photo 2: Disturbed vacant lot with nonnative vegetation west of 9th Street; facing west.


Photo 3: Zanja channel east of 9th Street; facing southwest.


Photo 4: Proposed location of Zanja Trail north of Zanja channel (disturbed area); facing west.


Photo 5: View from within Zanja channel, showing re-sprouting mulefat (arrow) and large gum trees in the background that provide bird nesting habitat; facing west.


Photo 6: Three-foot wide culvert that conveys stormwater runoff from Church Street into Zanja; facing north.

Photo 7: Western terminus of erosional feature and three-foot wide culvert that conveys stormwater runoff into Zanja; facing west.

Photo 8: Erosional feature located on the proposed Zanja Trail; facing west.

Photo 9: View of starting point of erosional feature along the road edge of Church Street (arrow); facing north.

Attachment 5: List of Plants and Wildlife

PLANTS	
SCIENTIFIC NAME	**COMMON NAME**
VASCULAR PLANTS	
ANGIOSPERMS (DICOTYLEDONS)	
ANACARDIACEAE	**SUMAC OR CASHEW FAMILY**
Rhus lancea	African sumac
*Schinus molle**	Peruvian pepper tree
ARECACEAE	**PALM TREE FAMILY**
Washingtonia robusta	Mexican fan palm
ASTERACEAE	**SUNFLOWER FAMILY**
Baccharis salicifolia	mulefat
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
*Salsola tragus**	Russian thistle; tumbleweed
MYRTACEAE	**MYRTLE FAMILY**
Eucalyptus sp.	Gum tree
POACEAE	**GRASS FAMILY**
Bromus sp.	Wild brome

*non-native species

WILDLIFE	
SCIENTIFIC NAME	**COMMON NAME**
REPTILIA	**REPTILES**
Iguanidae	**Iguanids**
Sceloporus occidentalis	Western fence lizard
AVES	**BIRDS**
Accipitridae	**Hawks, Kites, & Eagles**
Buteo jamaicensis	red-tailed hawk
Trochilidae	**Hummingbirds**
Calypte anna	Anna's hummingbird
Corvidae	**Jays and Crows**
Aphelocoma californica	California scrub-jay
Corvus brachyrhynchos	American crow
Mimidae	**Mockingbirds and Thrashers**
Mimus polyglottos	Northern mockingbird
Sturnidae	**Starlings**
*Sturnus vulgaris**	European starling
Fringillidae	**Finches**
Haemorhous mexicanus	house finch
Passeridae	**Old world sparrows**
*Passer domesticus**	house sparrow
MAMMALIA	**MAMMALS**
Canidae	**Dogs, Wolves, & Foxes**
Canis latrans	coyote (tracks)

*non-native species

Attachment 6: Helix Jurisdictional Delineation Report

Zanja Creek and Greenway Park Project

Jurisdictional Delineation Report

August 11, 2015

Stacy Nigro
Senior Scientist

Prepared for:
Schmidt Design Group, Inc.
1111 6th Avenue, Suite 500
San Diego, CA 92101

Prepared by:
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

Zanja Trail and Greenway Park Project
Jurisdictional Delineation Report

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I. INTRODUCTION

This report presents the results of a formal jurisdictional delineation performed by HELIX Environmental Planning, Inc. (HELIX) for the Zanja Trail and Greenway Park Project (project) located in the City of Redlands (City), San Bernardino County, California (Figure 1). The delineation was conducted to identify and map existing wetland and water resources potentially subject to the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act (CWA; 33 USC 1344), Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the CWA, and California Department of Fish and Wildlife (CDFW) pursuant to Sections 1600 et seq. of the California Fish and Game Code. This information is necessary to evaluate jurisdictional impacts and permit requirements associated with the proposed project.

This report presents HELIX's best efforts to quantify the extent of USACE, RWQCB, and CDFW jurisdiction within the study area using the current regulations, written policies, and guidance from the regulatory agencies. Only the USACE, RWQCB, and CDFW can make a final determination of jurisdictional boundaries.

A. PROJECT DESCRIPTION

The Zanja Trail and Greenway Park Project will establish a natural surface trail along or near the historic Mill Creek Zanja between 9th Street in Downtown Redlands and Wabash Avenue, the eastern most City boundary. Included will be one gateway at the west end, four pocket parks, and amenities such as interpretive signage along the route as designed (Figure 2). Zanja Trail and Greenway Park will connect with the Orange Blossom Trail which connects with the Santa Ana River Trail. When completed, this trail network will loop continually through north Redlands and into the Crafton Hills.

The project is intended to provide east-west connections between schools, University of Redlands, and historic Downtown Redlands; enhance the natural and scenic values of the park's footprint corridor; provide a safe and interesting space for Redlands' residents and visitors to conduct healthful activities; attract cultural and heritage tourists to Redlands; and complement the City's General Plan Open Space Element which calls for a linear park along the Mill Creek Zanja.

Redlands Conservancy is the project proponent, and has worked with local, county, state and federal agencies, local and regional organizations, and individual property owners to develop the project proposal. The intended grand opening for the entire trail and greenway park is 2019, the 200^{th} anniversary of the construction of the Mill Creek Zanja.

B. SITE DESCRIPTION AND LOCATION

The approximately 46-acre Project Study Area (PSA) is located north of Citrus Avenue between 9^{th} Street and Wabash Avenue, crossing below Interstate 10 east of Church Street (Figure 3). It is within unsectioned lands in the San Bernardino Land Grant of the U.S. Geological Survey (USGS) 7.5-minute Redlands quadrangle (Figure 4). The PSA consists of an approximately

100-foot-wide corridor centered along the proposed Zanja Trail and a potential alternate route between Grove and Lincoln Streets, as well as following the limits of proposed pocket parks and potential park expansion (Figures 2 and 3).

General land use within and adjacent to the PSA includes residential, commercial, and institutional development, and roads/transportation corridors. The trail alignment passes through the City's existing Sylvan Park between Division Street and University Street, as well as along Sylvan Boulevard through the University of Redlands. Citrus groves are planted along Mill Creek Zanja just upstream of the PSA, east of Wabash Avenue.

The historic Mill Creek Zanja was built in 1819 as an irrigation ditch to bring water to the area for agriculture and livestock. The original ditch extended for a distance of 12 miles from Mill Creek, through what is now the City of Redlands and westward to the City of Loma Linda. The western half of the ditch has been covered, but still exists east of 9th Street. Mill Creek Zanja is listed on the National Register of Historic Places. The proposed trail, extending approximately 2.25 miles between 9th Street and Wabash Avenue, would parallel portions of Mill Creek Zanja.

Physical Conditions

Elevations within the PSA range from approximately 1,360 feet above mean sea level (amsl) to approximately 1,640 feet amsl.

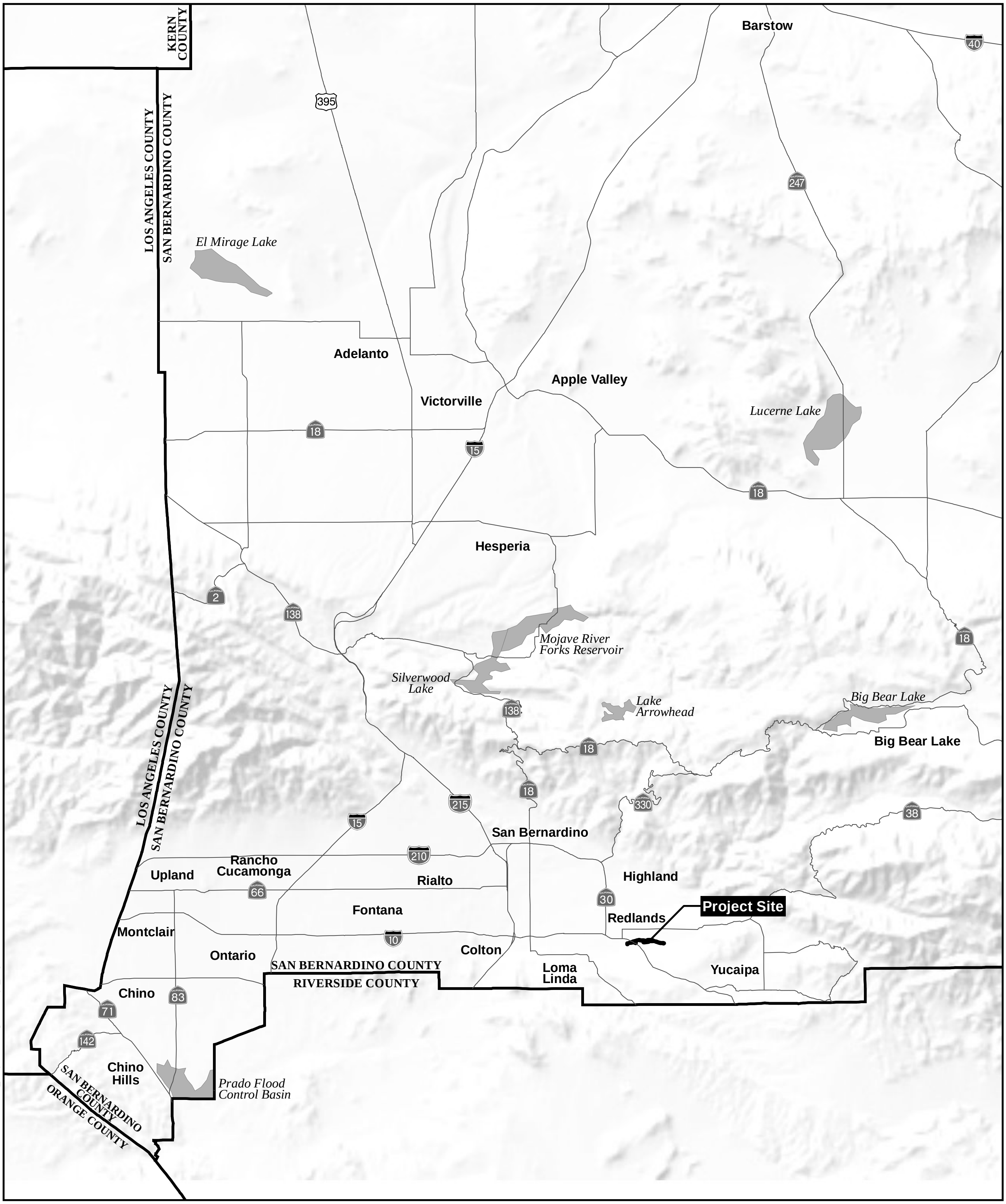
Two soil types are mapped within the PSA: Hanford coarse sandy loam, 2 to 9 percent slopes; and Ramona sandy loam, 2 to 9 percent slopes (NRCS 2015 [Table 1]). Soils in the Hanford series and Ramona series consist of soils that formed primarily from granitic alluvium. Hanford series soils are found in stream bottoms, floodplains, and alluvial fans, while Ramona series soils are typically found on alluvial fans and terraces.

Table 1
SOIL TYPES MAPPED IN THE PROJECT STUDY AREA[1]

MAP SYMBOL	MAP UNIT NAME	ACREAGE[2]
HaC	Hanford coarse sandy loam, 2 to 9 percent slopes	43.6
RmC	Ramona sandy loam, 2 to 9 percent slopes	2.4
	TOTAL	**46.0**

[1]Pursuant to the Natural Resources Conservation Service (NRCS) Web Soil Survey (2015).
[2]Rounded to the nearest tenth acre.

The PSA is located in the Redlands Hydrologic Subarea (HSA; HSA No. 801.53), which lies in the Upper Santa Ana River Hydrologic Area and Santa Ana River Hydrologic Unit, as identified in the Santa Ana RWQCB's Basin Plan (Region 8).



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Regional Location

ZANJA TRAIL AND GREENWAY PARK PROJECT

HELIX Environmental Planning

N 0 8 Miles

Figure 1

Source: Schmidt Design Group, Inc. 2015

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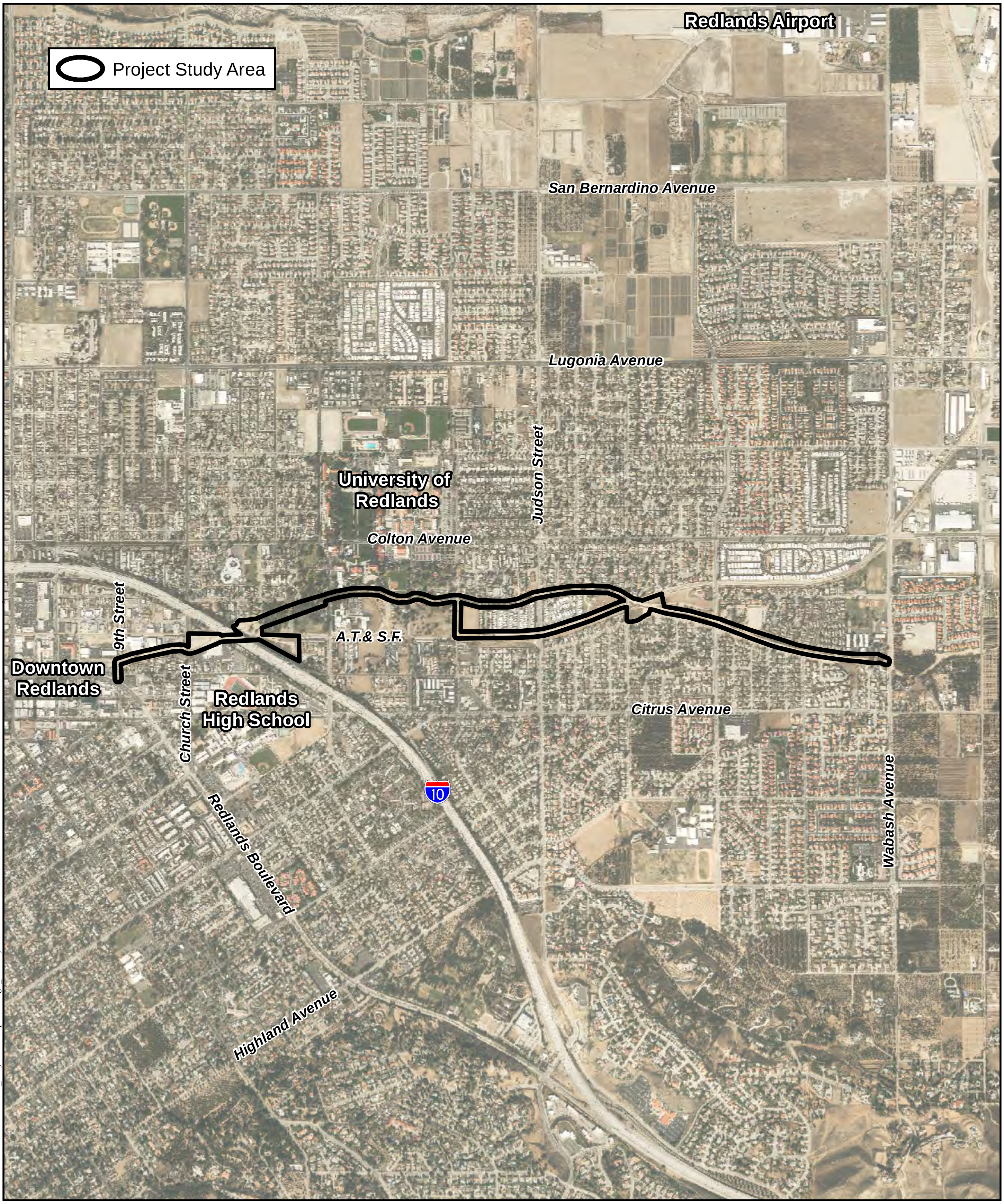
Proposed Trail Alignment

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 2

HELIX
Environmental Planning



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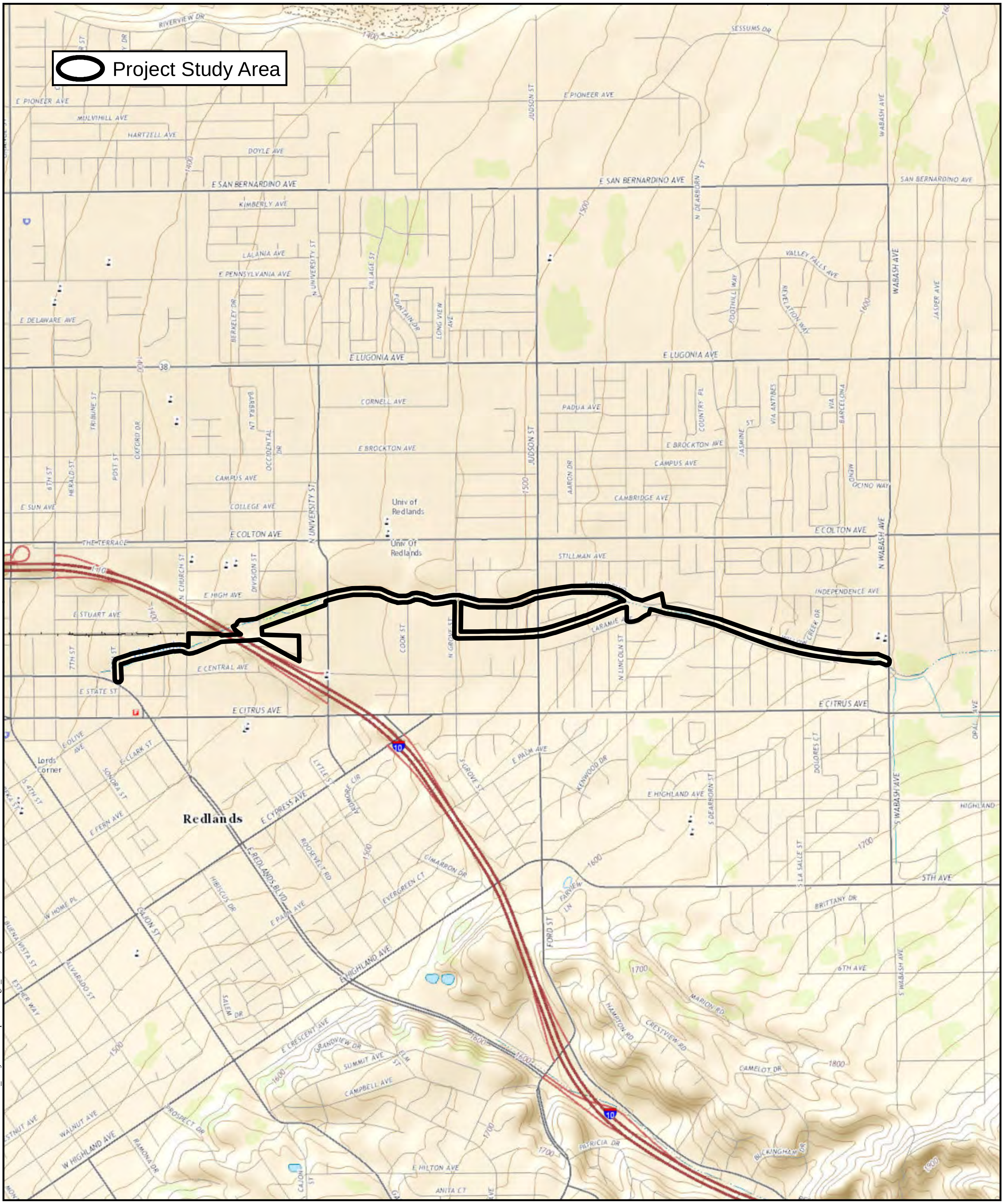
Project Vicinity (Aerial Photograph)

ZANJA TRAIL AND GREENWAY PARK PROJECT

HELIX Environmental Planning

N 0 2,000 Feet

Figure 3



Project Vicinity (USGS)

ZANJA TRAIL AND GREENWAY PARK PROJECT

HELIX Environmental Planning

N

0 2,000 Feet

Figure 4

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Biological Conditions

The PSA is located within the urbanized landscape of downtown Redlands. The vast majority of the PSA consists of urban/developed lands, including existing roads, trails, and parks, as well as disturbed habitat consisting primarily of previously cleared and graded areas with little to no vegetation. Remnant areas of non-native grassland remain in portions of the PSA. Mill Creek Zanja extends the length of the PSA and is non-vegetated to sparsely vegetated between 9^{th} Street and Lincoln Street; upstream of Lincoln Street it supports varying extents of disturbed wetland and riparian habitats.

II. METHODS

Vegetation mapping and a formal jurisdictional delineation were conducted within the PSA on July 28, 2015 by HELIX biologist Stacy Nigro. The site was surveyed on foot with the aid of binoculars. Vegetation and potential jurisdictional resources were mapped on 1"=100' scale aerial photographs. Prior to beginning fieldwork, aerial photographs (1"=100' scale), the local soil survey, and USGS quadrangle maps were reviewed to determine the location of potential jurisdictional areas that may be affected by the proposed project. Nomenclature for this report is from Baldwin et al. (2012) for plants, and Holland (1986) and Oberbauer (2008) for vegetation communities.

A. USACE JURISDICTION

The USACE asserts regulatory jurisdiction over activities affecting wetland and non-wetland waters of the U.S. (WUS) pursuant to Section 404 of the CWA. Areas with depressions or drainage channels were evaluated for the presence of potential wetland and non-wetland WUS. If an area appeared to support wetland conditions, vegetation and hydrology indicators were noted and a soil pit was excavated to examine soil conditions. The area was then determined to support wetland conditions if it satisfied the three wetland criteria (hydrophytic vegetation, wetland hydrology, and hydric soil) described within the Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008). Other references included memoranda (USACE 2007; Grumbles and Woodley 2007) that help clarify the wetland manual and recent court decisions.

Areas were determined to be potential non-wetland WUS if there was evidence of regular surface flow (e.g., bed and bank) but either the vegetation or soils criterion was not met. Jurisdictional limits for these areas were measured according to the presence of a discernible ordinary high water mark (OHWM), which is defined in 33 CFR Section 329.11 as “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas.”

The results presented here are also consistent with recent court decisions, as outlined and applied by the USACE (USACE 2007; Grumbles and Woodley 2007) and Environmental Protection Agency (EPA; 2007). These publications explain that the EPA and USACE will assert jurisdiction over traditional navigable waters (TNW) and tributaries to TNWs that are a relatively permanent water body (RPW), which has year-round or continuous seasonal flow. For water bodies that are not RPWs, a significant nexus evaluation is used to determine if the non-RPW is jurisdictional. As an alternative to the significant nexus evaluation process, a preliminary jurisdictional delineation (PJD) may be submitted to the USACE. The PJD treats all waters and wetlands on a site as if they are jurisdictional WUS (USACE 2008b). An overview of USACE wetlands and jurisdictional WUS definitions is presented in Appendix A.

Plants were identified according to The Jepson Manual: Vascular Plants of California (Baldwin et al. [2012]). Wetland affiliations of plant species follow the Arid West 2014 Regional Wetland Plant List (Lichvar et al 2014). Soils information was taken from the Natural Resources Conservation Service (NRCS; 2015). Soil chromas were identified according to Munsell's Soil Color Charts (Kollmorgen 1994).

A total of two wetland delineation sampling points were taken in the PSA in locations representative of potentially jurisdictional areas. Soil pits were excavated at each of the sampling points. Soil pits were excavated to a depth of 12 inches. Soil samples were evaluated for hydric soil indicators (e.g., hydrogen sulfide [A4], stratified layers [A5], sandy redox [S5], stripped matrix [S6], depleted matrix [F3], redox dark surface [F6], and redox depressions [F8]). Sampling points also were inspected for primary wetland hydrology indicators (e.g., surface water [A1], high water table [A2], saturation [A3], water marks [non-riverine, B1], sediment deposits [non-riverine, B2], drift deposits [non-riverine, B3], surface soil cracks [B6], inundation visible on aerial imagery [B7], water-stained leaves [B9], salt crust [B11], biotic crust [B12], aquatic invertebrates [B13], hydrogen sulfide odor [C1], and oxidized rhizospheres along living roots [C3]) and secondary (e.g., water marks [riverine, B1], sediment deposits [riverine, B2], drift deposits [riverine, B3], drainage patterns in wetlands [B10], shallow aquitard [D3], and positive FAC neutral test [D5]).

Standard USACE wetland delineation data forms were completed for each sampling point in the field and are included in Appendix C. Photographs taken of the sampling points and PSA are included in Appendix D.

The RWQCB asserts regulatory jurisdiction over activities affecting wetland and non-wetland waters of the state pursuant to Section 401 of the CWA and the State Porter-Cologne Water Quality Control Act. Potential RWQCB jurisdiction and waters of the state found within the PSA follows the boundaries of potential USACE jurisdiction for WUS. There are no areas supporting isolated waters of the state subject to exclusive RWQCB jurisdiction pursuant to the State Porter-Cologne Water Quality Control Act.

B. CDFW JURISDICTION

Potential CDFW jurisdictional boundaries within PSA were determined based on the presence of riparian vegetation or regular surface flow, as demonstrated by the presence of a streambed.

Streambeds within potential CDFW jurisdiction were delineated based on the definition of streambed as, "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports riparian vegetation" (Title 14, Section 1.72). Riparian habitat is not defined in Title 14, but the section refers to vegetation and habitat associated with a stream. The CDFW jurisdictional habitat includes all riparian shrub or tree canopy that may extend beyond the banks of a stream. Definitions of CDFW jurisdictional areas are presented in Appendix B (Section II).

III. RESULTS AND DISCUSSION

A. PRESENCE OF WETLAND INDICATORS

1. Hydrophytic Vegetation

Although unvegetated along much of its extent within the PSA, hydrophytic vegetation is present in some portions of the Mill Creek Zanja. Characteristic hydrophytic species observed included red willow (*Salix laevigata*), black willow (*Salix gooddingii*), and cattail (*Typha* sp.). Plant species observed within the sampling points are presented in Table 2, along with their wetland indicator status.

Table 2
PLANT SPECIES OBSERVED AT JURISDICTIONAL DELINEATION SAMPLING POINT LOCATIONS

SCIENTIFIC NAME	COMMON NAME	WETLAND INDICATOR STATUS†
Cynodon dactylon‡	Bermuda grass	FACU
Cyperus eragrostis	tall flatsedge	FACW
Fraxinus uhdei‡	shamel ash	FAC
Paspalum dilatatum‡	dallis grass	FAC
Populus fremontii	western cottonwood	FAC
Salix gooddingii	black willow	FACW
Salix laevigata	red willow	FACW
Sorghum halepense‡	Johnson grass	FACU
Typha sp.	cattail	OBL

†OBL=obligate wetland species, FACW=facultative wetland species, FAC=facultative species, FACU=facultative upland species, UPL=upland species. Please see Appendix A for further explanation of indicator status.
‡Non-native species.

2. Wetland Hydrology

The following wetland hydrology indicators, as defined by the USACE (USACE 2008a), were observed at sampling point locations in the PSA: sediment deposits, drift deposits, and drainage patterns.

3. Hydric Soil

Indicators of hydric soil, as defined by the USACE (USACE 2008a), were not observed at the sampling point locations.

B. DESCRIPTION OF JURISDICTIONAL HABITATS

Potential jurisdictional resources within the PSA consist of Mill Creek Zanja and associated wetland and riparian vegetation. Four of the eight vegetation communities mapped in the PSA are potential jurisdictional habitats: riparian woodland, riparian scrub (disturbed), freshwater marsh (disturbed), and non-vegetated channel/streambed. Upland vegetation communities mapped in the PSA include non-native grassland, non-native vegetation, disturbed habitat, and urban/developed land (Figures 5a-5d). Depictions of potential jurisdictional habitat within the PSA are presented in Figures 6a-6d.

Mill Creek Zanja is primarily an earthen trapezoidal channel, although portions of the channel are contained within vertical walls, mainly within Sylvan Park. The channel receives urban and agricultural runoff from surrounding development and upstream citrus groves.

Climatic conditions and hydrologic conditions within the PSA were typical for the time of year and normal circumstances were present. Vegetation and hydrology were not found to be significantly disturbed (i.e., subjected to unauthorized clearing or hydrologic modifications) or naturally problematic (i.e., periodically lacking indicators of hydrophytic vegetation or wetland hydrology due to normal seasonal or annual variability). Soil at one of the two sampling points was determined to be naturally problematic and is further discussed in Section IIIC2., below. All potential non-wetland WUS displayed evidence of a consistent OHWM and discernible streambed and bank.

1. Riparian Woodland

Riparian woodland is a tall, open, streamside woodland dominated by any of several species of trees (i.e., coast live oak, willow, sycamore, or cottonwood). Three small stands of riparian woodland occur along Mill Creek Zanja adjacent to Sylvan Boulevard between University Street and Judson Street. Each stand is comprised of four to eight mature trees growing on the upper channel slopes and top of bank. Western cottonwood (*Populus fremontii*) is the dominant species in each stand, although western sycamore (*Platanus racemosa*) and black willow also were observed. These small, open stands of woodland occur in an urbanized setting adjacent to paved roadways, with no understory present. Riparian woodland within the PSA is potential CDFW jurisdictional habitat.

Project Study Area

Vegetation

Non-native Grassland

Non-native Vegetation

Disturbed Habitat

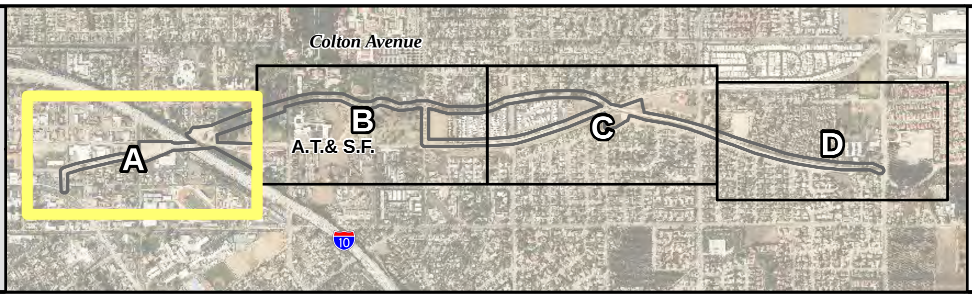
Non-vegetated Channel/Streambed

Developed

N

0 200 Feet

HELIX Environmental Planning



Vegetation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 5A

I:\PROJECTS\S\SDG\SDG-16 ZanjaTrail\Map\JDR\Fig5 Vegetation.mxd SDG-16 07/27/15 -EV

Project Study Area

Developed

Vegetation

Riparian Woodland

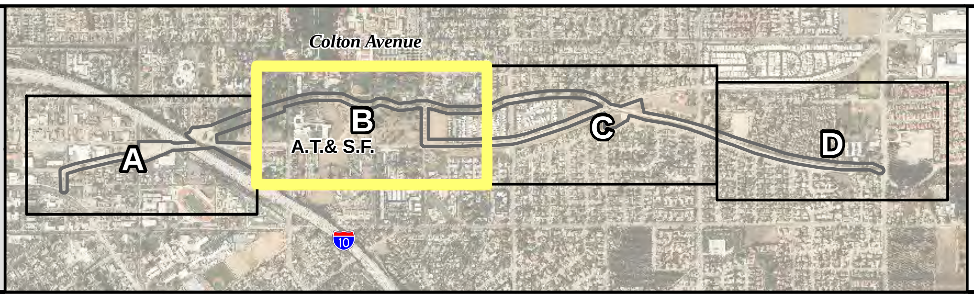
Disturbed Habitat

Non-vegetated Channel/Streambed

HELIX
Environmental Planning

N

0 200 Feet

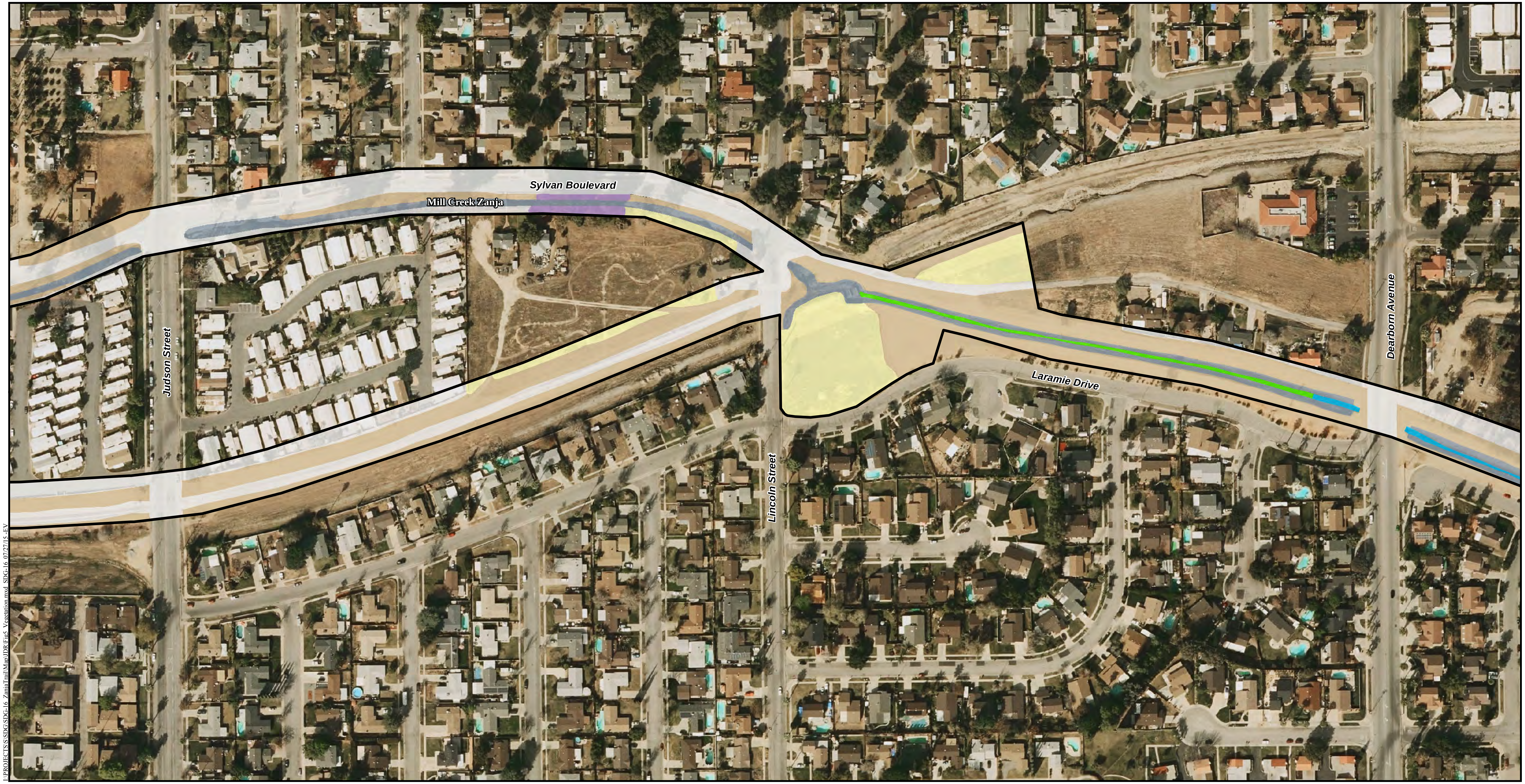


Vegetation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 5B

I:\PROJECTS\S\SDG\SDG-16_ZanjaTrail\Map\JDR\Fig5_Vegetation.mxd SDG-16 07/27/15 -EV



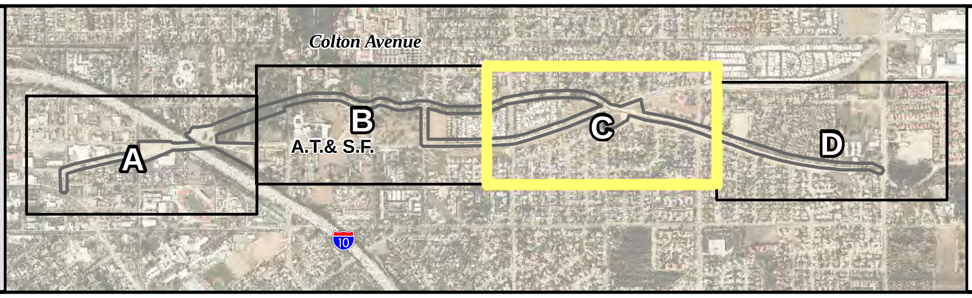
Project Study Area

Vegetation

- Freshwater Marsh Disturbed
- Riparian Scrub Disturbed
- Non-native Grassland
- Non-native Vegetation
- Disturbed Habitat
- Non-vegetated Channel/Streambed
- Developed

0 200 Feet

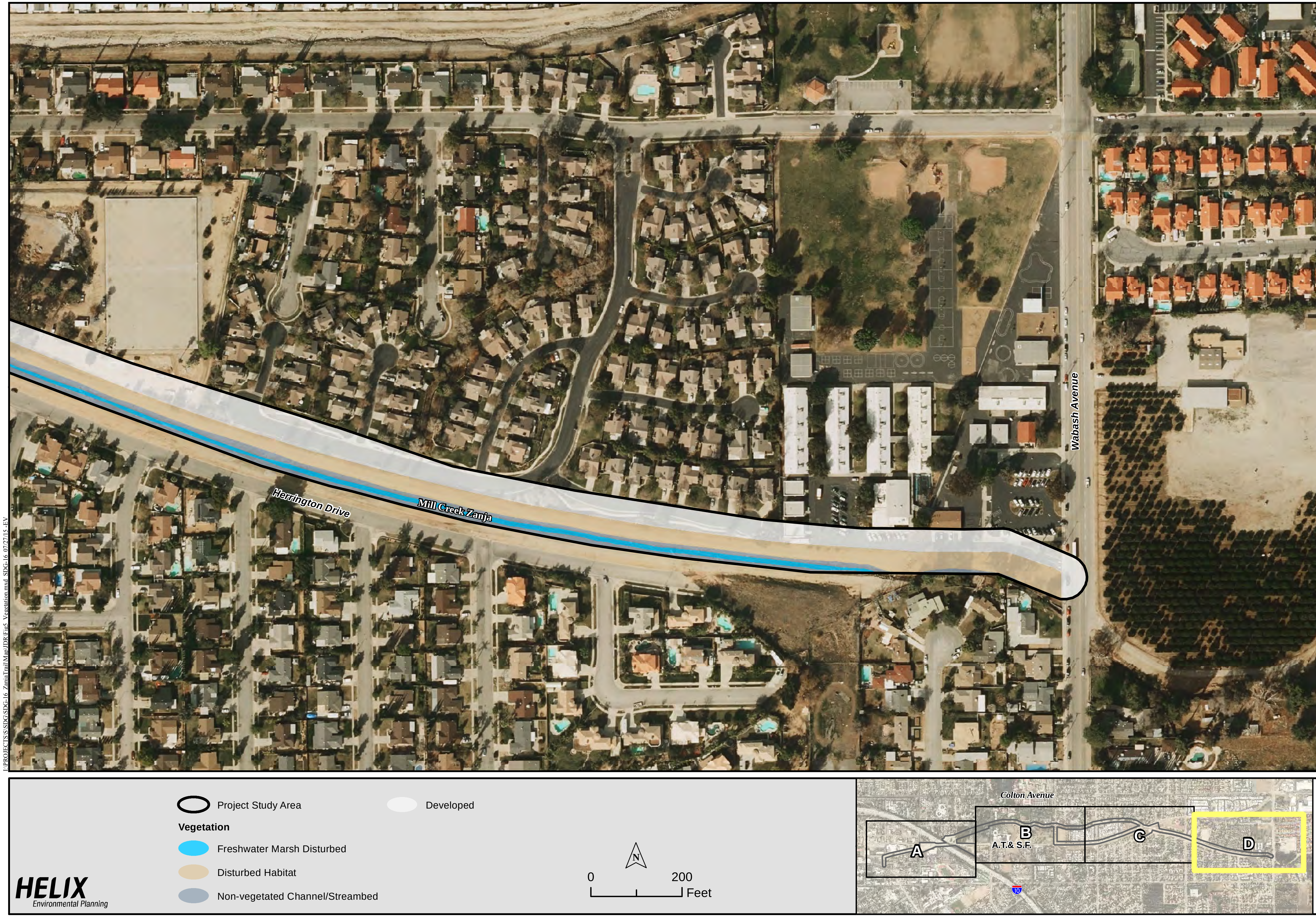
HELIX Environmental Planning



Vegetation

ZANJA TRAIL AND GREENWAY PARK PROJECT

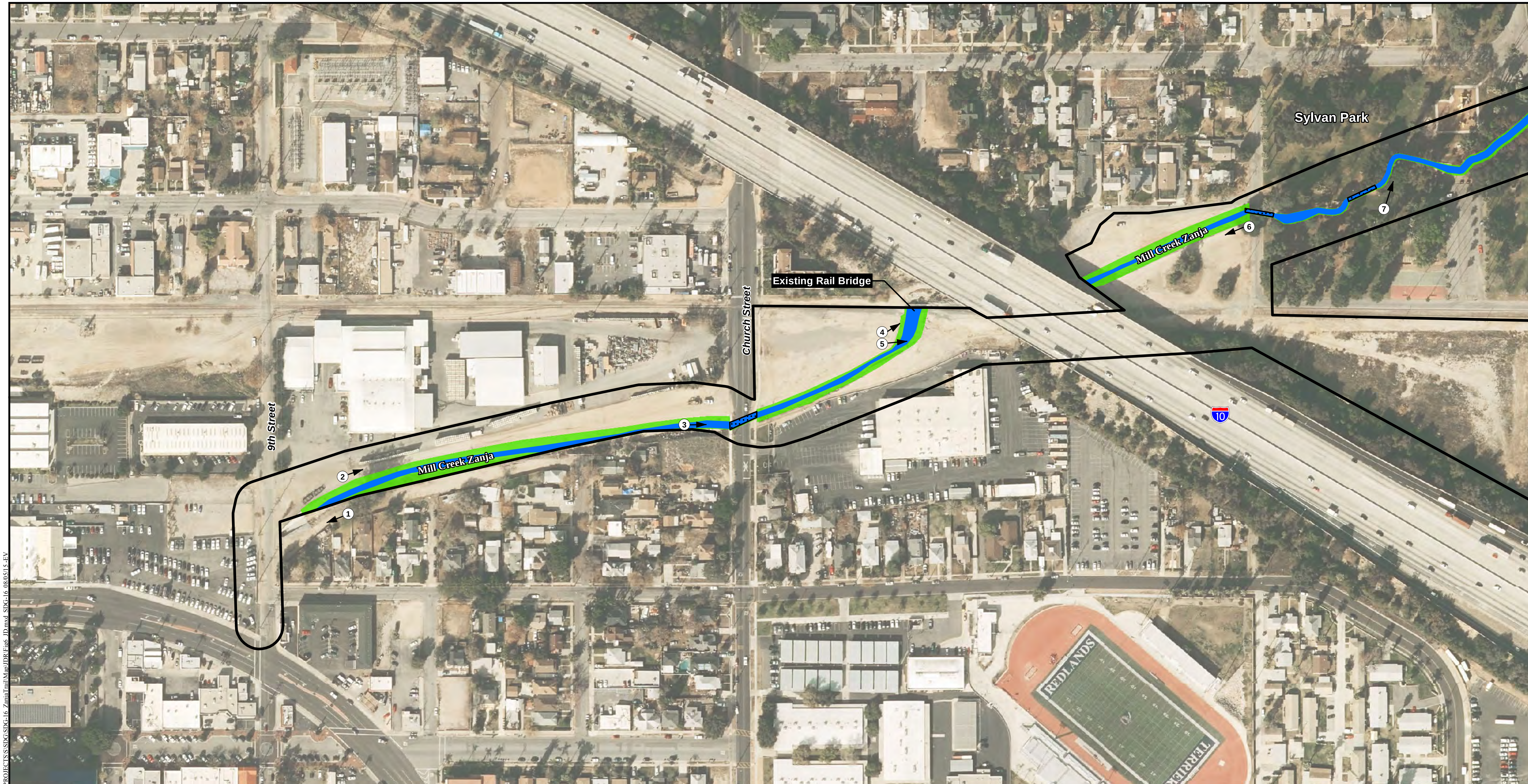
Figure 5C



Vegetation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 5D



Project Study Area

Photo Location

Culvert

Jurisdiction

USACE Non-wetland Waters of the U.S./CDFW

CDFW

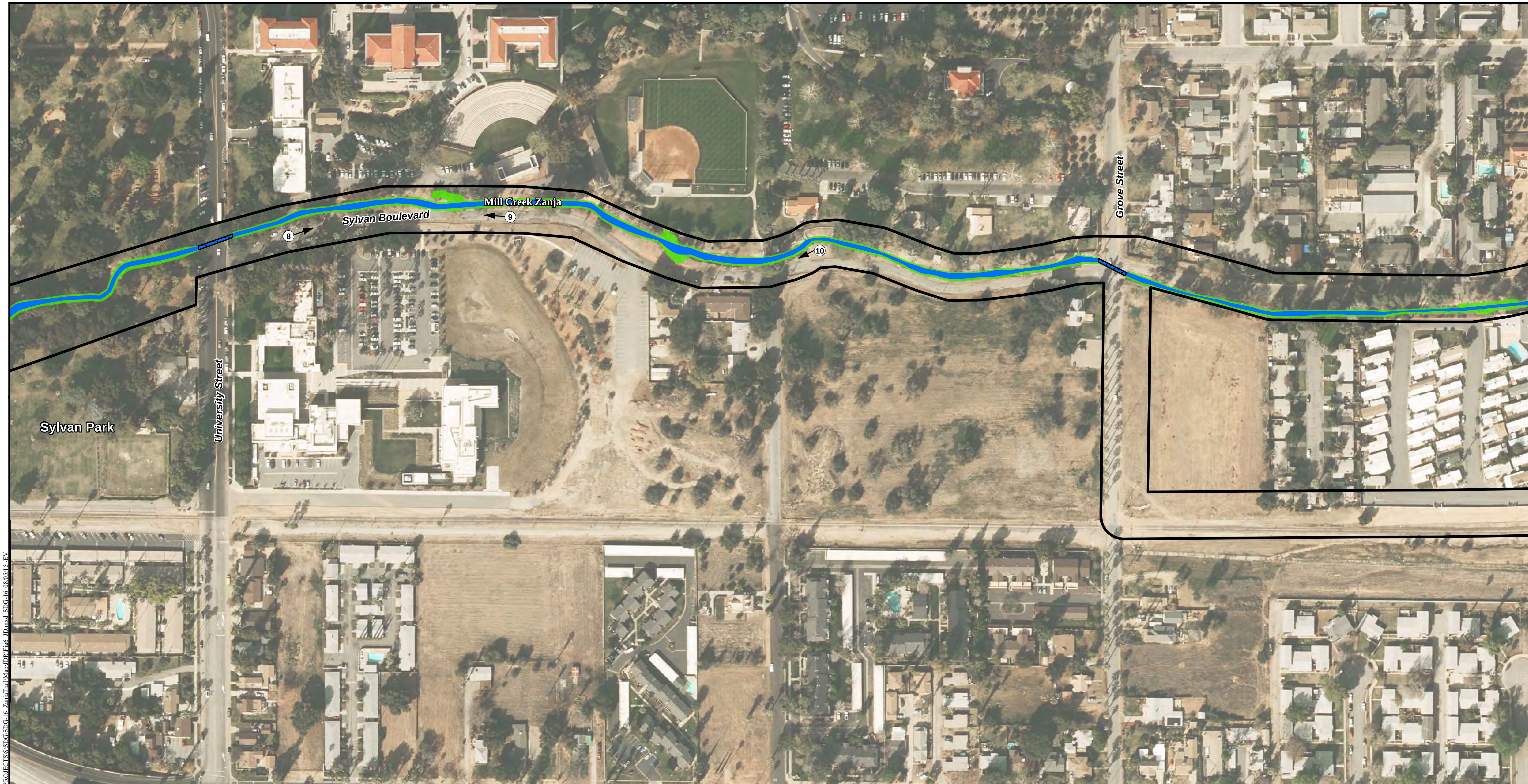
0 200 Feet

HELIX
Environmental Planning

Wetland and Waters Delineation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 6A



Project Study Area
Photo Location
Culvert

Jurisdiction

USACE Non-wetland Waters of the U.S./CDFW
CDFW

N

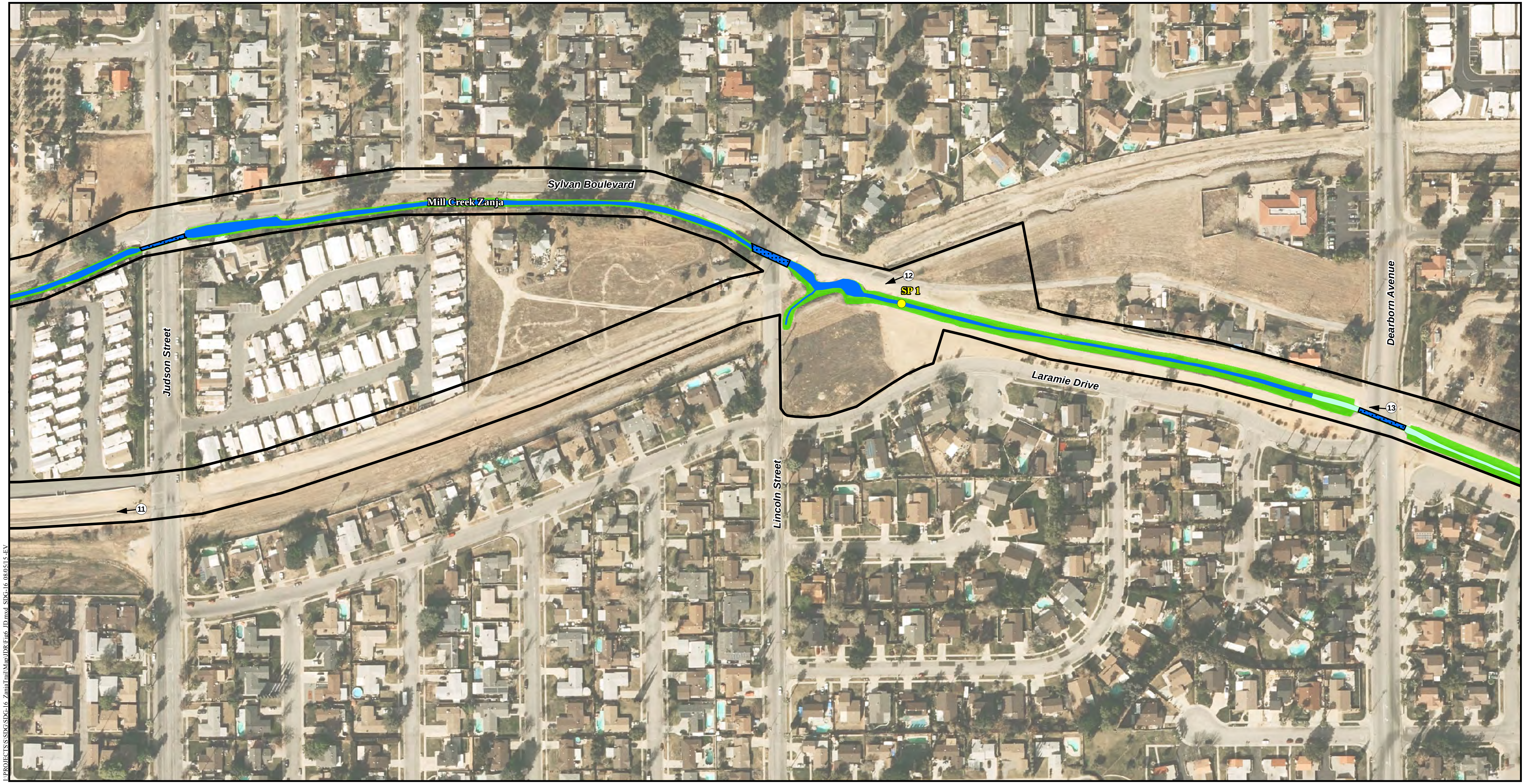
0 200 Feet

HELIX
Environmental Planning

Wetland and Waters Delineation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 6B



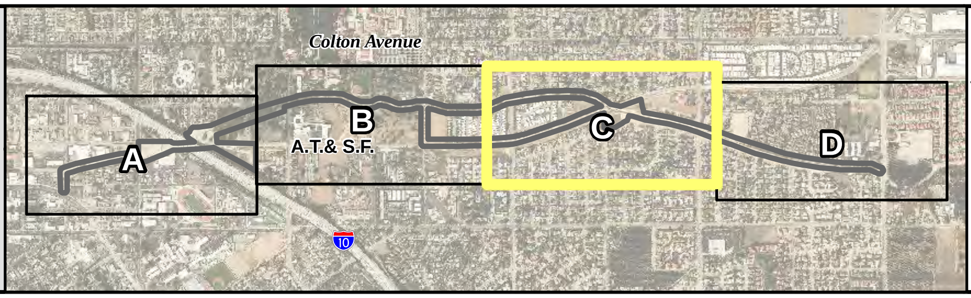
Project Study Area
Photo Location
Soil Pit (Sample Point)
Culvert

Jurisdiction
USACE Non-wetland Waters of the U.S./CDFW
USACE Wetland/CDFW
CDFW

N

0 200 Feet

HELIX
Environmental Planning



Wetland and Waters Delineation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 6C

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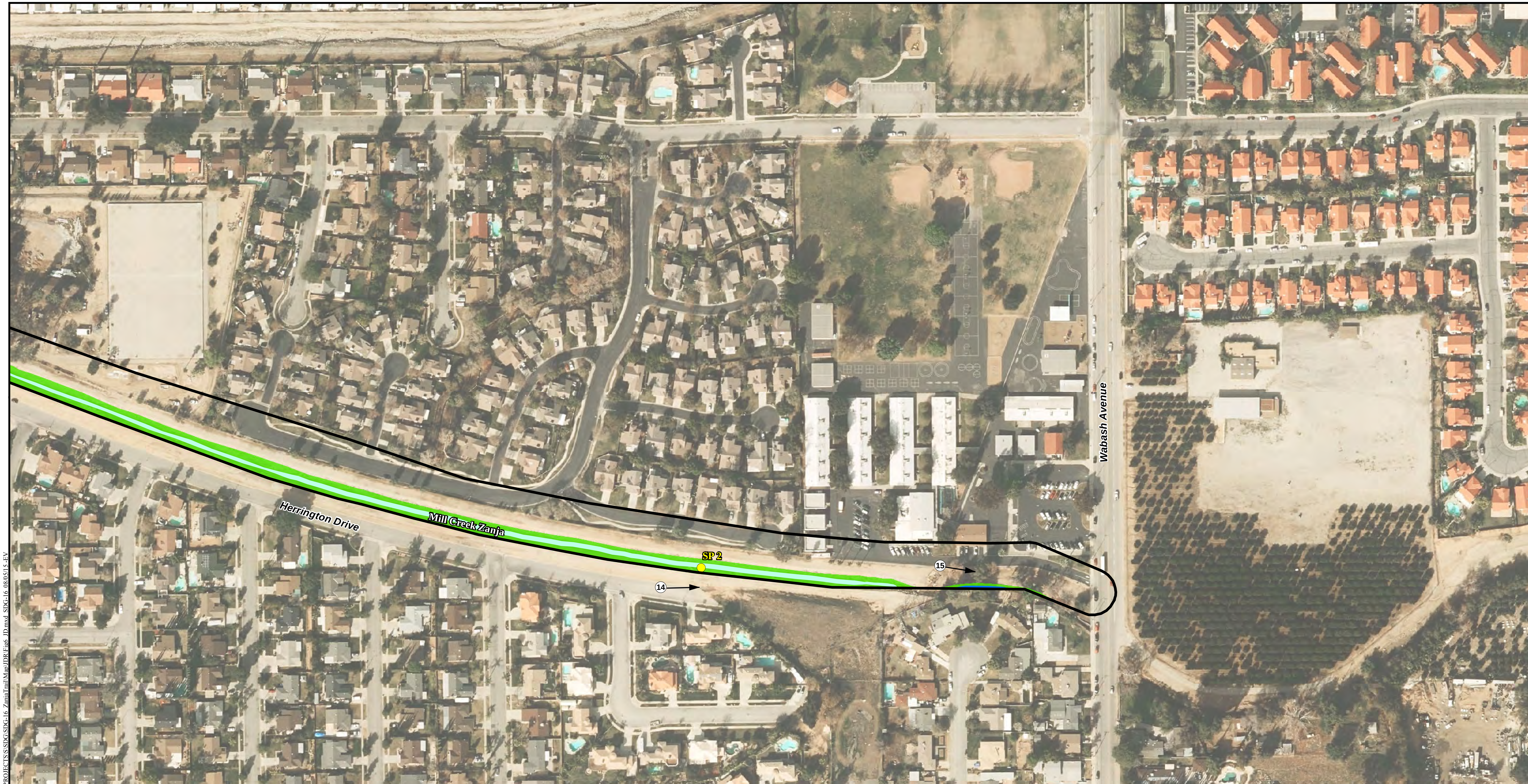

Project Study Area

Photo Location

Soil Pit (Sample Point)

Jurisdiction

USACE Non-wetland Waters of the U.S./CDFW

USACE Wetland/CDFW

CDFW

N

0 200 Feet

HELIX Environmental Planning

Wetland and Waters Delineation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 6D

2. Riparian Scrub - Disturbed

Riparian scrub is a scrubby streamside thicket varying from open to impenetrable. This early seral community may succeed to any of several riparian woodland or forest types absent severe flooding disturbance. This habitat occurs in the channel bottom of the Mill Creek Zanja between Lincoln Street and Dearborn Street. Mature shrubs are not present; rather, the habitat is characterized by saplings of western cottonwood, red willow, black willow, and mule fat growing among an herbaceous understory dominated by non-native Johnson grass (*Sorghum halepense*). Riparian scrub within the PSA is potential CDFW jurisdictional habitat.

3. Freshwater Marsh – Disturbed

Freshwater marsh is typically dominated by perennial, emergent monocots, 5 to 13 feet tall, forming incomplete to completely closed canopies. This habitat occurs in the channel bottom of the Mill Creek Zanja in the eastern portion of the PSA, downstream of citrus groves. Cattail is the dominant species present, with tall flatsedge (*Cyperus eragrostis*), Johnson grass, castor-bean (*Ricinus communis*), and spike-sedge (*Eleocharis* sp.) also observed. Freshwater marsh within the PSA is potential USACE and CDFW jurisdictional habitat.

4. Non-vegetated Channel/Streambed

Non-vegetated channel/streambed consists of portions of Mill Creek Zanja that are either unvegetated or sparsely vegetated and include areas of potential USACE and CDFW jurisdiction.

Potential USACE jurisdiction is comprised of portions of non-vegetated channel/streambed that are below the OHWM, as well as areas below the OHWM that are vegetated but do not meet all three of the USACE wetland criteria (i.e., disturbed riparian scrub). These areas are classified as non-wetland WUS.

Potential CDFW jurisdiction extends bank to bank, encompassing the entire non-vegetated channel/streambed.

C. SAMPLING POINTS

Below is a summary of the two wetland delineation sampling points taken in the PSA.

1. Sampling Point 1

This sampling point was located in disturbed riparian scrub in the bottom of Mill Creek Zanja. One wetland plant (black willow) and one upland plant (Johnson grass) were dominant, therefore, not meeting the USACE wetland vegetation criterion. Wetland hydrology was indicated by two secondary indicators: drift deposits (B3) and sediment deposits (B2). A soil pit excavated to 12 inches did not reveal the presence of hydric soil indicators. This sampling point met only one of the three USACE wetland criteria, and therefore, does not support wetland WUS; it is, however, potential USACE non-wetland WUS as well as CDFW jurisdictional habitat.

2. Sampling Point 2

This sampling point was located in disturbed freshwater marsh in the bottom of Mill Creek Zanja. Three of the four dominant species were wetland plants (cattail, western cottonwood, and shamel ash [*Fraxinus uhdei*]), thus meeting the wetland vegetation criterion. Wetland hydrology was indicated by two secondary indicators: drift deposits (B3) and drainage patterns (B10). A soil pit excavated to 12 inches did not reveal the presence of hydric soil indicators. Soil was considered naturally problematic at this location due to the dominance of obligate wetland vegetation (i.e., cattail) and presence of wetland hydrology, with the soil pit located in a landscape position suitable for the formation of hydric soils. In addition, this sampling point is downstream of irrigated citrus orchards and also receives urban runoff from surrounding residential development. Hydric soil indicators can be faint or absent in areas with coarse textured, sandy soils, as well as soils that are moderately to strongly alkaline. It is possible that hydric soil indicators were not observed in this location for these reasons. It was therefore concluded that this area met all three USACE wetland criteria and is potential USACE wetland and CDFW jurisdictional habitat.

Sampling points were not taken in the small stands of riparian woodland, as the trees were clearly located above the OHWM in a landscape position that would not support hydric soils and would not meet all three USACE wetland criteria.

D. JURISDICTIONAL HABITAT SUMMARY

Potential jurisdictional habitats within the PSA include riparian woodland, riparian scrub (disturbed), freshwater marsh (disturbed), and non-vegetated channel/streambed. A total of 2.61 acres of potential USACE jurisdiction/WUS and 5.76 acres of potential CDFW jurisdiction were delineated within the PSA (Tables 3 and 4, respectively).

1. USACE Jurisdiction – Waters of the U.S.

Potential USACE jurisdiction within the PSA totals 2.61 acres comprised of 0.47 acre of wetland WUS and 2.14 acres of non-wetland WUS (Figures 6a-6d; Table 3). Potential RWQCB jurisdiction under Section 401 of the Clean Water Act within the PSA follows the boundaries of potential USACE jurisdiction for WUS. There are no isolated waters of the state subject to exclusive RWQCB jurisdiction pursuant to the State Porter-Cologne Water Quality Control Act.

Table 3 USACE JURISDICTION WITHIN THE PROJECT STUDY AREA	
HABITAT	**ACREAGE***
Wetlands	
Freshwater Marsh	0.47
Non-wetland Waters	
Streambed	2.14
TOTAL	**2.61**

*Acreage is rounded to the nearest 0.01 acre; thus, total reflects rounding.

2. CDFW Jurisdiction

Potential CDFW jurisdiction within the PSA totals 5.76 acres comprised of 0.78 acre of wetland or riparian habitat and 4.98 acres of streambed (Table 4; Figures 6a-6d).

Table 4 CDFW JURISDICTION WITHIN THE PROJECT STUDY AREA	
HABITAT	**ACREAGE***
Riparian Woodland	0.14
Riparian Scrub (disturbed)	0.17
Freshwater Marsh (disturbed)	0.47
Non-vegetated Channel/Streambed	4.98
TOTAL	**5.76**

*Acreage is rounded to the nearest 0.01 acre, thus, total reflects rounding.

IV. CONCLUSION

A. FEDERAL PERMITTING

1. USACE

Permanent and temporary fills and discharges (impacts) to WUS are regulated by USACE under Section 404 of the CWA (33 USC 401 *et seq.*; 33 USC 1344; USC 1413; and Department of Defense, Department of the Army, Corps of Engineers 33 CFR Part 323). Impacts to WUS would require a CWA Section 404 permit from the Los Angeles District USACE. If impacts cannot be avoided, the proposed activities would likely be considered consistent with those covered under Nationwide Permit (NWP) 14 for Linear Transportation Projects if impact acreage thresholds of one-half acre for non-tidal waters are not exceeded. Notification to the USACE through the preparation of a Pre-Construction Notification (PCN) requesting authorization under NWP 14 would be required.

B. STATE PERMITTING

1. RWQCB

A CWA Section 401 Water Quality Certification (WQC) administered by the State Water Resources Control Board (SWRCB) or RWQCB must be issued prior to any 404 Permit. The USACE jurisdictional areas addressed in this report would also be subject to 401 Certification by the RWQCB. There are no isolated waters or wetlands under RWQCB jurisdiction within the PSA that would be subject to the State Porter-Cologne Water Quality Control Act only. If impacts to WUS are proposed, a 401 WQC from the Santa Ana RWQCB would be required.

2. CDFW

The CDFW regulates temporary and permanent alterations or impacts to streambeds or lakes under California Fish and Game Code Sections 1600 et seq. Notification of Lake or Streambed Alteration to CDFW is required for projects that will divert or obstruct the natural flow of water; change the bed, channel, or bank of any stream; or use any material from a streambed. A Streambed Alteration Agreement (SAA) is issued by CDFW as a contract between the applicant and CDFW stating what activities can occur in the riparian zone and stream course (California Association of Resource Conservation Districts 2002). If impacts to CDFW jurisdiction are proposed, Notification of Lake or Streambed Alteration would be required to the Inland Deserts Region CDFW.

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Appendix A

FEDERAL JURISDICTIONAL INFORMATION

Appendix A
FEDERAL JURISDICTIONAL INFORMATION

<u>Wetlands and "Waters of the U.S." Definitions</u>

The U.S. Army Corps of Engineers (USACE; Federal Register 1982) and the Environmental Protection Agency (Federal Register 1980) jointly define wetlands as "[t]hose areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Environmental Laboratory 1987).

The official definition of "Waters of the U.S." and their limits of jurisdiction (as they may apply) are defined by the USACE' Regulatory Program Regulations (Section 328.3, paragraphs [a] 1-3 and [e], and Section 328.4, paragraphs [c] 1 and 2) as follows:

All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; all waters including interstate wetlands, all other waters such as interstate lakes, rivers, streams [including intermittent streams], mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate commerce including any such water, which are or could be used by interstate travelers for recreation or other purposes; or from which fish or shellfish are or could be taken and sold in interstate commerce; or which are or could be used for industries in interstate commerce; or wetlands adjacent to waters [other than waters that are themselves wetlands].

Non-tidal Waters of the U.S. The limits of jurisdiction in non-tidal waters: In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or when adjacent wetlands are present, the jurisdiction extends to the limit of the adjacent wetlands.

The term ordinary high water mark (OHWM) means that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation (scouring), the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Waters of the U.S. must exhibit an OHWM or other evidence of surface flow created by hydrologic physical changes. These physical changes include (Riley 2005):

- Natural line impressed on the bank
- Shelving
- Changes in the character of soil
- Destruction of terrestrial vegetation
- Presence of litter and debris
- Wracking
- Vegetation matted down, bent, or absent
- Sediment sorting
- Leaf litter disturbed or washed away
- Scour
- Deposition
- Multiple observed flow events
- Bed and banks
- Water staining
- Change in plant community

Jurisdictional areas also must be connected to Waters of the U.S. (Guzy and Anderson 2001; U.S. Supreme Court 2001).

As a consequence of the U.S. Supreme Court decision in Rapanos v. United States, a memorandum was developed regarding Clean Water Act jurisdiction (Grumbles and Woodley 2007). The memorandum states that the EPA and the USACE will assert jurisdiction over traditional navigable waters (TNW), wetlands adjacent to TNW, tributaries to TNWs that are a relatively permanent water body (RPW), and wetlands adjacent to TNW. An RPW has year round flow or continuous seasonal flow (i.e., typically for three months or longer). Jurisdiction over other waters (i.e., non TNW and RPW) will be based on a fact specific analysis to determine if they have a significant nexus to a TNW.

Pursuant to the USACE Instructional Guidebook (USACE and EPA 2007), the significant nexus evaluation will cover the subject reach of the stream (upstream and downstream) as well as its adjacent wetlands (Illustrations 2 through 6, USACE and EPA 2007). The evaluation will include the flow characteristics, annual precipitation, ability to provide habitat for aquatic species, ability to retain floodwaters and filter pollutants, proximity of the subject reach to a TNW, drainage area, and the watershed.

Wetland Criteria

Wetland boundaries are determined using three mandatory criteria (hydrophytic vegetation, wetland hydrology, and hydric soil) established for wetland delineations and described within the Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008). Following is a brief discussion of the three criteria and how they are evaluated.

Vegetation

"Hydrophytic vegetation is defined herein as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present" (Environmental Laboratory 1987).

The wetland indicator status (obligate upland, facultative upland, facultative, facultative wetland, obligate wetland, or no indicator status) of the dominant plant species of all vegetative layers is determined. Species considered to be hydrophytic include the classifications of facultative,

facultative wetland, and obligate wetland as defined by the U.S. Fish and Wildlife Service (1988; Table A-1). The percent of dominant wetland plant species is calculated. The hydrophytic vegetation criterion is considered to be met if it meets the "Dominance Test," "Prevalence Index," or the vegetation has morphological adaptations for prolonged inundation.

Table A-1
DEFINITIONS OF PLANT INDICATOR CATEGORIES

INDICATOR CATEGORIES	ABBREVIATION	PROBABILITY OF OCCURRING IN WETLANDS
Obligate wetland	OBL	Occur almost exclusively in wetlands (99 percent probability of occurring in a wetland).
Facultative wetland	FACW	Usually found in wetlands (67 to 99 percent probability of occurring in a wetland) but occasionally in uplands.
Facultative	FAC	Equally likely to occur in wetland (34 to 66 percent probability) or non-wetland.
Facultative upland	FACU	Usually occur in non-wetlands but occasionally found in wetlands (1 to 33 percent probability of occurring in a wetland).
Obligate upland	UPL	Occur almost exclusively in non-wetlands (1 percent probability of occurring in a wetland).

Hydrology

"The term 'wetland hydrology' encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic reducing conditions, respectively" (Environmental Laboratory 1987).

Hydrologic characteristics must indicate that the ground is saturated to within 12 inches of the surface for at least 5 percent of the growing season during a normal rainfall year (approximately 18 days for most of low-lying southern California). Hydrology criteria are evaluated based on the characteristics listed below (USACE 2008). Where positive indicators of wetland hydrology are present, the limit of the OHWM (or the limit of adjacent wetlands) is noted and mapped. Evidence of wetland hydrology is met by the presence of a single primary indicator or two secondary indicators.

Primary

- surface water (A1)
- high water table (A2)
- saturation (A3)
- water marks (B1; non-riverine)
- sediment deposits (B2; non-riverine)
- drift deposits (B3; non-riverine
- surface soil cracks (B6)
- inundation visible on aerial imagery (B7)
- water-stained leaves (B9)
- salt crust (B11)
- biotic crust (B12)
- aquatic invertebrates (B13)
- hydrogen sulfide odor (C1)
- oxidized rhizospheres along living roots (C3)
- presence of reduced iron (C4)
- recent iron reduction in tilled soils (C6)
- thin muck surface (C7)

Secondary

- watermarks (B1; riverine)
- sediment deposits (B2; riverine)
- drift deposits (B3; riverine)
- drainage patterns (B10)
- dry-season water table (C2)
- crayfish burrows (C8)
- saturation visible on aerial imagery (C9)
- shallow aquitard (D3)
- FAC-neutral test (D5)

In the absence of all other hydrologic indicators and in the absence of significant modifications of an area's hydrologic function, positive hydric soil characteristics are assumed to indicate positive wetland hydrology. This assumption applies unless the site visit was done during the wet season of a normal or wetter-than-normal year. Under those circumstances, wetland hydrology would not be present.

Soils

"A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (Natural Resource Conservation Service [NRCS] 2004).

Soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation. Soil matrix and mottle colors are identified at each sampling plot using a Munsell soil color chart (Kollmorgen 1994). Generally, an 18-inch or deeper pit is excavated with a shovel at each sampling plot unless refusal occurs above 18 inches.

Soils in each area are closely examined for hydric soil indicators, including the characteristics listed below. Hydric soil indicators are presented in three groups. Indicators for "All Soils" (A) are used in any soil regardless of texture, indicators for "Sandy Soils" (S) area used in soil layers with USDA textures of loamy fine sand or coarser, and indicators for "Loamy and Clayey Soils" (F) are used with soil layers of loamy very fine sand and finer (USACE 2008).

- histosols (A1)
- histic epipedons (A2)
- black histic (A3)
- hydrogen sulfide (A4)
- stratified layers (A5)
- 1 cm muck (A9)
- depleted below dark surface (A11)
- thick dark surface (A12)
- sandy mucky mineral (S1)
- sandy gleyed matrix (S4)
- sandy redox (S5)
- stripped matrix (S6)
- loamy mucky mineral (F1)
- loamy gleyed matrix (F2)
- depleted matrix (F3)
- redox dark surface (F6)
- depleted dark surface (F7)
- redox depressions (F8)
- vernal pools (F9)
- 2 cm muck (A10)
- reduced vertic (F18)
- red parent material (TF2)

Hydric soils may be assumed to be present in plant communities that have complete dominance of obligate or facultative wetland species. In some cases, there is only inundation during the growing season and determination must be made by direct observation during that season, recorded hydrologic data, testimony of reliable persons, and/or indication on aerial photographs.

Non-wetland Waters of the U.S.

The non-wetland Waters of the U.S. designation is met when an area has periodic surface flows but lacks sufficient indicators to meet the hydrophytic vegetation and/or hydric soils criteria. For purposes of delineation and jurisdictional designation, the non-wetland Waters of the U.S. boundary in non-tidal areas is the OHWM as described in the Section 404 regulations (33 CFR Part 328).

USGS Mapping

The USGS Quad maps are one of the resources used to aid in the identification and mapping of jurisdictional areas. Their primary uses include understanding the subregional landscape position of a site, major topographical features, and a project's position in the watershed.

In our experience the designation of watercourse as a blue-line stream (intermittent or perennial) on USGS maps has been unreliable and typically overstates the hydrology of most streams. This has also been the experience of others, including the late Luna Leopold. Leopold was a hydrologist with USGS from 1952 to 1972, Professor in the Department of Geology and Geophysics, and Department of Landscape Architecture, University of California, Berkeley from 1972 to 1986, and Professor Emeritus from 1987 until his death in 2006. In regard to stream mapping on USGS maps, Dr. Leopold opined that ". . . blue lines on a map are drawn by nonprofessional, low-salaried personnel. In actual fact, they are drawn to fit a rather personalized aesthetic."

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Appendix B

STATE JURISDICTIONAL INFORMATION

Appendix B
STATE JURISDICTIONAL INFORMATION

California Department of Fish and Wildlife Regulations

The California Department of Fish and Wildlife (CDFW; Department) regulates alterations or impacts to streambeds or lakes (wetlands) under Fish and Game Code Sections 1600 through 1616 for any private, state, or local government or public utility-initiated projects. The Fish and Game Code Section 1602 requires any entity to notify the Department before beginning any activity that will do one or more of the following: (1) substantially obstruct or divert the natural flow of a river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. Fish and Game Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers and streams as well as lakes in the state.

In order to notify the Department, a person, state, or local governmental agency or public utility must submit a complete notification package and fee to the Department regional office that serves the county where the activity will take place. A fee schedule is included in the notification package materials. Under the Permit Streamlining Act (Government Code Sections 65920 et seq.), the Department has 30 days to determine whether the package is complete. If the requestor is not notified within 30 days, the application is automatically deemed to be complete.

Once the notification package is deemed to be complete, the Department will determine whether the applicant will need a Lake or Streambed Alteration Agreement (SAA) for the activity, which will be required if the activity could substantially adversely affect an existing fish and wildlife resource. If an SAA is required, the Department will conduct an on-site inspection, if necessary, and submit a draft SAA that will include measures to protect fish and wildlife resources while conducting the project. If the applicant is applying for a regular SAA (less than five years), the Department will submit a draft SAA within 60 calendar days after notification is deemed complete. The 60-day time period does not apply to notifications for long-term SAAs (greater than 5 years).

After the applicant receives the SAA, the applicant has 30 calendar days to notify the Department whether the measures in the draft SAA are acceptable. If the applicant agrees with the measures included in the draft SAA, the applicant will need to sign the SAA and submit it to the Department. If the applicant disagrees with any measures in the draft SAA, the applicant must notify the Department in writing and specify the measures that are not acceptable. Upon written request, the Department will meet with the applicant within 14 calendar days of receiving the request to resolve the disagreement. If the applicant fails to respond in writing within 90 calendar days of receiving the draft SAA, the Department may withdraw that SAA. The time periods described above may be extended at any time by mutual agreement.

After the Department receives the signed draft SAA, the Department will make it final by signing the SAA; however, the Department will not sign the SAA until it both receives the notification fee and ensures that the SAA complies with the California Environmental Quality

Act (Public Resources Code Section 21000 et seq.). After the applicant receives the final agreement, the applicant may begin the project the agreement covers, provided that the applicant has obtained any other necessary federal, state and/or local authorizations.

Water Resource Control Board Regulations

Section 401 Water Quality Certification

Whenever a project requires a federal Clean Water Act (CWA) Section 404 permit or a Rivers and Harbors Act Section 10 permit, it must first obtain a CWA Section 401 Water Quality Certification. The Regional Water Quality Control Board (RWQCB) administers the 401 Certification program. Federal CWA Section 401 requires that every applicant for a Section 404 permit must request a Water Quality Certification that the proposed activity will not violate state and federal water quality standards.

Porter-Cologne Water Quality Control Act

The State Water Resource Control Board (SWRCB) and the RWQCB regulate the discharge of waste to waters of the State via the 1969 Porter-Cologne Water Quality Control Act (Porter-Cologne) as described in the California Water Code (SWRCB 2008). The California Water Code is the State's version of the Federal CWA. Waste, according to the California Water Code, includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal. State waters that are not federal waters may be regulated under Porter-Cologne. A Report of Waste Discharge must be filed with the RWQCB for projects that result in discharge of waste into waters of the State. The RWQCB will issue Waste Discharge Requirements (WDRs) or a waiver. The WDRs are the Porter-Cologne version of a CWA 401 Water Quality Certification.

REFERENCES

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Date unknown. Streambed/Lake Alteration Notification Guidelines.

Appendix C

JURISDICTIONAL DELINEATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Zanja Trail and Greenway Park City/County: Redlands / San Bernardino Sampling Date: July 28, 2015

Applicant/Owner: ______ State: CA Sampling Point: 1

Investigator(s): S. Nigro Section, Township, Range: unsectioned/ 1 S / 3 W Redlands quadrangle

Landform (hillslope, terrace, etc.): historic irrigation channel Local relief (concave, convex, none): concave Slope (%): ______

Subregion (LRR): C Lat: 34.06 Long: -117.151 Datum: ______

Soil Map Unit Name: Hanford coarse sandy loam, 2-9 percent slopes NWI classification: N/A; not on NWI map

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ______ No ✔	**Is the Sampled Area within a Wetland?**	**Yes** ______ **No** ✔
Hydric Soil Present?	Yes ______ No ✔		
Wetland Hydrology Present?	Yes ✔ No ______		

Remarks:

Non-wetland waters of the U.S. and CDFW riparian habitat (disturbed riparian scrub) within Mill Creek Zanja.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10'x50')	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10'x50')			
1. Salix goodingii	30	X	FACW
2. Salix laevigata	5		FACW
3. Populus fremontii	5		FAC
4.			
5.			
	40 = Total Cover		
Herb Stratum (Plot size: 10'x20')			
1. Sorghum halepense	40	X	FACU
2. Cynodon dactylon	10		FACU
3. Paspalum dilatatum	10		FAC
4. Cyperus eragrostis	5		FACW
5.			
6.			
7.			
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: 10'x20')			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ______ **No** ✔

Remarks:

USACE hydrophytic vegetation criterion not met.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/3	100	--	--	--	--	sandy lm	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✔

Remarks:

Hydric soil criterion not met.

Photos 41-43

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
✔ Sediment Deposits (B2) (**Riverine**)
✔ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✔ Depth (inches): ______

Water Table Present? Yes ______ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✔ Depth (inches): ______

Wetland Hydrology Present? Yes ✔ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Zanja Trail and Greenway Park City/County: Redlands / San Bernardino Sampling Date: July 28, 2015

Applicant/Owner: ______ State: CA Sampling Point: 2

Investigator(s): S. Nigro Section, Township, Range: unsectioned/ 1 S / 3 W Redlands quadrangle

Landform (hillslope, terrace, etc.): historic irrigation channel Local relief (concave, convex, none): concave Slope (%): ______

Subregion (LRR): C Lat: 34.058 Long: -117.142 Datum: ______

Soil Map Unit Name: Hanford coarse sandy loam, 2-9 percent slopes NWI classification: N/A; not on NWI map

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ______

Are Vegetation ______, Soil ✔, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ______
Hydric Soil Present?	Yes ✔	No ______
Wetland Hydrology Present?	Yes ✔	No ______

Is the Sampled Area within a Wetland? **Yes ✔ No ______**

Remarks:

Wetland waters of the U.S. and CDFW habitat (disturbed freshwater marsh) within Mill Creek Zanja.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10'x50')			
1. N/A			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10'x20')			
1. Populus fremontii	5	X	FAC
2. Fraxinus uhdei	5	X	FAC
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 10'x20')			
1. Typha sp.	55	X	OBL
2. Sorghum halepense	25	X	FACU
3. Cyperus eragrostis	5		FACW
4.			
5.			
6.			
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: 10'x20')			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ✔ No ______**

Remarks:

USACE hydrophytic vegetation criterion met.

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100	--	--	--	--	lmy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ✔ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soil Present? Yes ✔ No ____

Remarks:

Soil considered naturally problematic as it does not exhibit any of the hydric soil indicators listed above, but the area supports a dominance of obligate wetland vegetation as well as 3 secondary hydrology indicators. Soil determined to be hydric based on the above criteria combined with landscape position suitable for formation of hydric soils, it's location downstream of irrigated citrus orchards, as well as presence of storm drain outfalls conveying urban runoff from surrounding residential development.
Photos 52-54

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ✔ Sediment Deposits (B2) (**Riverine**)
- ✔ Drift Deposits (B3) (**Riverine**)
- ✔ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✔ Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present.

Appendix D

SAMPLING POINTS AND SITE PHOTOS

Sampling Point 1. Looking west at disturbed riparian scrub in Mill Creek Zanja, east of Lincoln Street. Sampling point is within CDFW jurisdictional habitat and USACE non-wetland waters.

Sampling Point 2. Looking east at disturbed freshwater marsh in Mill Creek Zanja, between Dearborn Street and Wabash Avenue. Sampling point is within CDFW jurisdictional habitat and USACE wetland.

Photo 1. Looking west at the downstream end of Mill Creek Zanja at 9th Street.

Photo 2. Looking east at Mill Creek Zanja and the proposed Zanja Trail location just upstream of 9th Street.

Photo 3. Looking east at Mill Creek Zanja where it crosses below Church Street.

Photo 4. Looking northeast at a railroad bridge over Mill Creek Zanja just west of the I-10 overpass.

Photo 5. Looking east at the proposed Zanja Trail location below the I-10 overpass.

Photo 6. Looking southwest at Mill Creek Zanja and the proposed parking area east of the I-10 overpass.

Photo 7. Looking northeast at Mill Creek Zanja as it traverses Sylvan Park.

Photo 8. Looking east at Mill Creek Zanja adjacent to Sylvan Boulevard on the University of Redlands campus.

Photo 9. Looking west at a small stand of riparian woodland, consisting of mature western cottonwood trees, along Mill Creek Zanja adjacent to Sylvan Boulevard on the University of Redlands campus.

Photo 10. Looking west at Mill Creek Zanja adjacent to Sylvan Boulevard on the University of Redlands campus. Small trees have been planted adjacent to the creek.

Photo 11. Looking west at an existing segment of the Orange Blossom Trail, east of Judson Street. The proposed alignment for the Zanja Trail would follow this segment.

Photo 12. Looking west at disturbed riparian scrub in Mill Creek Zanja, east of Lincoln Street.

Photo 13. Looking west at disturbed freshwater marsh in Mill Creek Zanja, west of Dearborn Street.

Photo 14. Looking east at disturbed freshwater marsh in Mill Creek Zanja, between Dearborn Street and Wabash Avenue.

Photo 15. Looking east at Mill Creek Zanja adjacent to Crafton Elementary School and single-family homes just west of Wabash Avenue.

APPENDIX C

Jurisdictional Delineation Report

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Zanja Creek and Greenway Park Project

Jurisdictional Delineation Report

August 11, 2015

Stacy Nigro
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Zanja Trail and Greenway Park Project
Jurisdictional Delineation Report

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I. INTRODUCTION

This report presents the results of a formal jurisdictional delineation performed by HELIX Environmental Planning, Inc. (HELIX) for the Zanja Trail and Greenway Park Project (project) located in the City of Redlands (City), San Bernardino County, California (Figure 1). The delineation was conducted to identify and map existing wetland and water resources potentially subject to the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act (CWA; 33 USC 1344), Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the CWA, and California Department of Fish and Wildlife (CDFW) pursuant to Sections 1600 et seq. of the California Fish and Game Code. This information is necessary to evaluate jurisdictional impacts and permit requirements associated with the proposed project.

This report presents HELIX's best efforts to quantify the extent of USACE, RWQCB, and CDFW jurisdiction within the study area using the current regulations, written policies, and guidance from the regulatory agencies. Only the USACE, RWQCB, and CDFW can make a final determination of jurisdictional boundaries.

A. PROJECT DESCRIPTION

The Zanja Trail and Greenway Park Project will establish a natural surface trail along or near the historic Mill Creek Zanja between 9th Street in Downtown Redlands and Wabash Avenue, the eastern most City boundary. Included will be one gateway at the west end, four pocket parks, and amenities such as interpretive signage along the route as designed (Figure 2). Zanja Trail and Greenway Park will connect with the Orange Blossom Trail which connects with the Santa Ana River Trail. When completed, this trail network will loop continually through north Redlands and into the Crafton Hills.

The project is intended to provide east-west connections between schools, University of Redlands, and historic Downtown Redlands; enhance the natural and scenic values of the park's footprint corridor; provide a safe and interesting space for Redlands' residents and visitors to conduct healthful activities; attract cultural and heritage tourists to Redlands; and complement the City's General Plan Open Space Element which calls for a linear park along the Mill Creek Zanja.

Redlands Conservancy is the project proponent, and has worked with local, county, state and federal agencies, local and regional organizations, and individual property owners to develop the project proposal. The intended grand opening for the entire trail and greenway park is 2019, the 200th anniversary of the construction of the Mill Creek Zanja.

B. SITE DESCRIPTION AND LOCATION

The approximately 46-acre Project Study Area (PSA) is located north of Citrus Avenue between 9th Street and Wabash Avenue, crossing below Interstate 10 east of Church Street (Figure 3). It is within unsectioned lands in the San Bernardino Land Grant of the U.S. Geological Survey (USGS) 7.5-minute Redlands quadrangle (Figure 4). The PSA consists of an approximately

100-foot-wide corridor centered along the proposed Zanja Trail and a potential alternate route between Grove and Lincoln Streets, as well as following the limits of proposed pocket parks and potential park expansion (Figures 2 and 3).

General land use within and adjacent to the PSA includes residential, commercial, and institutional development, and roads/transportation corridors. The trail alignment passes through the City's existing Sylvan Park between Division Street and University Street, as well as along Sylvan Boulevard through the University of Redlands. Citrus groves are planted along Mill Creek Zanja just upstream of the PSA, east of Wabash Avenue.

The historic Mill Creek Zanja was built in 1819 as an irrigation ditch to bring water to the area for agriculture and livestock. The original ditch extended for a distance of 12 miles from Mill Creek, through what is now the City of Redlands and westward to the City of Loma Linda. The western half of the ditch has been covered, but still exists east of 9th Street. Mill Creek Zanja is listed on the National Register of Historic Places. The proposed trail, extending approximately 2.25 miles between 9th Street and Wabash Avenue, would parallel portions of Mill Creek Zanja.

Physical Conditions

Elevations within the PSA range from approximately 1,360 feet above mean sea level (amsl) to approximately 1,640 feet amsl.

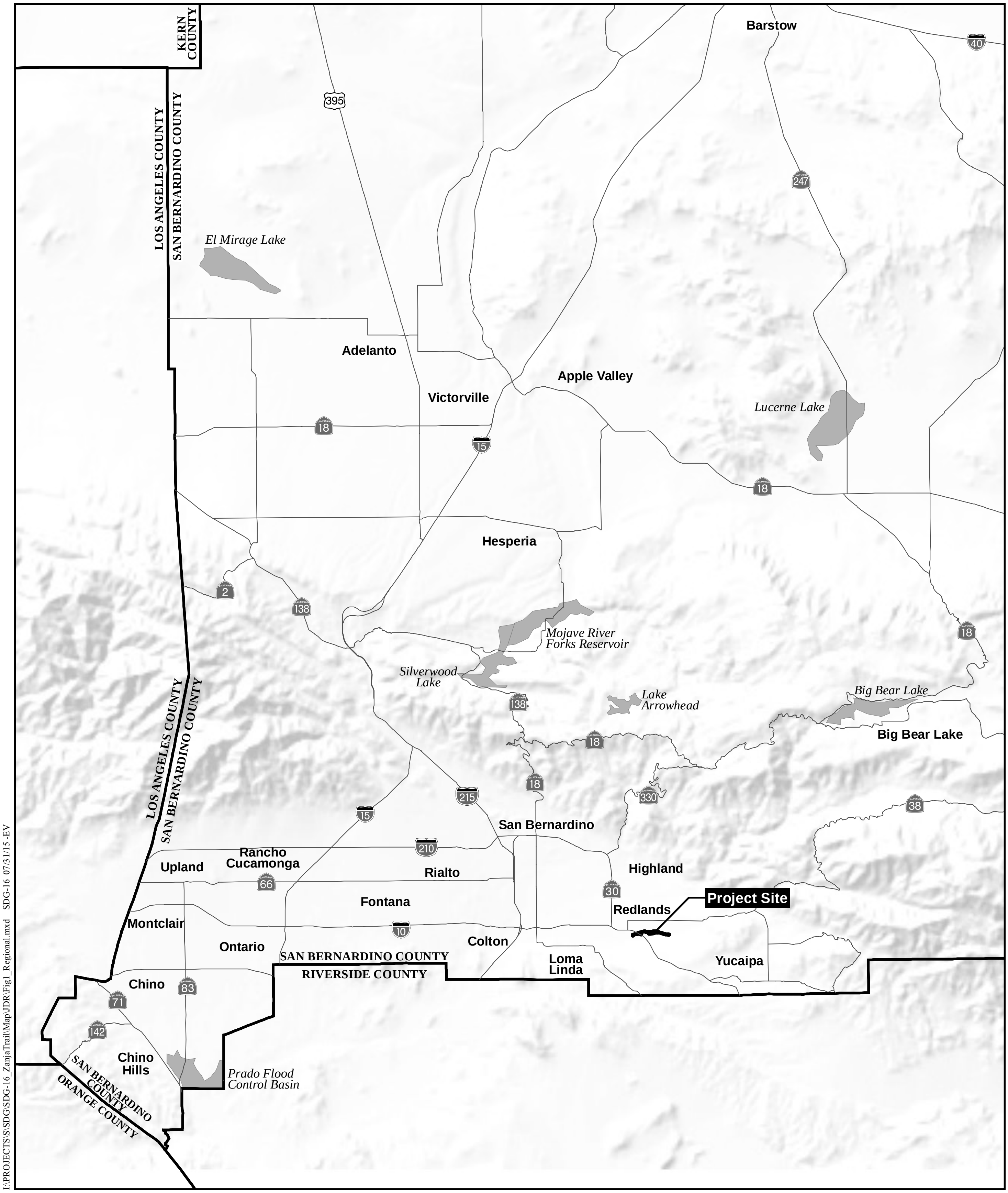
Two soil types are mapped within the PSA: Hanford coarse sandy loam, 2 to 9 percent slopes; and Ramona sandy loam, 2 to 9 percent slopes (NRCS 2015 [Table 1]). Soils in the Hanford series and Ramona series consist of soils that formed primarily from granitic alluvium. Hanford series soils are found in stream bottoms, floodplains, and alluvial fans, while Ramona series soils are typically found on alluvial fans and terraces.

Table 1
SOIL TYPES MAPPED IN THE PROJECT STUDY AREA[1]

MAP SYMBOL	MAP UNIT NAME	ACREAGE[2]
HaC	Hanford coarse sandy loam, 2 to 9 percent slopes	43.6
RmC	Ramona sandy loam, 2 to 9 percent slopes	2.4
	TOTAL	**46.0**

[1]Pursuant to the Natural Resources Conservation Service (NRCS) Web Soil Survey (2015).
[2]Rounded to the nearest tenth acre.

The PSA is located in the Redlands Hydrologic Subarea (HSA; HSA No. 801.53), which lies in the Upper Santa Ana River Hydrologic Area and Santa Ana River Hydrologic Unit, as identified in the Santa Ana RWQCB's Basin Plan (Region 8).



Regional Location

ZANJA TRAIL AND GREENWAY PARK PROJECT

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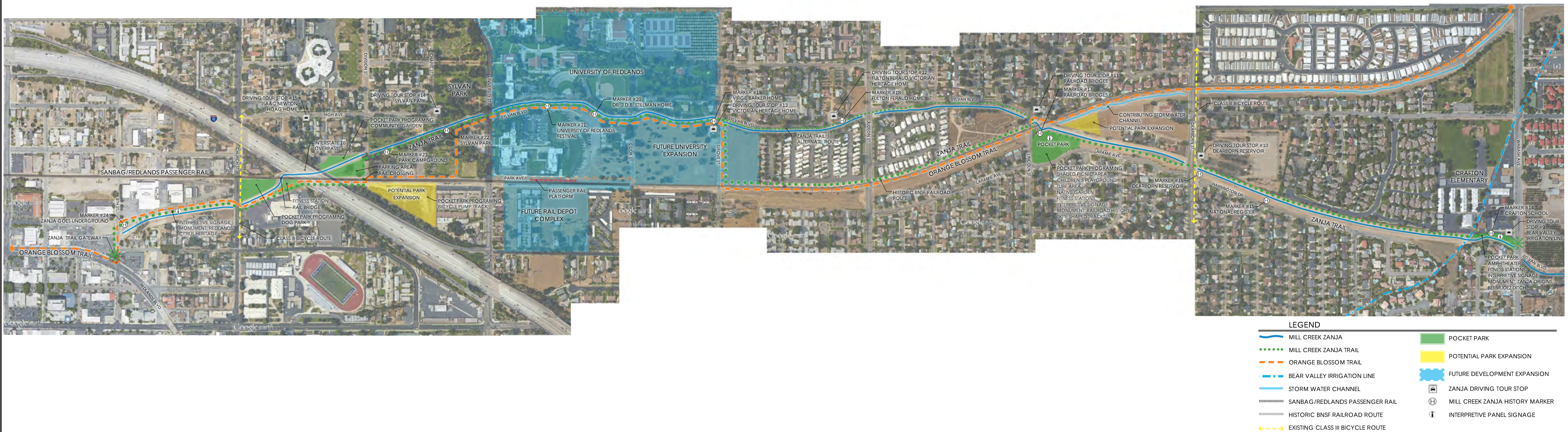
N 0 8 Miles

Figure 1



Source: Schmidt Design Group, Inc. 2015

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Proposed Trail Alignment

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 2

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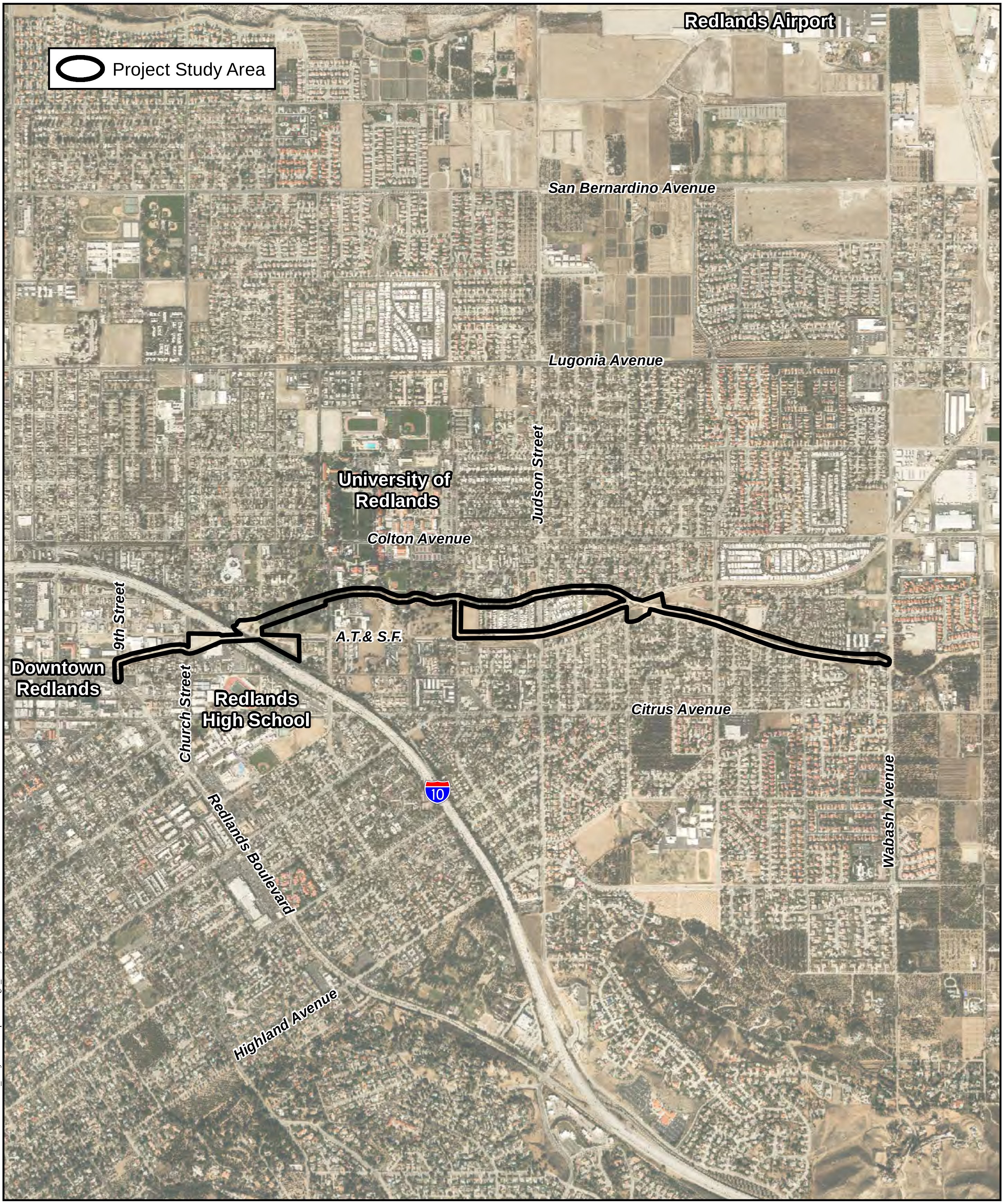

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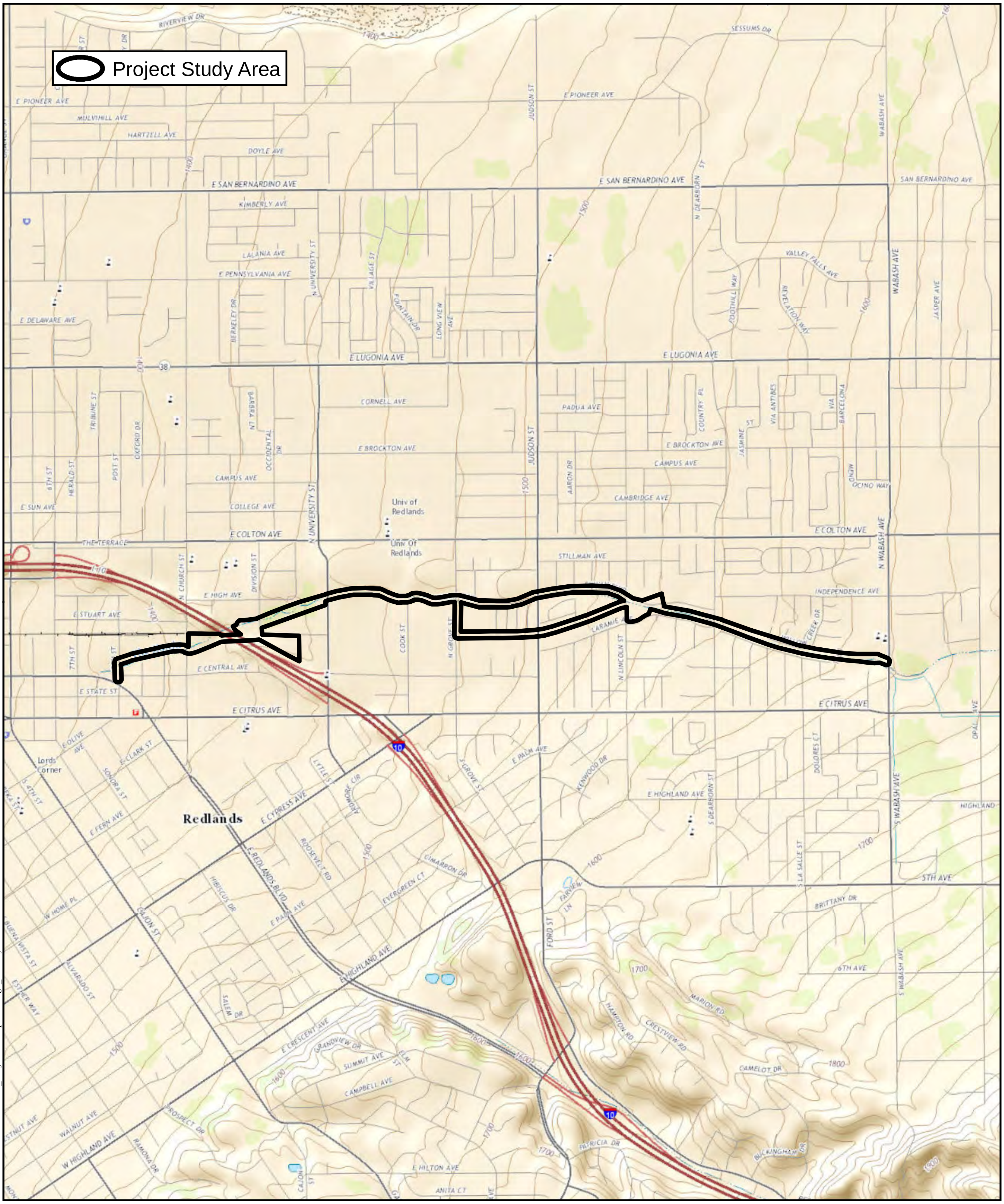
Project Vicinity (Aerial Photograph)

ZANJA TRAIL AND GREENWAY PARK PROJECT

HELIX Environmental Planning

N 0 2,000 Feet

Figure 3



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Project Vicinity (USGS)

ZANJA TRAIL AND GREENWAY PARK PROJECT

HELIX Environmental Planning

N 0 2,000 Feet

Figure 4

Biological Conditions

The PSA is located within the urbanized landscape of downtown Redlands. The vast majority of the PSA consists of urban/developed lands, including existing roads, trails, and parks, as well as disturbed habitat consisting primarily of previously cleared and graded areas with little to no vegetation. Remnant areas of non-native grassland remain in portions of the PSA. Mill Creek Zanja extends the length of the PSA and is non-vegetated to sparsely vegetated between 9th Street and Lincoln Street; upstream of Lincoln Street it supports varying extents of disturbed wetland and riparian habitats.

II. METHODS

Vegetation mapping and a formal jurisdictional delineation were conducted within the PSA on July 28, 2015 by HELIX biologist Stacy Nigro. The site was surveyed on foot with the aid of binoculars. Vegetation and potential jurisdictional resources were mapped on 1"=100' scale aerial photographs. Prior to beginning fieldwork, aerial photographs (1"=100' scale), the local soil survey, and USGS quadrangle maps were reviewed to determine the location of potential jurisdictional areas that may be affected by the proposed project. Nomenclature for this report is from Baldwin et al. (2012) for plants, and Holland (1986) and Oberbauer (2008) for vegetation communities.

A. USACE JURISDICTION

The USACE asserts regulatory jurisdiction over activities affecting wetland and non-wetland waters of the U.S. (WUS) pursuant to Section 404 of the CWA. Areas with depressions or drainage channels were evaluated for the presence of potential wetland and non-wetland WUS. If an area appeared to support wetland conditions, vegetation and hydrology indicators were noted and a soil pit was excavated to examine soil conditions. The area was then determined to support wetland conditions if it satisfied the three wetland criteria (hydrophytic vegetation, wetland hydrology, and hydric soil) described within the Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008). Other references included memoranda (USACE 2007; Grumbles and Woodley 2007) that help clarify the wetland manual and recent court decisions.

Areas were determined to be potential non-wetland WUS if there was evidence of regular surface flow (e.g., bed and bank) but either the vegetation or soils criterion was not met. Jurisdictional limits for these areas were measured according to the presence of a discernible ordinary high water mark (OHWM), which is defined in 33 CFR Section 329.11 as “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas.”

The results presented here are also consistent with recent court decisions, as outlined and applied by the USACE (USACE 2007; Grumbles and Woodley 2007) and Environmental Protection Agency (EPA; 2007). These publications explain that the EPA and USACE will assert jurisdiction over traditional navigable waters (TNW) and tributaries to TNWs that are a relatively permanent water body (RPW), which has year-round or continuous seasonal flow. For water bodies that are not RPWs, a significant nexus evaluation is used to determine if the non-RPW is jurisdictional. As an alternative to the significant nexus evaluation process, a preliminary jurisdictional delineation (PJD) may be submitted to the USACE. The PJD treats all waters and wetlands on a site as if they are jurisdictional WUS (USACE 2008b). An overview of USACE wetlands and jurisdictional WUS definitions is presented in Appendix A.

Plants were identified according to The Jepson Manual: Vascular Plants of California (Baldwin et al. [2012]). Wetland affiliations of plant species follow the Arid West 2014 Regional Wetland Plant List (Lichvar et al 2014). Soils information was taken from the Natural Resources Conservation Service (NRCS; 2015). Soil chromas were identified according to Munsell's Soil Color Charts (Kollmorgen 1994).

A total of two wetland delineation sampling points were taken in the PSA in locations representative of potentially jurisdictional areas. Soil pits were excavated at each of the sampling points. Soil pits were excavated to a depth of 12 inches. Soil samples were evaluated for hydric soil indicators (e.g., hydrogen sulfide [A4], stratified layers [A5], sandy redox [S5], stripped matrix [S6], depleted matrix [F3], redox dark surface [F6], and redox depressions [F8]). Sampling points also were inspected for primary wetland hydrology indicators (e.g., surface water [A1], high water table [A2], saturation [A3], water marks [non-riverine, B1], sediment deposits [non-riverine, B2], drift deposits [non-riverine, B3], surface soil cracks [B6], inundation visible on aerial imagery [B7], water-stained leaves [B9], salt crust [B11], biotic crust [B12], aquatic invertebrates [B13], hydrogen sulfide odor [C1], and oxidized rhizospheres along living roots [C3]) and secondary (e.g., water marks [riverine, B1], sediment deposits [riverine, B2], drift deposits [riverine, B3], drainage patterns in wetlands [B10], shallow aquitard [D3], and positive FAC neutral test [D5]).

Standard USACE wetland delineation data forms were completed for each sampling point in the field and are included in Appendix C. Photographs taken of the sampling points and PSA are included in Appendix D.

The RWQCB asserts regulatory jurisdiction over activities affecting wetland and non-wetland waters of the state pursuant to Section 401 of the CWA and the State Porter-Cologne Water Quality Control Act. Potential RWQCB jurisdiction and waters of the state found within the PSA follows the boundaries of potential USACE jurisdiction for WUS. There are no areas supporting isolated waters of the state subject to exclusive RWQCB jurisdiction pursuant to the State Porter-Cologne Water Quality Control Act.

B. CDFW JURISDICTION

Potential CDFW jurisdictional boundaries within PSA were determined based on the presence of riparian vegetation or regular surface flow, as demonstrated by the presence of a streambed.

Streambeds within potential CDFW jurisdiction were delineated based on the definition of streambed as, "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports riparian vegetation" (Title 14, Section 1.72). Riparian habitat is not defined in Title 14, but the section refers to vegetation and habitat associated with a stream. The CDFW jurisdictional habitat includes all riparian shrub or tree canopy that may extend beyond the banks of a stream. Definitions of CDFW jurisdictional areas are presented in Appendix B (Section II).

III. RESULTS AND DISCUSSION

A. PRESENCE OF WETLAND INDICATORS

1. Hydrophytic Vegetation

Although unvegetated along much of its extent within the PSA, hydrophytic vegetation is present in some portions of the Mill Creek Zanja. Characteristic hydrophytic species observed included red willow (*Salix laevigata*), black willow (*Salix gooddingii*), and cattail (*Typha* sp.). Plant species observed within the sampling points are presented in Table 2, along with their wetland indicator status.

Table 2
PLANT SPECIES OBSERVED AT JURISDICTIONAL DELINEATION SAMPLING POINT LOCATIONS

SCIENTIFIC NAME	COMMON NAME	WETLAND INDICATOR STATUS†
Cynodon dactylon‡	Bermuda grass	FACU
Cyperus eragrostis	tall flatsedge	FACW
Fraxinus uhdei‡	shamel ash	FAC
Paspalum dilatatum‡	dallis grass	FAC
Populus fremontii	western cottonwood	FAC
Salix gooddingii	black willow	FACW
Salix laevigata	red willow	FACW
Sorghum halepense‡	Johnson grass	FACU
Typha sp.	cattail	OBL

†OBL=obligate wetland species, FACW=facultative wetland species, FAC=facultative species, FACU=facultative upland species, UPL=upland species. Please see Appendix A for further explanation of indicator status.
‡Non-native species.

2. Wetland Hydrology

The following wetland hydrology indicators, as defined by the USACE (USACE 2008a), were observed at sampling point locations in the PSA: sediment deposits, drift deposits, and drainage patterns.

3. Hydric Soil

Indicators of hydric soil, as defined by the USACE (USACE 2008a), were not observed at the sampling point locations.

B. DESCRIPTION OF JURISDICTIONAL HABITATS

Potential jurisdictional resources within the PSA consist of Mill Creek Zanja and associated wetland and riparian vegetation. Four of the eight vegetation communities mapped in the PSA are potential jurisdictional habitats: riparian woodland, riparian scrub (disturbed), freshwater marsh (disturbed), and non-vegetated channel/streambed. Upland vegetation communities mapped in the PSA include non-native grassland, non-native vegetation, disturbed habitat, and urban/developed land (Figures 5a-5d). Depictions of potential jurisdictional habitat within the PSA are presented in Figures 6a-6d.

Mill Creek Zanja is primarily an earthen trapezoidal channel, although portions of the channel are contained within vertical walls, mainly within Sylvan Park. The channel receives urban and agricultural runoff from surrounding development and upstream citrus groves.

Climatic conditions and hydrologic conditions within the PSA were typical for the time of year and normal circumstances were present. Vegetation and hydrology were not found to be significantly disturbed (i.e., subjected to unauthorized clearing or hydrologic modifications) or naturally problematic (i.e., periodically lacking indicators of hydrophytic vegetation or wetland hydrology due to normal seasonal or annual variability). Soil at one of the two sampling points was determined to be naturally problematic and is further discussed in Section IIIC2., below. All potential non-wetland WUS displayed evidence of a consistent OHWM and discernible streambed and bank.

1. Riparian Woodland

Riparian woodland is a tall, open, streamside woodland dominated by any of several species of trees (i.e., coast live oak, willow, sycamore, or cottonwood). Three small stands of riparian woodland occur along Mill Creek Zanja adjacent to Sylvan Boulevard between University Street and Judson Street. Each stand is comprised of four to eight mature trees growing on the upper channel slopes and top of bank. Western cottonwood (*Populus fremontii*) is the dominant species in each stand, although western sycamore (*Platanus racemosa*) and black willow also were observed. These small, open stands of woodland occur in an urbanized setting adjacent to paved roadways, with no understory present. Riparian woodland within the PSA is potential CDFW jurisdictional habitat.

Project Study Area

Vegetation

Non-native Grassland

Non-native Vegetation

Disturbed Habitat

Non-vegetated Channel/Streambed

Developed

N

0 200 Feet

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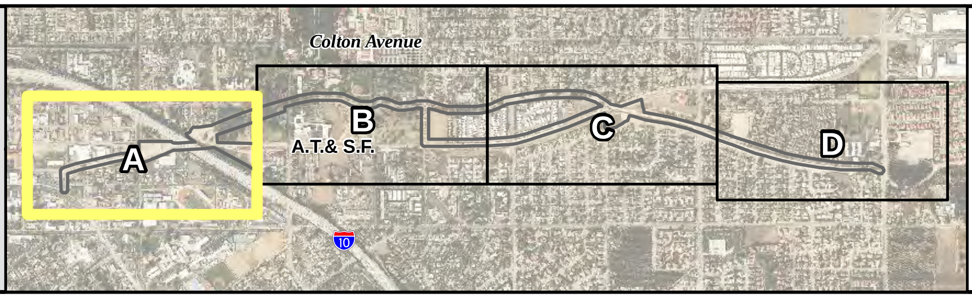

Vegetation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 5A

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Project Study Area

Developed

Vegetation

Riparian Woodland

Disturbed Habitat

Non-vegetated Channel/Streambed

N

0 200 Feet

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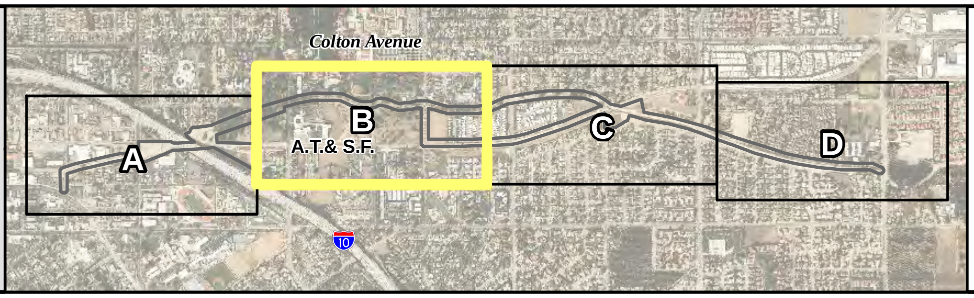
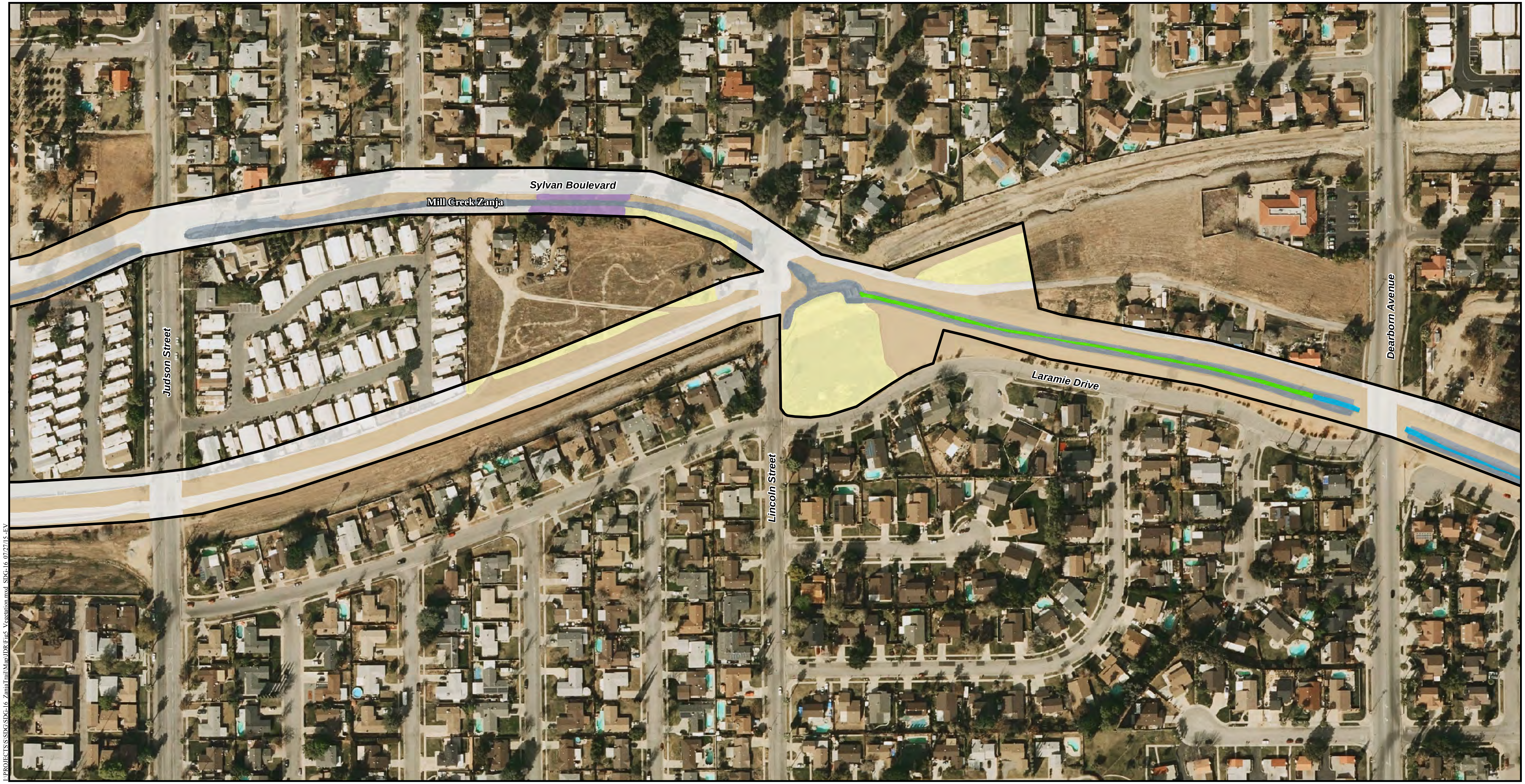


Vegetation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 5B



Project Study Area

Vegetation

- Freshwater Marsh Disturbed
- Riparian Scrub Disturbed
- Non-native Grassland
- Non-native Vegetation
- Disturbed Habitat
- Non-vegetated Channel/Streambed
- Developed

N

0 200 Feet

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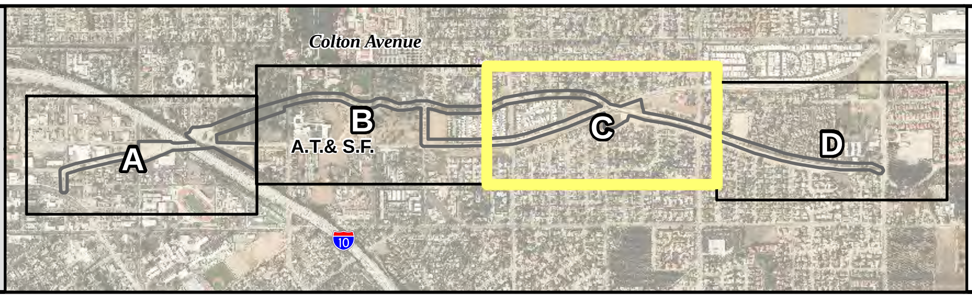
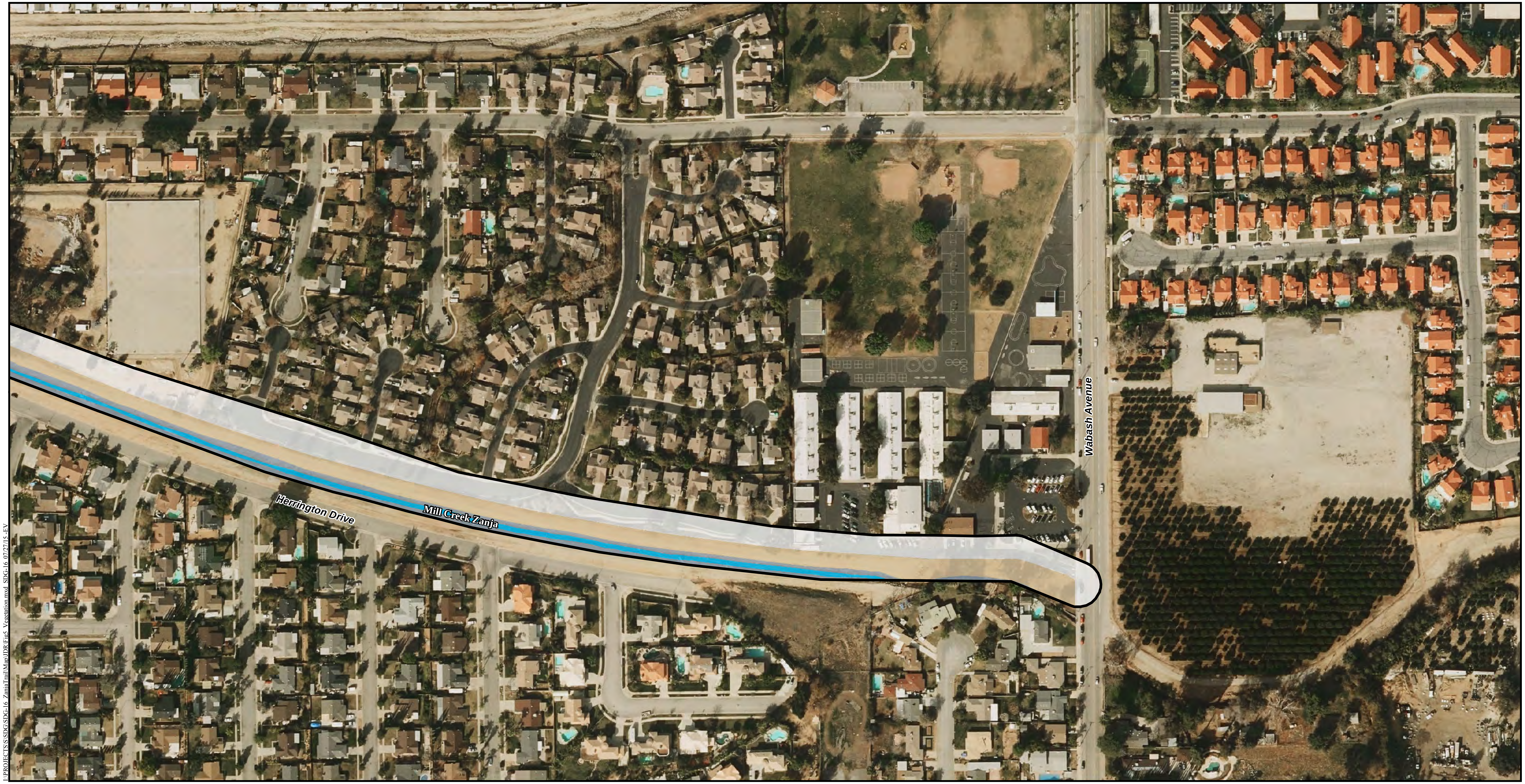
Environmental Planning



Vegetation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 5C



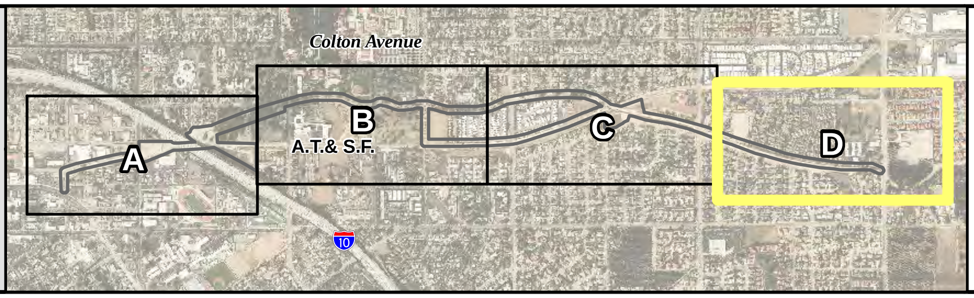
Project Study Area
Developed

Vegetation

Freshwater Marsh Disturbed
Disturbed Habitat
Non-vegetated Channel/Streambed

0 200 Feet

N



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Vegetation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 5D

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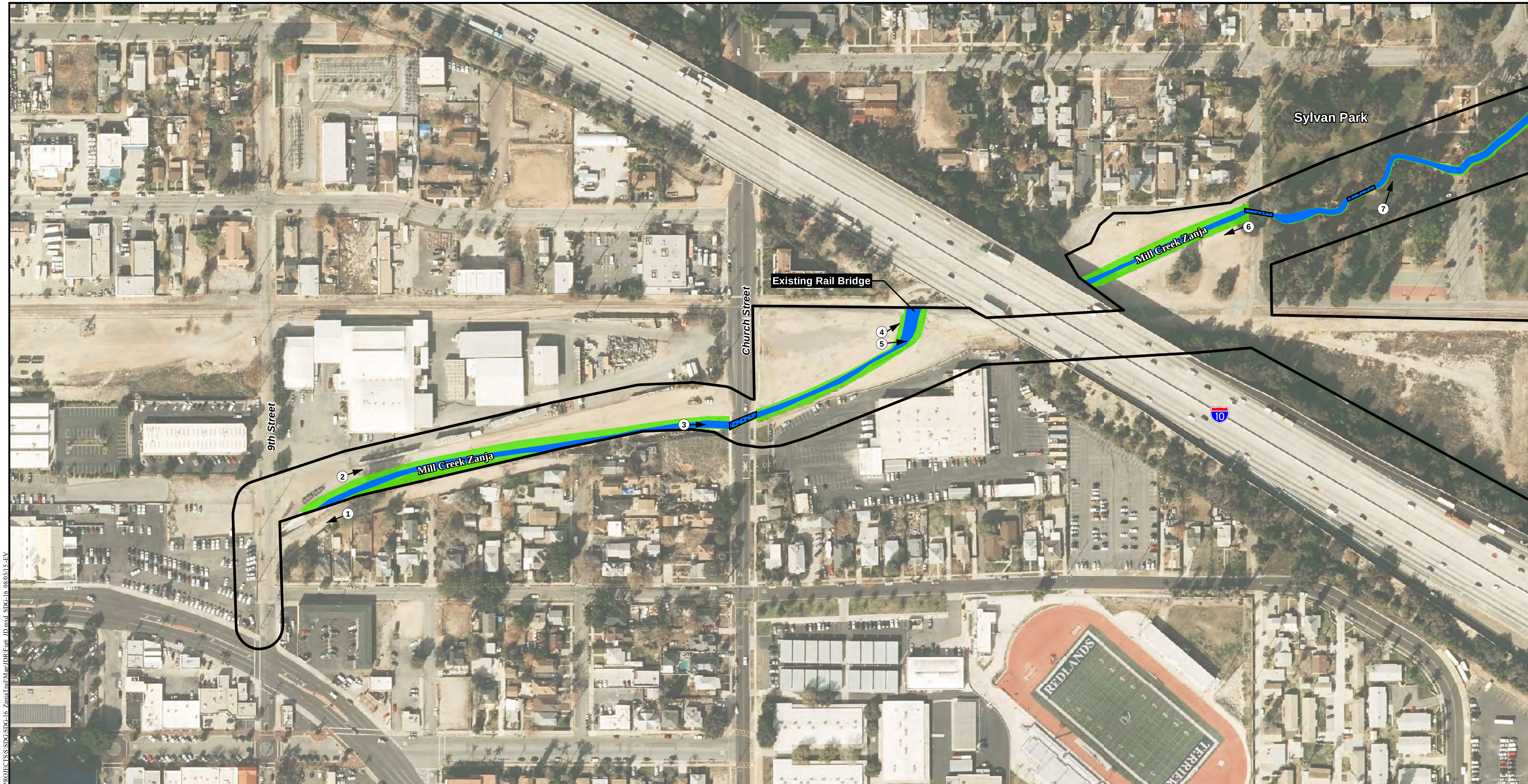

Project Study Area
Photo Location
Culvert

Jurisdiction

USACE Non-wetland Waters of the U.S./CDFW
CDFW

N

0 200 Feet

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Wetland and Waters Delineation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 6A

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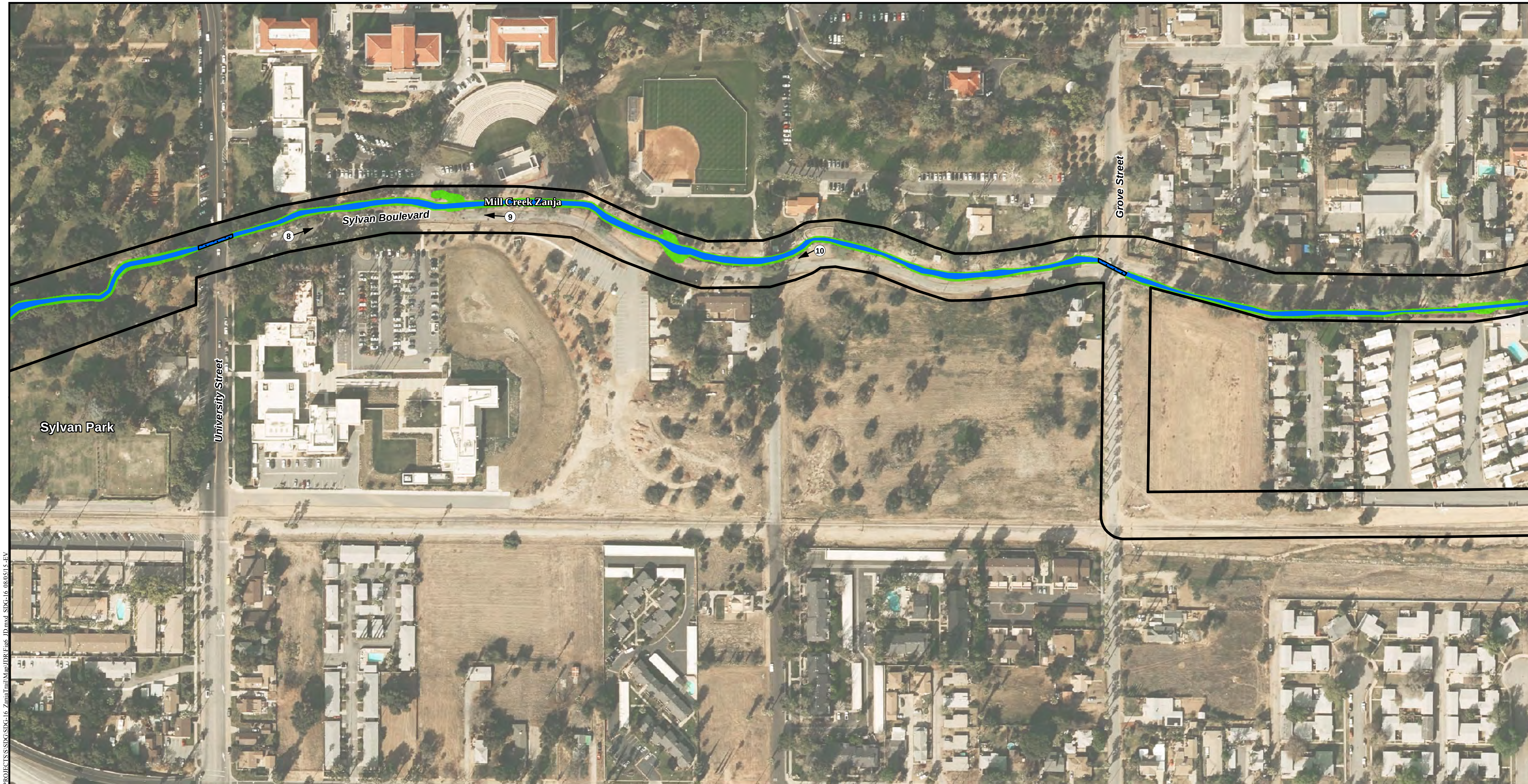


Project Study Area

Photo Location

Culvert

Jurisdiction

USACE Non-wetland Waters of the U.S./CDFW

CDFW

0 200 Feet

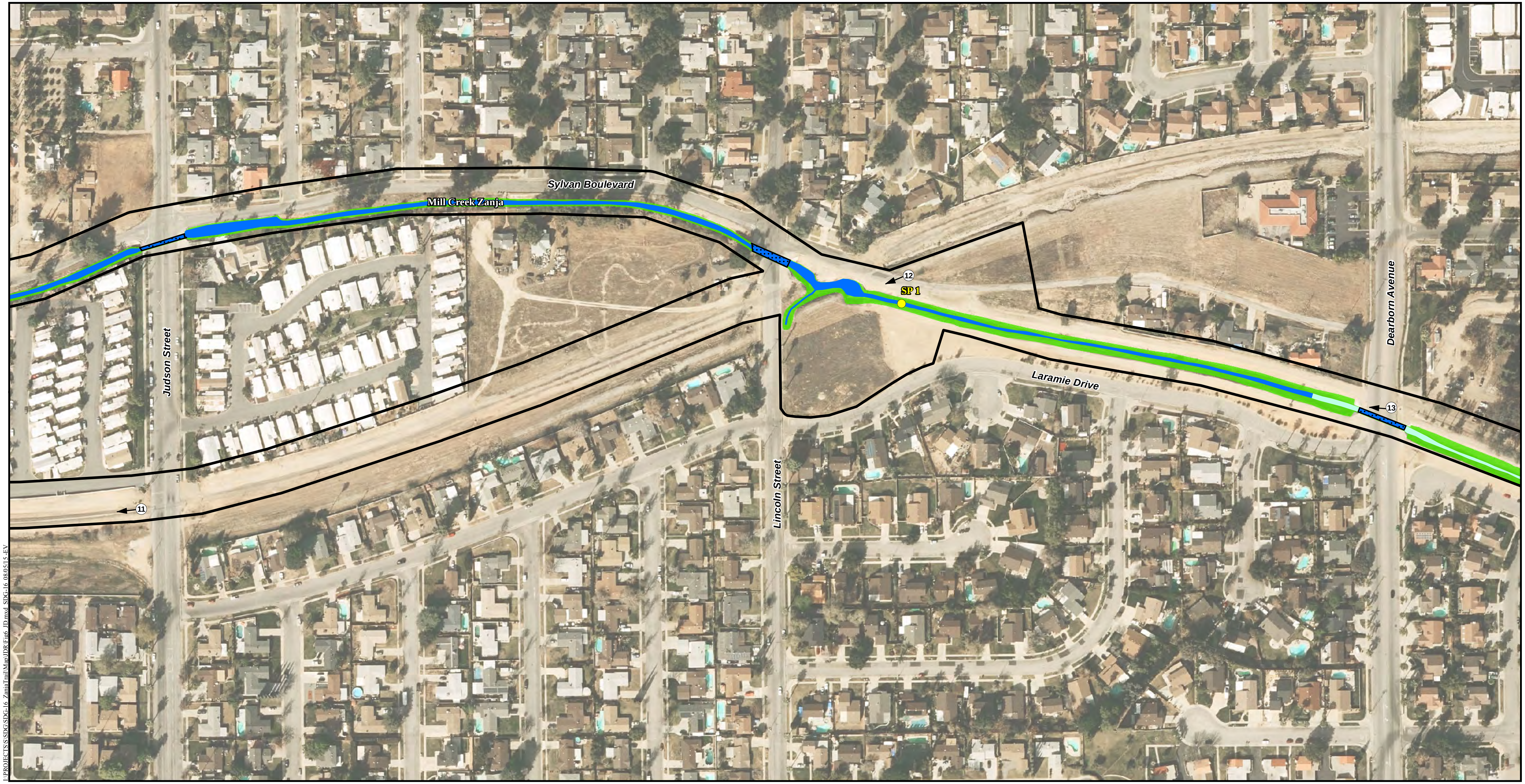
N

HELIX Environmental Planning

Wetland and Waters Delineation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 6B



Project Study Area
Photo Location
Soil Pit (Sample Point)
Culvert

Jurisdiction
USACE Non-wetland Waters of the U.S./CDFW
USACE Wetland/CDFW
CDFW

N
0 200 Feet

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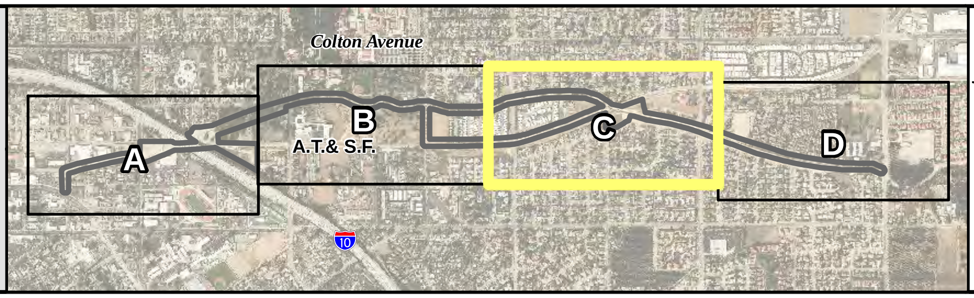

Wetland and Waters Delineation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 6C

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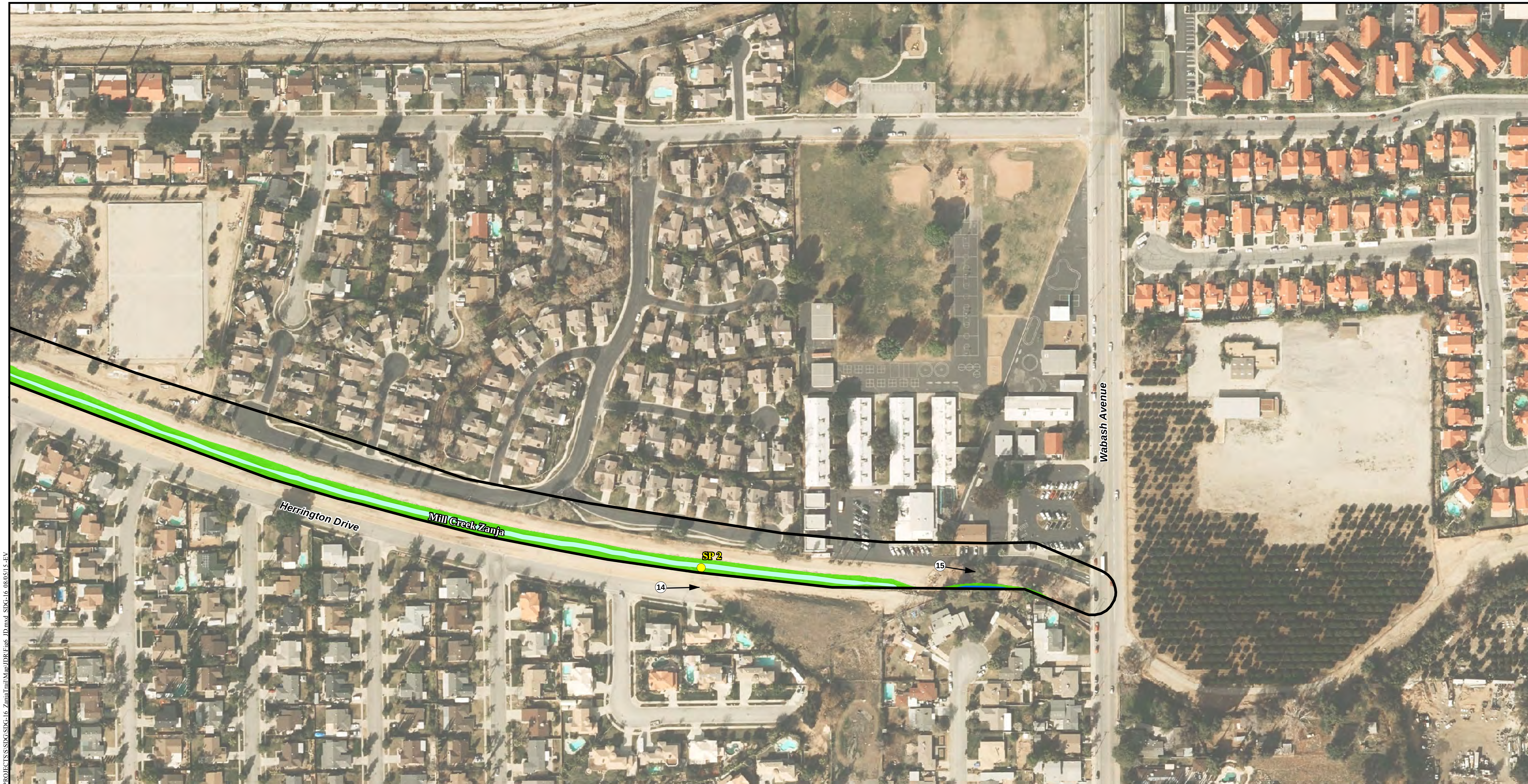

Project Study Area

Photo Location

Soil Pit (Sample Point)

Jurisdiction

USACE Non-wetland Waters of the U.S./CDFW

USACE Wetland/CDFW

CDFW

N

0 200 Feet

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Environmental Planning

Wetland and Waters Delineation

ZANJA TRAIL AND GREENWAY PARK PROJECT

Figure 6D

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2. Riparian Scrub - Disturbed

Riparian scrub is a scrubby streamside thicket varying from open to impenetrable. This early seral community may succeed to any of several riparian woodland or forest types absent severe flooding disturbance. This habitat occurs in the channel bottom of the Mill Creek Zanja between Lincoln Street and Dearborn Street. Mature shrubs are not present; rather, the habitat is characterized by saplings of western cottonwood, red willow, black willow, and mule fat growing among an herbaceous understory dominated by non-native Johnson grass (*Sorghum halepense*). Riparian scrub within the PSA is potential CDFW jurisdictional habitat.

3. Freshwater Marsh – Disturbed

Freshwater marsh is typically dominated by perennial, emergent monocots, 5 to 13 feet tall, forming incomplete to completely closed canopies. This habitat occurs in the channel bottom of the Mill Creek Zanja in the eastern portion of the PSA, downstream of citrus groves. Cattail is the dominant species present, with tall flatsedge (*Cyperus eragrostis*), Johnson grass, castor-bean (*Ricinus communis*), and spike-sedge (*Eleocharis* sp.) also observed. Freshwater marsh within the PSA is potential USACE and CDFW jurisdictional habitat.

4. Non-vegetated Channel/Streambed

Non-vegetated channel/streambed consists of portions of Mill Creek Zanja that are either unvegetated or sparsely vegetated and include areas of potential USACE and CDFW jurisdiction.

Potential USACE jurisdiction is comprised of portions of non-vegetated channel/streambed that are below the OHWM, as well as areas below the OHWM that are vegetated but do not meet all three of the USACE wetland criteria (i.e., disturbed riparian scrub). These areas are classified as non-wetland WUS.

Potential CDFW jurisdiction extends bank to bank, encompassing the entire non-vegetated channel/streambed.

C. SAMPLING POINTS

Below is a summary of the two wetland delineation sampling points taken in the PSA.

1. Sampling Point 1

This sampling point was located in disturbed riparian scrub in the bottom of Mill Creek Zanja. One wetland plant (black willow) and one upland plant (Johnson grass) were dominant, therefore, not meeting the USACE wetland vegetation criterion. Wetland hydrology was indicated by two secondary indicators: drift deposits (B3) and sediment deposits (B2). A soil pit excavated to 12 inches did not reveal the presence of hydric soil indicators. This sampling point met only one of the three USACE wetland criteria, and therefore, does not support wetland WUS; it is, however, potential USACE non-wetland WUS as well as CDFW jurisdictional habitat.

2. Sampling Point 2

This sampling point was located in disturbed freshwater marsh in the bottom of Mill Creek Zanja. Three of the four dominant species were wetland plants (cattail, western cottonwood, and shamel ash [*Fraxinus uhdei*]), thus meeting the wetland vegetation criterion. Wetland hydrology was indicated by two secondary indicators: drift deposits (B3) and drainage patterns (B10). A soil pit excavated to 12 inches did not reveal the presence of hydric soil indicators. Soil was considered naturally problematic at this location due to the dominance of obligate wetland vegetation (i.e., cattail) and presence of wetland hydrology, with the soil pit located in a landscape position suitable for the formation of hydric soils. In addition, this sampling point is downstream of irrigated citrus orchards and also receives urban runoff from surrounding residential development. Hydric soil indicators can be faint or absent in areas with coarse textured, sandy soils, as well as soils that are moderately to strongly alkaline. It is possible that hydric soil indicators were not observed in this location for these reasons. It was therefore concluded that this area met all three USACE wetland criteria and is potential USACE wetland and CDFW jurisdictional habitat.

Sampling points were not taken in the small stands of riparian woodland, as the trees were clearly located above the OHWM in a landscape position that would not support hydric soils and would not meet all three USACE wetland criteria.

D. JURISDICTIONAL HABITAT SUMMARY

Potential jurisdictional habitats within the PSA include riparian woodland, riparian scrub (disturbed), freshwater marsh (disturbed), and non-vegetated channel/streambed. A total of 2.61 acres of potential USACE jurisdiction/WUS and 5.76 acres of potential CDFW jurisdiction were delineated within the PSA (Tables 3 and 4, respectively).

1. USACE Jurisdiction – Waters of the U.S.

Potential USACE jurisdiction within the PSA totals 2.61 acres comprised of 0.47 acre of wetland WUS and 2.14 acres of non-wetland WUS (Figures 6a-6d; Table 3). Potential RWQCB jurisdiction under Section 401 of the Clean Water Act within the PSA follows the boundaries of potential USACE jurisdiction for WUS. There are no isolated waters of the state subject to exclusive RWQCB jurisdiction pursuant to the State Porter-Cologne Water Quality Control Act.

Table 3 USACE JURISDICTION WITHIN THE PROJECT STUDY AREA	
HABITAT	**ACREAGE***
Wetlands	
Freshwater Marsh	0.47
Non-wetland Waters	
Streambed	2.14
TOTAL	**2.61**

*Acreage is rounded to the nearest 0.01 acre; thus, total reflects rounding.

2. <u>CDFW Jurisdiction</u>

Potential CDFW jurisdiction within the PSA totals 5.76 acres comprised of 0.78 acre of wetland or riparian habitat and 4.98 acres of streambed (Table 4; Figures 6a-6d).

Table 4 CDFW JURISDICTION WITHIN THE PROJECT STUDY AREA	
HABITAT	**ACREAGE***
Riparian Woodland	0.14
Riparian Scrub (disturbed)	0.17
Freshwater Marsh (disturbed)	0.47
Non-vegetated Channel/Streambed	4.98
TOTAL	**5.76**

*Acreage is rounded to the nearest 0.01 acre, thus, total reflects rounding.

IV. CONCLUSION

A. FEDERAL PERMITTING

1. <u>USACE</u>

Permanent and temporary fills and discharges (impacts) to WUS are regulated by USACE under Section 404 of the CWA (33 USC 401 *et seq.*; 33 USC 1344; USC 1413; and Department of Defense, Department of the Army, Corps of Engineers 33 CFR Part 323). Impacts to WUS would require a CWA Section 404 permit from the Los Angeles District USACE. If impacts cannot be avoided, the proposed activities would likely be considered consistent with those covered under Nationwide Permit (NWP) 14 for Linear Transportation Projects if impact acreage thresholds of one-half acre for non-tidal waters are not exceeded. Notification to the USACE through the preparation of a Pre-Construction Notification (PCN) requesting authorization under NWP 14 would be required.

B. STATE PERMITTING

1. RWQCB

A CWA Section 401 Water Quality Certification (WQC) administered by the State Water Resources Control Board (SWRCB) or RWQCB must be issued prior to any 404 Permit. The USACE jurisdictional areas addressed in this report would also be subject to 401 Certification by the RWQCB. There are no isolated waters or wetlands under RWQCB jurisdiction within the PSA that would be subject to the State Porter-Cologne Water Quality Control Act only. If impacts to WUS are proposed, a 401 WQC from the Santa Ana RWQCB would be required.

2. CDFW

The CDFW regulates temporary and permanent alterations or impacts to streambeds or lakes under California Fish and Game Code Sections 1600 et seq. Notification of Lake or Streambed Alteration to CDFW is required for projects that will divert or obstruct the natural flow of water; change the bed, channel, or bank of any stream; or use any material from a streambed. A Streambed Alteration Agreement (SAA) is issued by CDFW as a contract between the applicant and CDFW stating what activities can occur in the riparian zone and stream course (California Association of Resource Conservation Districts 2002). If impacts to CDFW jurisdiction are proposed, Notification of Lake or Streambed Alteration would be required to the Inland Deserts Region CDFW.

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Appendix A

FEDERAL JURISDICTIONAL INFORMATION

Appendix A
FEDERAL JURISDICTIONAL INFORMATION

<u>Wetlands and “Waters of the U.S.” Definitions</u>

The U.S. Army Corps of Engineers (USACE; Federal Register 1982) and the Environmental Protection Agency (Federal Register 1980) jointly define wetlands as “[t]hose areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (Environmental Laboratory 1987).

The official definition of “Waters of the U.S.” and their limits of jurisdiction (as they may apply) are defined by the USACE’ Regulatory Program Regulations (Section 328.3, paragraphs [a] 1-3 and [e], and Section 328.4, paragraphs [c] 1 and 2) as follows:

All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; all waters including interstate wetlands, all other waters such as interstate lakes, rivers, streams [including intermittent streams], mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate commerce including any such water, which are or could be used by interstate travelers for recreation or other purposes; or from which fish or shellfish are or could be taken and sold in interstate commerce; or which are or could be used for industries in interstate commerce; or wetlands adjacent to waters [other than waters that are themselves wetlands].

Non-tidal Waters of the U.S. The limits of jurisdiction in non-tidal waters: In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or when adjacent wetlands are present, the jurisdiction extends to the limit of the adjacent wetlands.

The term ordinary high water mark (OHWM) means that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation (scouring), the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Waters of the U.S. must exhibit an OHWM or other evidence of surface flow created by hydrologic physical changes. These physical changes include (Riley 2005):

- Natural line impressed on the bank
- Shelving
- Changes in the character of soil
- Destruction of terrestrial vegetation
- Presence of litter and debris
- Wracking
- Vegetation matted down, bent, or absent
- Sediment sorting
- Leaf litter disturbed or washed away
- Scour
- Deposition
- Multiple observed flow events
- Bed and banks
- Water staining
- Change in plant community

Jurisdictional areas also must be connected to Waters of the U.S. (Guzy and Anderson 2001; U.S. Supreme Court 2001).

As a consequence of the U.S. Supreme Court decision in Rapanos v. United States, a memorandum was developed regarding Clean Water Act jurisdiction (Grumbles and Woodley 2007). The memorandum states that the EPA and the USACE will assert jurisdiction over traditional navigable waters (TNW), wetlands adjacent to TNW, tributaries to TNWs that are a relatively permanent water body (RPW), and wetlands adjacent to TNW. An RPW has year round flow or continuous seasonal flow (i.e., typically for three months or longer). Jurisdiction over other waters (i.e., non TNW and RPW) will be based on a fact specific analysis to determine if they have a significant nexus to a TNW.

Pursuant to the USACE Instructional Guidebook (USACE and EPA 2007), the significant nexus evaluation will cover the subject reach of the stream (upstream and downstream) as well as its adjacent wetlands (Illustrations 2 through 6, USACE and EPA 2007). The evaluation will include the flow characteristics, annual precipitation, ability to provide habitat for aquatic species, ability to retain floodwaters and filter pollutants, proximity of the subject reach to a TNW, drainage area, and the watershed.

Wetland Criteria

Wetland boundaries are determined using three mandatory criteria (hydrophytic vegetation, wetland hydrology, and hydric soil) established for wetland delineations and described within the Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008). Following is a brief discussion of the three criteria and how they are evaluated.

Vegetation

"Hydrophytic vegetation is defined herein as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present" (Environmental Laboratory 1987).

The wetland indicator status (obligate upland, facultative upland, facultative, facultative wetland, obligate wetland, or no indicator status) of the dominant plant species of all vegetative layers is determined. Species considered to be hydrophytic include the classifications of facultative,

facultative wetland, and obligate wetland as defined by the U.S. Fish and Wildlife Service (1988; Table A-1). The percent of dominant wetland plant species is calculated. The hydrophytic vegetation criterion is considered to be met if it meets the "Dominance Test," "Prevalence Index," or the vegetation has morphological adaptations for prolonged inundation.

Table A-1
DEFINITIONS OF PLANT INDICATOR CATEGORIES

INDICATOR CATEGORIES	ABBREVIATION	PROBABILITY OF OCCURRING IN WETLANDS
Obligate wetland	OBL	Occur almost exclusively in wetlands (99 percent probability of occurring in a wetland).
Facultative wetland	FACW	Usually found in wetlands (67 to 99 percent probability of occurring in a wetland) but occasionally in uplands.
Facultative	FAC	Equally likely to occur in wetland (34 to 66 percent probability) or non-wetland.
Facultative upland	FACU	Usually occur in non-wetlands but occasionally found in wetlands (1 to 33 percent probability of occurring in a wetland).
Obligate upland	UPL	Occur almost exclusively in non-wetlands (1 percent probability of occurring in a wetland).

Hydrology

"The term 'wetland hydrology' encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic reducing conditions, respectively" (Environmental Laboratory 1987).

Hydrologic characteristics must indicate that the ground is saturated to within 12 inches of the surface for at least 5 percent of the growing season during a normal rainfall year (approximately 18 days for most of low-lying southern California). Hydrology criteria are evaluated based on the characteristics listed below (USACE 2008). Where positive indicators of wetland hydrology are present, the limit of the OHWM (or the limit of adjacent wetlands) is noted and mapped. Evidence of wetland hydrology is met by the presence of a single primary indicator or two secondary indicators.

Primary

- surface water (A1)
- high water table (A2)
- saturation (A3)
- water marks (B1; non-riverine)
- sediment deposits (B2; non-riverine)
- drift deposits (B3; non-riverine
- surface soil cracks (B6)
- inundation visible on aerial imagery (B7)
- water-stained leaves (B9)
- salt crust (B11)
- biotic crust (B12)
- aquatic invertebrates (B13)
- hydrogen sulfide odor (C1)
- oxidized rhizospheres along living roots (C3)
- presence of reduced iron (C4)
- recent iron reduction in tilled soils (C6)
- thin muck surface (C7)

Secondary

- watermarks (B1; riverine)
- sediment deposits (B2; riverine)
- drift deposits (B3; riverine)
- drainage patterns (B10)
- dry-season water table (C2)
- crayfish burrows (C8)
- saturation visible on aerial imagery (C9)
- shallow aquitard (D3)
- FAC-neutral test (D5)

In the absence of all other hydrologic indicators and in the absence of significant modifications of an area's hydrologic function, positive hydric soil characteristics are assumed to indicate positive wetland hydrology. This assumption applies unless the site visit was done during the wet season of a normal or wetter-than-normal year. Under those circumstances, wetland hydrology would not be present.

Soils

"A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (Natural Resource Conservation Service [NRCS] 2004).

Soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation. Soil matrix and mottle colors are identified at each sampling plot using a Munsell soil color chart (Kollmorgen 1994). Generally, an 18-inch or deeper pit is excavated with a shovel at each sampling plot unless refusal occurs above 18 inches.

Soils in each area are closely examined for hydric soil indicators, including the characteristics listed below. Hydric soil indicators are presented in three groups. Indicators for "All Soils" (A) are used in any soil regardless of texture, indicators for "Sandy Soils" (S) area used in soil layers with USDA textures of loamy fine sand or coarser, and indicators for "Loamy and Clayey Soils" (F) are used with soil layers of loamy very fine sand and finer (USACE 2008).

- histosols (A1)
- histic epipedons (A2)
- black histic (A3)
- hydrogen sulfide (A4)
- stratified layers (A5)
- 1 cm muck (A9)
- depleted below dark surface (A11)
- thick dark surface (A12)
- sandy mucky mineral (S1)
- sandy gleyed matrix (S4)
- sandy redox (S5)
- stripped matrix (S6)
- loamy mucky mineral (F1)
- loamy gleyed matrix (F2)
- depleted matrix (F3)
- redox dark surface (F6)
- depleted dark surface (F7)
- redox depressions (F8)
- vernal pools (F9)
- 2 cm muck (A10)
- reduced vertic (F18)
- red parent material (TF2)

Hydric soils may be assumed to be present in plant communities that have complete dominance of obligate or facultative wetland species. In some cases, there is only inundation during the growing season and determination must be made by direct observation during that season, recorded hydrologic data, testimony of reliable persons, and/or indication on aerial photographs.

Non-wetland Waters of the U.S.

The non-wetland Waters of the U.S. designation is met when an area has periodic surface flows but lacks sufficient indicators to meet the hydrophytic vegetation and/or hydric soils criteria. For purposes of delineation and jurisdictional designation, the non-wetland Waters of the U.S. boundary in non-tidal areas is the OHWM as described in the Section 404 regulations (33 CFR Part 328).

USGS Mapping

The USGS Quad maps are one of the resources used to aid in the identification and mapping of jurisdictional areas. Their primary uses include understanding the subregional landscape position of a site, major topographical features, and a project's position in the watershed.

In our experience the designation of watercourse as a blue-line stream (intermittent or perennial) on USGS maps has been unreliable and typically overstates the hydrology of most streams. This has also been the experience of others, including the late Luna Leopold. Leopold was a hydrologist with USGS from 1952 to 1972, Professor in the Department of Geology and Geophysics, and Department of Landscape Architecture, University of California, Berkeley from 1972 to 1986, and Professor Emeritus from 1987 until his death in 2006. In regard to stream mapping on USGS maps, Dr. Leopold opined that ". . . blue lines on a map are drawn by nonprofessional, low-salaried personnel. In actual fact, they are drawn to fit a rather personalized aesthetic."

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Appendix B

STATE JURISDICTIONAL INFORMATION

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STATE JURISDICTIONAL INFORMATION

California Department of Fish and Wildlife Regulations

The California Department of Fish and Wildlife (CDFW; Department) regulates alterations or impacts to streambeds or lakes (wetlands) under Fish and Game Code Sections 1600 through 1616 for any private, state, or local government or public utility-initiated projects. The Fish and Game Code Section 1602 requires any entity to notify the Department before beginning any activity that will do one or more of the following: (1) substantially obstruct or divert the natural flow of a river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. Fish and Game Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers and streams as well as lakes in the state.

In order to notify the Department, a person, state, or local governmental agency or public utility must submit a complete notification package and fee to the Department regional office that serves the county where the activity will take place. A fee schedule is included in the notification package materials. Under the Permit Streamlining Act (Government Code Sections 65920 et seq.), the Department has 30 days to determine whether the package is complete. If the requestor is not notified within 30 days, the application is automatically deemed to be complete.

Once the notification package is deemed to be complete, the Department will determine whether the applicant will need a Lake or Streambed Alteration Agreement (SAA) for the activity, which will be required if the activity could substantially adversely affect an existing fish and wildlife resource. If an SAA is required, the Department will conduct an on-site inspection, if necessary, and submit a draft SAA that will include measures to protect fish and wildlife resources while conducting the project. If the applicant is applying for a regular SAA (less than five years), the Department will submit a draft SAA within 60 calendar days after notification is deemed complete. The 60-day time period does not apply to notifications for long-term SAAs (greater than 5 years).

After the applicant receives the SAA, the applicant has 30 calendar days to notify the Department whether the measures in the draft SAA are acceptable. If the applicant agrees with the measures included in the draft SAA, the applicant will need to sign the SAA and submit it to the Department. If the applicant disagrees with any measures in the draft SAA, the applicant must notify the Department in writing and specify the measures that are not acceptable. Upon written request, the Department will meet with the applicant within 14 calendar days of receiving the request to resolve the disagreement. If the applicant fails to respond in writing within 90 calendar days of receiving the draft SAA, the Department may withdraw that SAA. The time periods described above may be extended at any time by mutual agreement.

After the Department receives the signed draft SAA, the Department will make it final by signing the SAA; however, the Department will not sign the SAA until it both receives the notification fee and ensures that the SAA complies with the California Environmental Quality

Act (Public Resources Code Section 21000 et seq.). After the applicant receives the final agreement, the applicant may begin the project the agreement covers, provided that the applicant has obtained any other necessary federal, state and/or local authorizations.

Water Resource Control Board Regulations

Section 401 Water Quality Certification

Whenever a project requires a federal Clean Water Act (CWA) Section 404 permit or a Rivers and Harbors Act Section 10 permit, it must first obtain a CWA Section 401 Water Quality Certification. The Regional Water Quality Control Board (RWQCB) administers the 401 Certification program. Federal CWA Section 401 requires that every applicant for a Section 404 permit must request a Water Quality Certification that the proposed activity will not violate state and federal water quality standards.

Porter-Cologne Water Quality Control Act

The State Water Resource Control Board (SWRCB) and the RWQCB regulate the discharge of waste to waters of the State via the 1969 Porter-Cologne Water Quality Control Act (Porter-Cologne) as described in the California Water Code (SWRCB 2008). The California Water Code is the State's version of the Federal CWA. Waste, according to the California Water Code, includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal. State waters that are not federal waters may be regulated under Porter-Cologne. A Report of Waste Discharge must be filed with the RWQCB for projects that result in discharge of waste into waters of the State. The RWQCB will issue Waste Discharge Requirements (WDRs) or a waiver. The WDRs are the Porter-Cologne version of a CWA 401 Water Quality Certification.

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Date unknown. Streambed/Lake Alteration Notification Guidelines.

Appendix C

JURISDICTIONAL DELINEATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Zanja Trail and Greenway Park City/County: Redlands / San Bernardino Sampling Date: July 28, 2015

Applicant/Owner: ______ State: CA Sampling Point: 1

Investigator(s): S. Nigro Section, Township, Range: unsectioned/ 1 S / 3 W Redlands quadrangle

Landform (hillslope, terrace, etc.): historic irrigation channel Local relief (concave, convex, none): concave Slope (%): ______

Subregion (LRR): C Lat: 34.06 Long: -117.151 Datum: ______

Soil Map Unit Name: Hanford coarse sandy loam, 2-9 percent slopes NWI classification: N/A; not on NWI map

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No	
Hydrophytic Vegetation Present?		✔	**Is the Sampled Area within a Wetland?** Yes ______ No ✔
Hydric Soil Present?		✔	
Wetland Hydrology Present?	✔		

Remarks:

Non-wetland waters of the U.S. and CDFW riparian habitat (disturbed riparian scrub) within Mill Creek Zanja.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10'x50')			
1. N/A			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10'x50')			
1. Salix goodingii	30	X	FACW
2. Salix laevigata	5		FACW
3. Populus fremontii	5		FAC
4.			
5.			
	40 = Total Cover		
Herb Stratum (Plot size: 10'x20')			
1. Sorghum halepense	40	X	FACU
2. Cynodon dactylon	10		FACU
3. Paspalum dilatatum	10		FAC
4. Cyperus eragrostis	5		FACW
5.			
6.			
7.			
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: 10'x20')			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	______	x 1 =	______
FACW species	______	x 2 =	______
FAC species	______	x 3 =	______
FACU species	______	x 4 =	______
UPL species	______	x 5 =	______
Column Totals:	______ (A)		______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ______ No ✔

Remarks:

USACE hydrophytic vegetation criterion not met.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/3	100	--	--	--	--	sandy lm	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✔

Remarks:

Hydric soil criterion not met.

Photos 41-43

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
✔ Sediment Deposits (B2) (**Riverine**)
✔ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✔ Depth (inches): ______

Water Table Present? Yes ______ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✔ Depth (inches): ______

Wetland Hydrology Present? Yes ✔ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Zanja Trail and Greenway Park City/County: Redlands / San Bernardino Sampling Date: July 28, 2015

Applicant/Owner: ______ State: CA Sampling Point: 2

Investigator(s): S. Nigro Section, Township, Range: unsectioned/ 1 S / 3 W Redlands quadrangle

Landform (hillslope, terrace, etc.): historic irrigation channel Local relief (concave, convex, none): concave Slope (%): ______

Subregion (LRR): C Lat: 34.058 Long: -117.142 Datum: ______

Soil Map Unit Name: Hanford coarse sandy loam, 2-9 percent slopes NWI classification: N/A; not on NWI map

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ______

Are Vegetation ______, Soil ✔, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ______	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ______
Hydric Soil Present?	Yes ✔	No ______	
Wetland Hydrology Present?	Yes ✔	No ______	

Remarks:

Wetland waters of the U.S. and CDFW habitat (disturbed freshwater marsh) within Mill Creek Zanja.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10'x50')	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10'x20')			
1. Populus fremontii	5	X	FAC
2. Fraxinus uhdei	5	X	FAC
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 10'x20')			
1. Typha sp.	55	X	OBL
2. Sorghum halepense	25	X	FACU
3. Cyperus eragrostis	5		FACW
4.			
5.			
6.			
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: 10'x20')			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ______

Remarks:

USACE hydrophytic vegetation criterion met.

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100	--	--	--	--	lmy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ✔ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✔ **No** ______

Remarks:

Soil considered naturally problematic as it does not exhibit any of the hydric soil indicators listed above, but the area supports a dominance of obligate wetland vegetation as well as 3 secondary hydrology indicators. Soil determined to be hydric based on the above criteria combined with landscape position suitable for formation of hydric soils, it's location downstream of irrigated citrus orchards, as well as presence of storm drain outfalls conveying urban runoff from surrounding residential development.
Photos 52-54

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ✔ Sediment Deposits (B2) (**Riverine**)
- ✔ Drift Deposits (B3) (**Riverine**)
- ✔ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✔ Depth (inches): ______

Water Table Present? Yes ______ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✔ Depth (inches): ______

Wetland Hydrology Present? Yes ✔ **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present.

Appendix D

SAMPLING POINTS AND SITE PHOTOS

Sampling Point 1. Looking west at disturbed riparian scrub in Mill Creek Zanja, east of Lincoln Street. Sampling point is within CDFW jurisdictional habitat and USACE non-wetland waters.

Sampling Point 2. Looking east at disturbed freshwater marsh in Mill Creek Zanja, between Dearborn Street and Wabash Avenue. Sampling point is within CDFW jurisdictional habitat and USACE wetland.

Sampling Point and Site Photos

ZANJA TRAIL AND GREENWAY PARK

Photo 1. Looking west at the downstream end of Mill Creek Zanja at 9th Street.

Photo 2. Looking east at Mill Creek Zanja and the proposed Zanja Trail location just upstream of 9th Street.

Photo 3. Looking east at Mill Creek Zanja where it crosses below Church Street.

Photo 4. Looking northeast at a railroad bridge over Mill Creek Zanja just west of the I-10 overpass.

Photo 5. Looking east at the proposed Zanja Trail location below the I-10 overpass.

Photo 6. Looking southwest at Mill Creek Zanja and the proposed parking area east of the I-10 overpass.

Photo 7. Looking northeast at Mill Creek Zanja as it traverses Sylvan Park.

Photo 8. Looking east at Mill Creek Zanja adjacent to Sylvan Boulevard on the University of Redlands campus.

Photo 9. Looking west at a small stand of riparian woodland, consisting of mature western cottonwood trees, along Mill Creek Zanja adjacent to Sylvan Boulevard on the University of Redlands campus.

Photo 10. Looking west at Mill Creek Zanja adjacent to Sylvan Boulevard on the University of Redlands campus. Small trees have been planted adjacent to the creek.

Photo 11. Looking west at an existing segment of the Orange Blossom Trail, east of Judson Street. The proposed alignment for the Zanja Trail would follow this segment.

Photo 12. Looking west at disturbed riparian scrub in Mill Creek Zanja, east of Lincoln Street.

Photo 13. Looking west at disturbed freshwater marsh in
Mill Creek Zanja, west of Dearborn Street.

Photo 14. Looking east at disturbed freshwater marsh in Mill Creek Zanja,
between Dearborn Street and Wabash Avenue.

Photo 15. Looking east at Mill Creek Zanja adjacent to Crafton Elementary School and single-family homes just west of Wabash Avenue.

APPENDIX D

Cultural Resources Inventory and Evaluation

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Cultural Resources Inventory and Evaluation

Zanja Trail Project - 7th Street to Church Street in the City of Redlands

San Bernardino County, California

Prepared For:

Redlands Conservancy
1615 West Redlands Boulevard
Redlands, CA 95765

Prepared By:

Robert Cunningham
ECORP Consulting, Inc.
215 North 5th Street
Redlands, California 92374

Under the direction of Principal Investigator:

Roger Mason, Ph.D., RPA

30 YEARS ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

ECORP Consulting, Inc. has assisted public and private land owners with environmental regulation compliance since 1987. We offer full service capability, from initial baseline environmental studies through environmental planning review, permitting negotiation, liaison to obtain legal agreements, mitigation design, and construction monitoring and reporting.

Citation: ECORP Consulting, Inc. 2018. Inventory and Evaluation Report for the Zanja Trail Project - 7th Street to Church Street. Prepared for Redlands Conservancy, Redlands, California.

MANAGEMENT SUMMARY

A cultural resources investigation was conducted for the Zanja Trail Project - 7th Street to Church Street, a 3.49-acre project in the City of Redlands, San Bernardino County, California. This investigation was conducted at the request of the Redlands Conservancy in support of a proposed pedestrian trail along the banks of the Mill Creek Zanja. The study was completed by ECORP Consulting, Inc. (ECORP) in compliance with the California Environmental Quality Act (CEQA).

In March 2018, a cultural resources records search was conducted at the South Central Coastal Information Center (SCCIC) at California State University, Fullerton, and a search of the Sacred Lands File was requested from the Native American Heritage Commission (NAHC). The records search results indicated that two cultural resources were documented within the Project area: the Mill Creek Zanja itself (CA-SBR-8092H/P36-008092), a section of which is listed on the National Register of Historic Places (NRHP), and the San Bernardino Motor Line of the Southern Pacific Railroad (CA-SBR-31266H/P36-031266), which was recommended eligible for the California Register of Historical Resources (CRHR). An additional 673 resources have been documented within one-mile radius of the Project area. The records search indicated that the Project area had been previously surveyed in 1937, 1985 and 1988, and 36 additional cultural resources investigations were conducted within the one-mile records search radius between 1937 and 2016. The results of the search of the Sacred Lands File by the NAHC indicated the presence of a Native American cultural resource within one mile of the Project area. This resource was later identified by the San Manuel Band of Mission Indians as the Mill Creek Zanja (CA-SBR-8092H/P36-008092). In addition to the search of the Sacred Lands File, the NAHC identified 20 Native American groups and individuals with historical and traditional ties to the Project area.

As a result of the field survey, three historic-period isolated finds (ZJ-001-I, ZJ-002-I and ZJ-003-I) were documented, and sections of two previously recorded resources, the Mill Creek Zanja and the San Bernardino Motor Line of the Southern Pacific Railroad, were field checked and evaluated using California Register of Historical Resources eligibility criteria. The segment of the San Bernardino Motor Line in the Project Area lacks integrity (the tracks have been removed) and therefore is not a Historical Resource. An evaluation using CRHR eligibility criteria was carried out for isolated finds ZJ-001-I, ZJ-002-I, and ZJ-003-I. Isolated finds are not eligible for inclusion in the CRHR, and are therefore not Historical Resources as defined by CEQA.

The Zanja Trail Project would not have any significant direct impacts on the Mill Creek Zanja, but has the potential to result in indirect impacts to the Mill Creek Zanja. However, these impacts would not be significant. Should the design of the project be altered, an additional impact analysis may be necessary to assess potential impacts to Historical Resources.

The archaeological sensitivity of the Project area is believed to be high. There may be subsurface artifacts or features within the Project area related to CA-SBR-8092H and CA-SRB-31266H. ECORP recommends archaeological monitoring of all ground-disturbing activities that occur during the construction of the project. If new artifacts or features are encountered, recordation and evaluation of the resource(s) would be required. If found to be CRHR-eligible and significant impacts to the resource(s) cannot be avoided, additional mitigation measures would be required. If human remains of any kind are found during

construction, the requirements of CEQA Guidelines Section 15064.5(e) and Assembly Bill (AB) 2641 shall be followed.

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LIST OF ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AMSL	Above Mean Sea Level
BP	Before present
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
CRHR	California Register of Historical Resources
DPR	Department of Parks and Recreation
MLD	Most Likely Descendant
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NPS	National Park Service
NRHP	National Register of Historic Places
OHP	Office of Historic Preservation's
PRC	Public Resources Code
Project	Zanja Trail Project - 7th Street to Church Street
RPA	Registered Professional Archaeologist
SB	Senate Bill
SCCIC	South Central Coastal Information Center
USGS	U.S. Geological Survey

1.0 INTRODUCTION

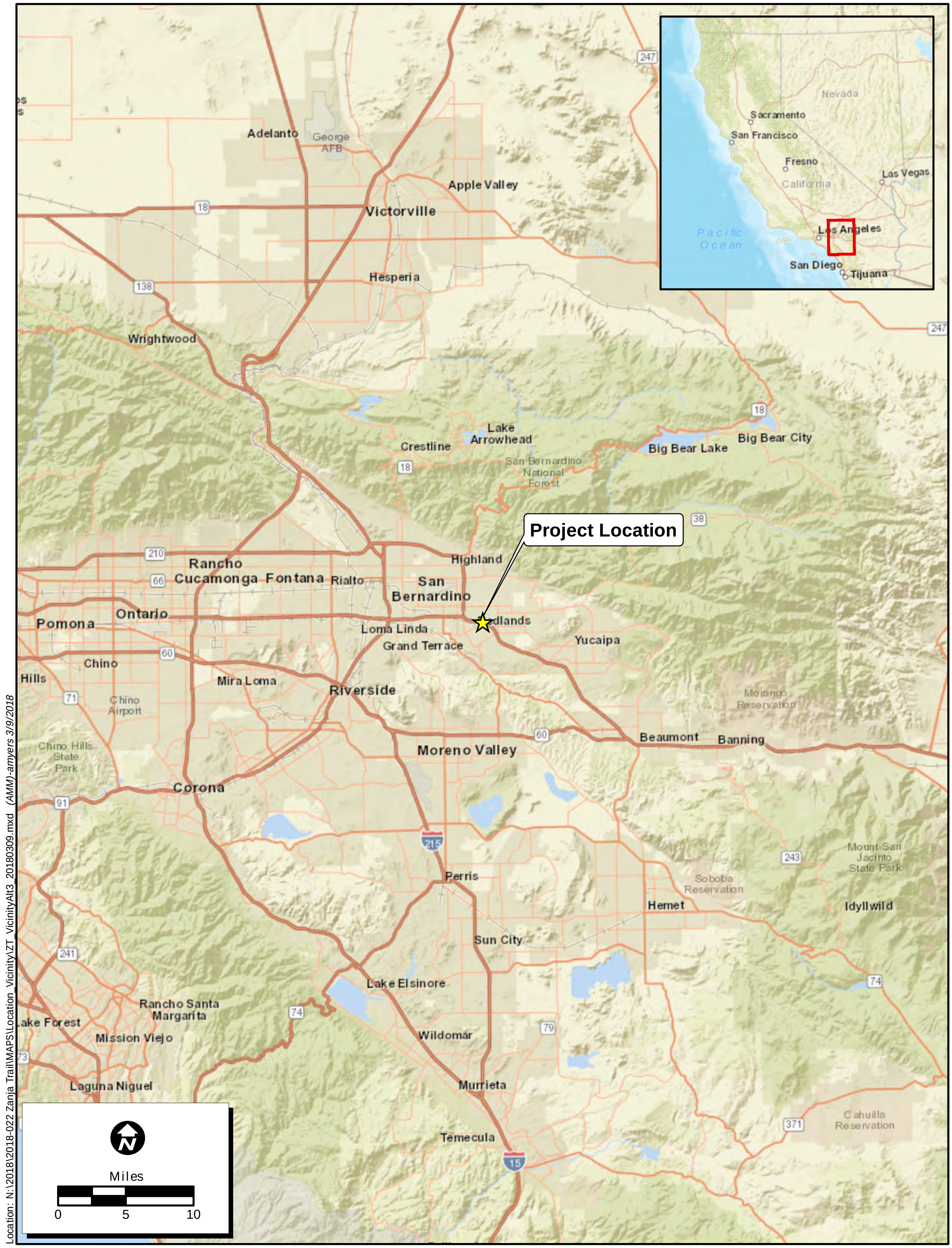
In February 2018, ECORP Consulting, Inc. (ECORP) conducted a cultural resources investigation of a 3.49-acre Project area in the City of Redlands, San Bernardino County, California (Figure 1). The study was conducted at the request of the Redlands Conservancy in support of a proposed pedestrian trail along the banks of the Mill Creek Zanja. The purpose of the study was to identify cultural resources that could be impacted by the proposed project, pursuant to the terms of the California Environmental Quality Act (CEQA). This study included a cultural resources records search, a Native American Heritage Commission (NAHC) Sacred Lands File search, a field survey, an update and impact assessment to segments of two previously recorded resources that are eligible or recommended as eligible for the California Register of Historical Resources (CRHR), and an eligibility discussion for three newly recorded isolated finds.

This report presents the methods and results of the cultural resources records search, Sacred Lands File Search, field survey, and CRHR evaluations that were conducted for the project, along with management recommendations. This project was completed in compliance with CEQA.

1.1 Project Location

The Project area is located between 7th Street and Church Street in the City of Redlands (Figure 1). The Project area is in a commercial district with residential development abutting the southern boundary of the eastern two-thirds of the Project area. The majority of the Project area parallels a segment of the Mill Creek Zanja (irrigation ditch) channel between 9th Street and Church Street. The Mill Creek Zanja goes underground west of 9th Street as it passes out of the Project area. The 7th to 9th Street segment of the Project area is paved with asphalt. The Mill Creek Zanja is a California Historic Landmark, and a segment of the Zanja located east of the Project area is listed on the National Register of Historic Places (NRHP). However, the section located within the Project area is not part of the NRHP listed segment of this resource and has not been previously evaluated for inclusion in the CRHR. The Zanja is the oldest civil engineering infrastructure project remaining in southern California and was fundamental to the founding and settlement of Redlands. The Zanja is depicted on the earliest USGS topographic maps of the area. As shown on the U. S. Geological Survey (USGS) 7.5-minute Redlands, California topographic quadrangle map (1996), the Project area is located in an unsectioned area of the Rancho San Bernardino Land Grant in Township 1 South, Range 3 West, of the San Bernardino Base and Meridian (Figure 2).

The elevation of the Project area ranges from 1,377 feet above mean sea level (AMSL) to 1,406 feet AMSL. It is located approximately 1.9 miles (3,057 meters) south of the Santa Ana River Wash that emanates from the San Bernardino Mountains 4.9 miles (7,882 meters) to the northeast. Sediments in the area consists of Holocene alluvial sediments of the Santa Ana River flood plain, made up of coarse granitic sand and gravel. Vegetation within the Project area consists primarily of non-native grasses and weeds. Surface sediments in the western one-third of the Project area (from 7th Street to 9th Street) are highly disturbed due to construction of an asphalt parking lot. Sediments in the eastern two-thirds of the Project area (from 9th Street to Church Street) are highly disturbed due to the creation of the Zanja and modern improvements to the channel. The banks of the Zanja have been graded to provide a flat maintenance access to the channel that also serves as an informal pedestrian walkway. At the time of the cultural resources field survey, ground visibility was overall very good (approximately 95% visibility).



Map Date: 3/9/2018

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

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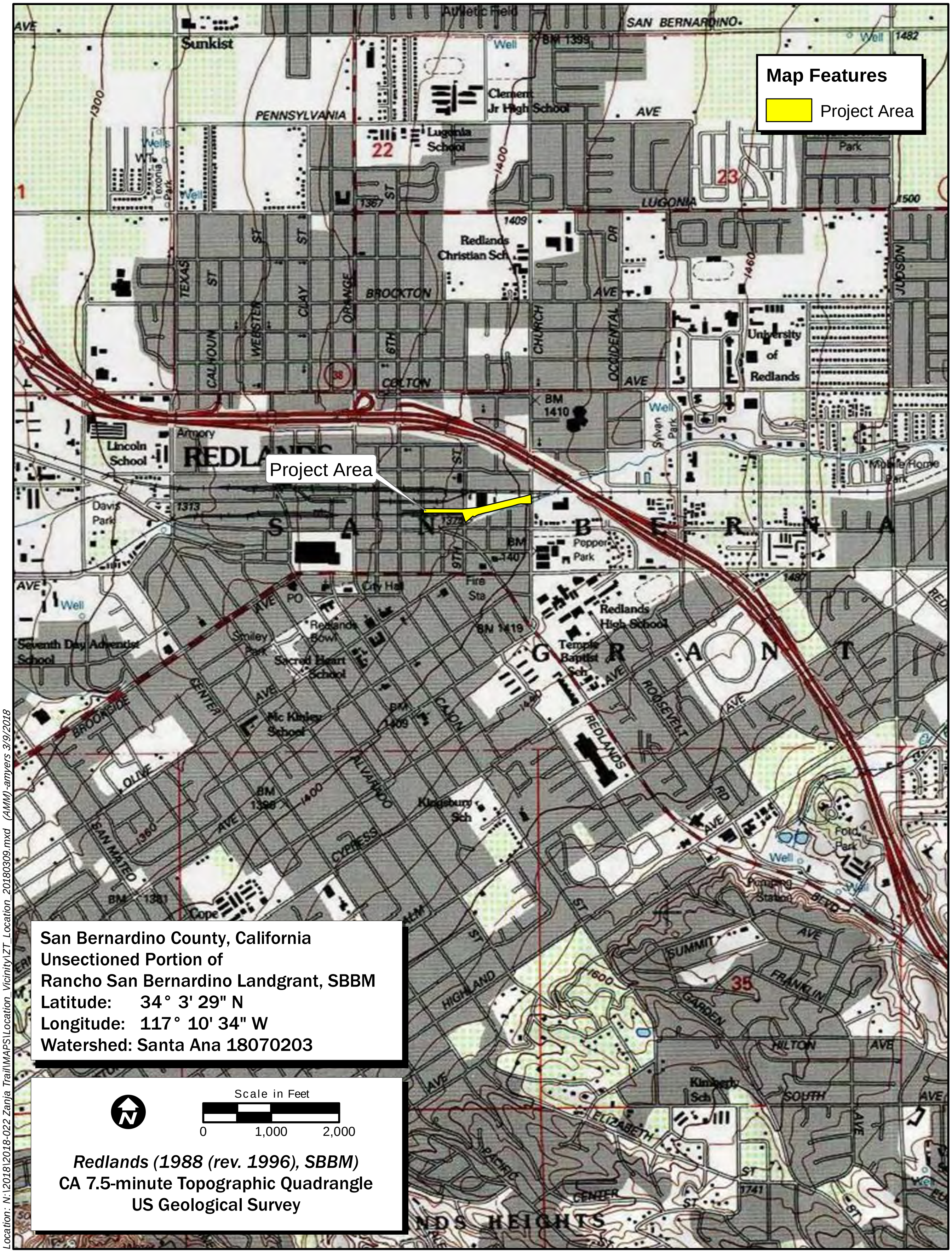
ENVIRONMENTAL CONSULTANTS

Figure 1. Project Vicinity

2018-022 Zanja Trail Project



Location: N:\2018\2018-022 Zanja Trail\MAPS\Location_Vicinity\ZT_Location_20180309.mxd (AMM)-amyers 3/9/2018

Map Date: 3/9/2018

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 2. Project Location

2018-022 Zanja Trail Project

1.2 Project Description

The proposed project includes an approximately 1,600-foot long segment of pedestrian trail that travels from the east side of 7th Street to the west side of Church Street along the historic-age Mill Creek Zanja. The undertaking will complete the westernmost portion of the larger Zanja Trail and Greenway Park Project that will establish a natural surface trail along the Zanja between 7th Street in Downtown Redlands and Wabash Avenue to the east. This project will be completed to enhance the City of Redlands' public trails system and to implement a component of the City's General Plan Open Space Element.

1.3 Regulatory Context

To meet the regulatory requirements of this Project, this cultural resources investigation was conducted pursuant to the provisions for the treatment of cultural resources contained in CEQA (Public Resources Code [PRC] § 21000 et seq.) The goal of CEQA is to develop and maintain a high-quality environment that serves to identify the significant environmental effects of the actions of a proposed project and to either avoid or mitigate those significant effects where feasible. CEQA pertains to all proposed projects that require state or local government agency approval, including the enactment of zoning ordinances, the issuance of conditional use permits, and the approval of development project maps.

CEQA (Title 14, California Code of Regulations [CCR], Article 5, § 15064.5) applies to cultural resources of the historical and prehistoric periods. Any project with an effect that may cause a substantial adverse change in the significance of a cultural resource, either directly or indirectly, is a project that may have a significant effect on the environment. As a result, such a project would require avoidance or mitigation of impacts to those affected resources. Significant cultural resources must meet at least one of four criteria that define eligibility for listing on the CRHR (PRC § 5024.1, Title 14 CCR, § 4852). Resources listed on or eligible for inclusion in the CRHR are considered Historical Resources under CEQA.

1.4 Report Organization

The following report documents the study and its findings and was prepared in conformance with the California Office of Historic Preservation's (OHP) *Archaeological Resource Management Reports: Recommended Contents and Format.* Attachment A contains documentation of a search of the Sacred Lands File and Native American outreach. Confidential Attachment B presents a site location map, and Attachment C contains confidential cultural resource site locations and site records.

Sections 6253, 6254, and 6254.10 of the California Code authorize state agencies to exclude archaeological site information from public disclosure under the Public Records Act. In addition, the California Public Records Act (Government Code § 6250 et seq.) and California's open meeting laws (The Brown Act, Government Code § 54950 et seq.) protect the confidentiality of Native American cultural place information. Under Exemption 3 of the federal Freedom of Information Act (5 U.S. Code 5 [USC]), because the disclosure of cultural resources location information is prohibited by the Archaeological Resources Protection Act of 1979 (16 USC 470hh) and Section 304 of the National Historic Preservation Act (NHPA), it is also exempted from disclosure under the Freedom of Information Act. Likewise, the Information Centers of the California Historical Resources Information System (CHRIS) maintained by the OHP prohibit public dissemination of records search information. In compliance with these requirements, the results of this cultural resource investigation were prepared as a confidential document, which is not intended for public distribution in either paper or electronic format.

2.0 CULTURAL CONTEXT

2.1 Regional Prehistory

2.1.1 Paleo-Indian Period/Terminal Pleistocene (12,000 to 10,000 BP)

The first inhabitants of southern California were big game hunters and gatherers exploiting extinct species of Pleistocene megafauna (e.g., mammoth and other Rancholabrean fauna). Local "fluted point" assemblages comprised of large spear points or knives are stylistically and technologically similar to the Clovis Paleo-Indian cultural tradition dated to this period elsewhere in North America (Moratto 1984). Archaeological evidence for this period in southern California is limited to a few small temporary camps with fluted points found around late Pleistocene lake margins in the Mojave Desert and around Tulare Lake in the southern San Joaquin Valley. Single points are reported from Ocotillo Wells and Cuyamaca Pass in eastern San Diego County and from the Yuha Desert in Imperial County (Rondeau, Cassidy, and Jones 2007).

2.1.2 Early Archaic Period/Early Holocene (10,000 to 8,500 BP)

Approximately 10,000 years ago, at the beginning of the Holocene, warming temperatures, and the extinction of the megafauna resulted in changing subsistence strategies with an emphasis hunting smaller game and increasing reliance on plant gathering. Previously, Early Holocene sites were represented by only a few sites and isolates from the Lake Mojave and San Dieguito complexes found along former lakebeds and grasslands of the Mojave Desert and in inland San Diego County. More recently, southern California Early Holocene sites have been found along the Santa Barbara Channel (Erlandson 1994), in western Riverside County (Goldberg 2001; Grenda 1997), and along the San Diego County coast (Gallegos 1991; Koerper, et al. 1991; Warren 1967).

The San Dieguito Complex was defined based on material found at the Harris site (CA-SDI-149) on the San Dieguito River near Lake Hodges in San Diego County. San Dieguito artifacts include large leaf-shaped points; leaf-shaped knives; large ovoid, domed, and rectangular end and side scrapers; engraving tools; and crescentics (Koerper, et al. 1991). The San Dieguito Complex at the Harris site dates to 9,000 to 7,500 BP (Gallegos 1991 Gallegos 1991:Figure 3.9). However, sites from this time period in coastal San Diego County have yielded artifacts and subsistence remains characteristic of the succeeding Encinitas Tradition, including manos, metates, core-cobble tools, and marine shell (Gallegos 1991; Koerper, et al. 1991).

2.1.3 Encinitas Tradition or Milling Stone Period/Middle Holocene (8,500 to 3,500 BP)

The Encinitas Tradition (Warren 1968) and the Milling Stone Period (Wallace 1955) refer to a long period of time during which small mobile bands of people who spoke an early Hokan language (possibly proto-Yuman) foraged for a wide variety of resources including hard seeds, berries, and roots/tubers (yucca in inland areas), rabbits and other small animals, and shellfish and fish in coastal areas. Sites from the

Encinitas Tradition consist of residential bases and resource acquisition locations with no evidence of overnight stays. Residential bases have hearths and fire-affected rock indicating overnight stays and food preparation. Residential bases along the coast have large amounts of shell and are often termed shell middens.

The Encinitas Tradition as originally defined (Warren 1968) applied to all of the non-desert areas of southern California. Recently, two patterns within the Encinitas Tradition have been proposed that apply to different regions of southern California (Sutton, et al. 2010). The Topanga Pattern includes archaeological material from the Los Angeles Basin and Orange County. The Greven Knoll Pattern pertains to southwestern San Bernardino County and western Riverside County (Sutton and Gardner 2010). Each of the patterns is divided into temporal phases. The Topanga I phase extends from 8,500 to 5,000 BP and Topanga II runs from 5,000 to 3,500 BP. The Topanga Pattern ended about 3,500 BP with the arrival of Takic speakers, except in the Santa Monica Mountains, where the Topanga III phase lasted until about 2,000 BP.

The Encinitas Tradition in inland areas east of the Topanga Pattern (southwestern San Bernardino County and western Riverside County) is the Greven Knoll Pattern (Sutton and Gardner 2010). Greven Knoll I (9,400-4,000 BP) has abundant manos and metates. Projectile points are few and are mostly Pinto points. Greven Knoll II (4,000-3,000 BP) has abundant manos and metates and core tools. Projectile points are mostly Elko points. The Elsinore site on the east shore of Lake Elsinore was occupied during Greven Knoll I and Greven Knoll II. During Greven Knoll I faunal processing (butchering) took place at the lakeshore and floral processing (seed grinding), cooking, and eating took place farther from the shore. The primary foods were rabbit meat and seeds from grasses, sage, and ragweed. A few deer, waterfowl, and reptiles were consumed. The recovered archaeological material suggests that a highly mobile population visited the site at a specific time each year. It is possible that their seasonal round included the ocean coast at other times of the year. These people had an unspecialized technology as exemplified by the numerous crescents, a multi-purpose tool. The few projectile points suggest that most of the small game was trapped using nets and snares (Grenda 1997:279). During Greven Knoll II, which included a warmer drier climatic episode known as the Altithermal, it is thought that populations in interior southern California concentrated at “oases” and that Lake Elsinore was one of these oases. The Elsinore site (CA-RIV-2798) is one of five known Middle Holocene residential sites around Lake Elsinore. Tools were mostly manos, metates, and hammerstones. Scraper planes were absent. Flaked stone tools consisted mostly of utilized flakes used as scrapers. The Elsinore site during the Middle Holocene was a “recurrent extended encampment” which could have been occupied during much of the year.

The Encinitas Tradition lasted longer in inland areas because Takic speakers did not move east into these areas until circa 1,000 BP Greven Knoll III (3,000-1,000 BP) is present at the Liberty Grove site in Cucamonga (Salls 1983) and at sites in Cajon Pass that were defined as part of the Sayles Complex (Kowta (1969). Greven Knoll III sites have a large proportion of manos and metates and core tools as well as scraper planes. Kowta (1969) suggested the scraper planes may have been used to process yucca and agave. The faunal assemblage consists of large quantities of lagomorphs (rabbits and hares) and lesser quantities of deer, rodents, birds, carnivores, and reptiles.

2.1.4 Palomar Tradition (1,250 – 150 BP)

The native people of southern California (north of a line from Agua Hedrionda to Lake Henshaw in San Diego County) spoke Takic languages which form a branch or subfamily of the Uto-Aztecan language family. The Takic languages are divided into the Gabrielino-Fernandeño language, the Serrano-Kitanemuk group (the Serrano [includes the Vanyume dialect] and Kitanemuk languages), the Tataviam language, and the Cupan group (the Luiseño-Juaneño language, the Cahuilla Language, and the Cupeño language) (Golla 2011). According to Sutton (2009), Takic speakers occupied the southern San Joaquin Valley before 3,500 BP. Perhaps as a result of the arrival of Yokutsan speakers (a language in the Penutian language family) from the north, Takic speakers moved southeast. The ancestors of the Kitanemuk moved into the Tehachapi Mountains and the ancestors of the Tataviam moved into the upper Santa Clara River drainage. The ancestors of the Gabrielino (Tongva) moved into the Los Angeles Basin about 3,500 B.P replacing the native proto-Yuman (Hokan) speakers. Speakers of proto-Gabrielino reached the southern Channel Islands by 3,200 BP (Sutton 2009) and moved as far south as Aliso Creek in Orange County by 3,000 BP

Takic people moved south into southern Orange County after 1,250 B. P. and became the ancestors of the Juaneño. Takic people moved inland from southern Orange County about 1,000 BP, becoming the ancestors of the Luiseño, Cupeño, and Cahuilla. At the same time, Takic people from the Kitanemuk area moved east along the northern slopes of the San Gabriel Mountains and spread into the San Bernardino Mountains and along the Mojave River becoming the ancestors of the Serrano and the Vanyume. Although Sutton (2011) believes that Yuman speakers living in these inland areas adopted Takic languages and that Takic speakers did not physically replace the Yuman speakers, this is unlikely because settlement and subsistence systems in inland areas were the same as those characteristic of the Takic peoples of the coast.

The material culture of the inland areas where Takic languages were spoken at the time of Spanish contact is part of the Palomar Tradition (Sutton 2011). San Luis Rey I Phase (1,000 – 500 BP) and San Luis Rey II Phase (500 – 150 BP) pertain to the area occupied by the Luiseño at the time of Spanish contact. The Peninsular I (1,000 – 750 BP), II (750 – 300 BP), and III (300 – 150 BP) Phases are used in the areas occupied by the Cahuilla and Serrano (Sutton 2011).

San Luis Rey I is characterized by Cottonwood Triangular arrow points, use of bedrock mortars, stone pendants, shell beads, quartz crystals, and bone tools. San Luis Rey II sees the addition of ceramics, including ceramic cremation urns, red pictographs on boulders in village sites, and steatite arrow straighteners. San Luis Rey II represents the archaeological manifestation of the antecedents of the historically known Luiseño (Goldberg 2001: I-43). During San Luis Rey I there were a series of small permanent residential bases at water sources, each occupied by a kin group (probably a lineage). During San Luis Rey II people from several related residential bases moved into a large village located at the most reliable water source (Waugh 1986). Each village had a territory that included acorn harvesting camps at higher elevations. Villages have numerous bedrock mortars, large dense midden areas with a full range of flaked and ground stone tools, rock art, and a cemetery.

2.2 Ethnohistory

The Project area is located within the territory known to have been occupied by the Serrano group of Native Americans at the time of contact with Europeans, around AD 1769. The Serrano occupied an area in and around the San Bernardino Mountains and northward into the Mojave Desert. Their territory also extended west along the north slope of the San Gabriel Mountains, east as far as Twentynine Palms, north into the Victorville and Lucerne Valley areas, and south to the Yucaipa Valley and San Jacinto Valley (Cultural Systems Research 2005). The Serrano speakers in the Mojave Desert who lived along the Mojave River were known as Vanyume. Serrano is a language within the Takic family of the Uto-Aztecan language stock.

The Serrano were mainly hunters and gatherers who occasionally fished. Game that was hunted included mountain sheep, deer, antelope, rabbits, small rodents, and various birds, particularly quail. Vegetable staples consisted of acorns, pinyon nuts, bulbs and tubers, shoots and roots, juniper berries, mesquite, barrel cacti, and Joshua tree (Bean and Smith 1978).

A variety of materials were used for hunting, gathering, and processing food, as well as for shelter, clothing, and luxury items. Shells, wood, bone, stone, plant materials, and animal skins and feathers were used for making baskets, pottery, blankets, mats, nets, bags and pouches, cordage, awls, bows, arrows, drills, stone pipes, musical instruments, and clothing (Bean and Smith 1978).

Settlement locations were determined by water availability, and most Serranos lived in villages near water sources. Houses and ramadas were round and constructed of poles covered with bark and tule mats (Kroeber 1925). Most Serrano villages also had a ceremonial house used as a religious center. Other structures within the village might include granaries and sweathouses (Bean and Smith 1978).

Serrano social and political units were clans, patrilineal exogamous territorial groups. Each clan was led by a chief who had both political and ceremonial roles. The chief lived in a principal village within the clan's territory. The clans were part of a moiety system such that each clan was either a wildcat or coyote clan and marriages could only occur between members of opposite moieties (Earle 2004). On the north side of the San Bernardino Mountains, clan villages were located along the desert-mountain interface on Deep Creek, on the upper Mojave River, in Summit Valley, and in Cajon Pass. The principal plant food available near these villages was juniper berries. These villages also had access to mountain resources, such as acorns and pinyon nuts.

Vanyume villages were located along the Mojave River from south of Victorville to Soda Lake. These river villages had populations of 40 to 80 people. Marriage ties between the Serrano foothill villages and Vanyume desert villages facilitated access to mountain resources, such as acorns and pinyon nuts, by the desert villages. The principal desert resources were mesquite beans, screw beans, tule reed roots, and carrizo grass sugar (produced by aphids that lived on the Carrizo grass). Animal resources were rabbits, jackrabbits, desert bighorn sheep, pronghorn, and desert tortoise (Earle 2005:10). The Vanyume also collected salt from Soda Lake and from the Barstow-Daggett area to exchange for acorns and other resources from the mountains (Earle 2005:11).

Partly due to their mountainous and desert inland territory, contact between Serrano and European-Americans was minimal prior to the early 1800s. In 1819, an asistencia (mission outpost) was established near present-day Redlands and was used to help relocate many Serrano to Mission San Gabriel. However, small groups of Serrano remained in the area northeast of the San Gorgonio Pass and were able to preserve some of their native culture. Today, most Serrano live either on the Morongo or San Manuel reservations (Bean and Smith 1978).

2.3 History

The first European to visit Alta California (the area north of Baja California) was Spanish maritime explorer Juan Rodriguez Cabrillo, in 1542. Sent north by the Viceroy of New Spain (Mexico) to look for the Northwest Passage, Cabrillo visited San Diego Bay, Catalina Island, San Pedro Bay, and the northern Channel Islands. In 1579, the English adventurer Francis Drake visited the Miwok Native American group at Drake's Bay or Bodega Bay. Sebastian Vizcaíno explored the coast as far north as Monterey in 1602. He reported that Monterey was an excellent location for a port (Castillo 1978). Vizcaíno also named San Diego Bay to commemorate Saint Didacus. The name began to appear on European maps of the New World by 1624 (Gudde 1998).

Colonization of Alta California began with a land expedition led by Spanish army captain Gaspar de Portolá. In 1769, Portolá and Father Junipero Serra, a Franciscan missionary, explored the California coast from San Diego to the Monterrey Bay area. As a result of this expedition, Spanish missions to convert the native population to Catholicism, presidios (forts), and pueblos (towns) were established. The Franciscan missionary friars built 21 missions in Alta California, beginning with Mission San Diego in 1769 and ending with the missions in San Rafael and Sonoma, founded in 1823. Mission San Diego was established to convert the Native Americans that lived in the area, known as the Kumeyaay or Diegueño. Mission San Gabriel Archangel began in 1771, east of what is now Los Angeles, to convert the Tongva or Gabrielino. Mission San Fernando, also in Tongva/Gabrielino territory, was built in 1797. Mission San Juan Capistrano was established in 1776 on San Juan Creek (in what is now southern Orange County) to convert the Agjachemem or Juaneño. Mission San Luis Rey began in 1798 on the San Luis Rey River (in what is now northern San Diego County) to convert the Luiseño (Castillo 1978).

Some missions later established outposts in inland areas. An asistencia (mission outpost) of Mission San Luis Rey, known as San Antonio de Pala, was built in Luiseño territory along the upper San Luis Rey River near Mount Palomar in 1810 (Pourade 1961). A chapel administered by Mission San Gabriel Archangel was established in the San Bernardino area in 1819 (Bean and Smith 1978). The present asistencia within the western outskirts of present-day Redlands was built circa 1830 (Haenszel and Reynolds 1975). The missions sustained themselves through cattle ranching and traded hides and tallow for supplies brought by ship. Large cattle ranches were established by Mission San Luis Rey at Temecula and San Jacinto (Gunther 1984). The Spanish also constructed presidios, or forts, at San Diego and Santa Barbara, and a pueblo, or town, was established at Los Angeles.

The Spanish period, which had begun in 1769 with the Portolá expedition, ended in 1821 with Mexican independence. After Mexico became independent from Spain, what is now California became the Mexican province of Alta California. The Mexican government secularized the missions in the 1830s and former mission lands were granted to retired soldiers and other Mexican citizens for use as cattle ranches. Much of the land along the coast and in the interior valleys became part of Mexican land grants, or ranchos (Robinson 1948). Rancho owners sometimes lived in one of the towns, such as San Diego (near the presidio), San Juan Capistrano (around the mission), or Los Angeles, but often resided in an adobe house on their own land.

The Mexican Period, which began with independence from Spain in 1821, continued until the Mexican-American War of 1846-1848. The American period began when the Treaty of Guadalupe Hidalgo was signed between Mexico and the United States in 1848. As a result of the treaty, Alta California became part of the United States as the Territory of California. Rapid population increase occasioned by the Gold Rush of 1849 led to statehood in 1850. Most Mexican land grants were confirmed to the grantees by U.S. courts, but usually with more restricted boundaries which were surveyed by the U.S. Surveyor General's office. Floods and drought in the 1860s greatly reduced the cattle herds on the ranchos, making it difficult for their owners to pay the new American taxes on their thousands of acres. Many Mexican-American cattle ranchers borrowed money at usurious rates from newly arrived Anglo-Americans. Foreclosures and land sales eventually resulted in the transfer of most of the land grants into the hands of Anglo-Americans (Cleland 1941).

In 1842, several years after the secularization of the missions by Mexico, California Governor Juan Bautista Alvarado, representing the Mexican government, made a large land grant to Don Antonio Maria Lugo and his three sons. The Lugo family's Rancho San Bernardino encompassed land in both the San Bernardino and Yucaipa valleys, extending from present-day Colton to Calimesa. In the spring of 1851, 437 Mormon settlers, who had come in wagons from Salt Lake City, settled in the San Bernardino Valley. Two apostles, Amasa Lyman and Charles C. Rich, acting as representatives of the Latter Day Saints, bought a large portion of Rancho San Bernardino from the Lugos and established what is today the city of San Bernardino.

Several wealthy ranchers purchased Rancho San Bernardino land in what was known as the Mission District because of the presence of the old outpost of Mission San Gabriel Archangel (the San Bernardino Asistencia in present-day Redlands). Among these new residents were Dr. Benjamin Barton (for whom Barton Road was later named), Anson Van Leuven, and J. W. Curtis.

Less than two miles east of the Mission District, the Redlands Colony was formed in 1881 by Frank E. Brown, a civil engineer from Connecticut, and Edward G. Judson, a businessman from New York. The original settlement comprised 160 acres centered on what is now the intersection of Center Street and Cypress Avenue. The San Bernardino & Redlands Railroad Company built a spur from the Southern Pacific Railroad (SPRR) main line (which ran from Colton through San Timoteo Canyon to Banning) to Redlands, with an extension to Crafton, in 1888. This rail spur was known as the Redlands & San Bernardino Motor Line (USGS 1901). It was leased to the SPRR in 1892 and sold to the SPRR in 1916. The California Central Railway Company, a subsidiary of the AT&SF Railroad, built a rail line from its main line in San Bernardino to Redlands in 1888. A loop was formed when this line was continued through Mentone, Highland, and back to San Bernardino in 1892. This loop line was purchased by the AT&SF in 1906 (Robertson 1998). Soon after the railroads arrived, the business center of Redlands became established at its present location, near the AT&SF and SP stations. Redlands soon grew to encompass several thousand acres. The

City of Redlands was incorporated on November 26, 1888 (Burgess 1981; Hinckley 1956; Kupfer 1979; F. Moore 1987; W. Moore 1983; Richards 1966).

Judson and Brown had purchased the land on which they laid out the streets of Redlands primarily from the Southern Pacific Railroad and Dr. Barton. Brown, the engineer, surveyed a six-mile-long canal from the Santa Ana River to a large uncovered reservoir southeast of the new town site. Citrus farming in San Bernardino Valley soon became centered in the growing community of Redlands. In 1883, Brown, always looking for a better source of water, and Hiram Barton, Dr. Barton's son and a prominent Redlands grower and rancher, set out on a camping trip up the Santa Ana River Canyon to assess Bear Valley as a site for a dam and reservoir for Redlands' increasing irrigation needs. Brown returned to Redlands in a fever of excitement over the possibilities he and Barton had seen. He immediately bought a 20-day option on the valley from its two principal owners, Los Angeles banker J. S. Slauson and the Southern Pacific Railroad. Within those 20 days, Brown managed to raise $360,000 from investors and incorporate the Bear Valley Land and Water Company to purchase the valley's land, as well as its water rights (Robinson 1989). By November of 1884, a 240-foot-long, 52-foot-high dam had been completed, at a cost of $75,000. By the following spring, a 1,500-acre, 45-foot-deep reservoir had formed—the beginnings of Big Bear Lake. Irrigation water from the lake reached Redlands for the first time on July 10, 1885 (Hinckley 1956; Richards 1966; Robinson 1989).

With the arrival of a nearly unlimited supply of irrigation water, Redlands grew rapidly. The railroad rate competition of the late 1880s brought even more people to the prospering town. The new city of Redlands was subdivided from the beginning in anticipation of a quickly growing population, but the economic depression of the 1890s resulted in most residential development being restricted to the area south of present-day Redlands Boulevard. In the Lugonia and Crafton districts, development was sporadic, with residential lots interspersed with large parcels of agricultural fields (Hinckley 1956; Mermilliod 2002). In the main part of town, however, development continued at a rapid pace.

The 1890s saw the beginnings of paved streets, a streetcar line, and the construction of hundreds of houses and dozens of substantial brick commercial and industrial buildings in Redlands. Civic improvement projects, such as street tree planting, were initiated. The Smiley brothers (Albert K. and Alfred K.), prominent Redlands residents, contributed much of their wealth to the beautification of the town, and in 1898 financed the construction of the A. K. Smiley Public Library, a monumental brick Mission Revival-style building that still serves the community today. The Smileys also developed the 200-acre Canyon Crest Park (also called Smiley Heights), a botanical garden that drew tourists from around the world between 1890 and 1930 (Burgess and Gonzales 2004; Hinckley 1956).

By the early twentieth century, Redlands had a population of more than 5,000, and had gained the reputation of being the navel orange capital of the world, with over 15,000 acres planted in citrus and more than two dozen packing houses. The greatest disaster in the city's early decades came in 1913, when a three-day freeze destroyed most of the citrus crop and killed thousands of orange trees. Many farmers were left bankrupt, but the community worked together and slowly recovered. New trees were planted, and Redlands regained its leadership as a navel orange center. The citrus industry continued to thrive until after World War II, when land values began to make it more financially worthwhile to sell to developers than to continue to farm (Burgess and Gonzales 2004). Since the 1950s, many thousands of acres of orange trees have given way to residential and commercial development. As its citrus agriculture gradually fades into history, Redlands continues to prosper while maintaining its downtown core and surrounding neighborhoods reminiscent of a small early twentieth century city. The current population of Redlands is approximately 70,000 (City-Data.com 2012).

3.0 METHODS

3.1 Personnel Qualifications

All phases of the cultural resources investigation were conducted or supervised by Registered Professional Archaeologist (RPA) Dr. Roger Mason, who meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historical archaeologist. Fieldwork was conducted by Staff Archaeologist and Field Director Robert Cunningham. This report was prepared by Staff Archaeologist Robert Cunningham and Senior Archaeologist Wendy Blumel, RPA.

Dr. Mason has been professionally involved with cultural resources management in California since 1983. Dr. Mason is the author of more than 200 reports dealing with cultural resource surveys, evaluations, and mitigation programs in California. He has extensive project experience with the cultural resources requirements of CEQA and Section 106 of the NHPA.

Ms. Blumel is a Registered Professional Archaeologist with 10 years of experience in cultural resource management. She meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historical archaeologist and is experienced in the organization and execution of field projects in compliance with Section 106 of the National Historic Preservation Act (NHPA) and CEQA. She has contributed to and authored numerous cultural resources technical reports, research designs, and cultural resource management plans, and has contributed to a variety of environmental compliance documents.

Mr. Cunningham is a Staff Archaeologist for ECORP and has more than 10 years of experience in cultural resources management, primarily in Southern California. He holds a BA degree in Anthropology and has participated in and supervised numerous survey, testing, and data recovery excavations for both prehistoric and historical sites, and has cataloged, identified, and curated thousands of artifacts. He has conducted evaluations of cultural resources for eligibility for the NRHP and CRHR.

3.2 Records Search Methods

A cultural resources records search was conducted in March 2018 at the SCCIC, located at California State University, Fullerton. The purpose of the records search was to determine the extent of previous cultural resources investigations and the presence of previously-recorded archaeological sites or historic-period (i.e., over 50 years in age) resources within a one-mile (1600-meter) radius of the Project area. Materials reviewed included reports of previous cultural resources investigations, archaeological site records, historical maps, and listings of resources on the NRHP, CRHR, California Points of Historical Interest, California Landmarks, and National Historic Landmarks.

Historic maps reviewed include:

- 1899 USGS Redlands, California (15-minute scale)
- 1901 USGS Redlands, California (15-minute scale)
- 1954 USGS Redlands, California (7.5-minute scale)
- 1963 USGS Redlands, California (7.5-minute scale)
- 1967 USGS Redlands, California (7.5-minute scale)
- 1969 USGS Redlands, California (7.5-minute scale)
- 1973 USGS Redlands, California (7.5-minute scale)
- 1979 USGS Redlands, California (7.5-minute scale)
- 1980 USGS Redlands, California (7.5-minute scale)

Historic aerial photos taken in 1938, 1959, 1966, 1968, 1980, and 1995 to present were also reviewed for any indications of property usage and built environment (Nationwide Environmental Research 2018).

3.3 Sacred Lands File Coordination Methods

A search of the Sacred Lands File by the NAHC in Sacramento, California, was requested by ECORP in February 2018. This search was requested to determine whether there are sensitive or sacred Native American resources in the vicinity of the Project area that could be affected by the proposed Project. The NAHC was also asked to provide a list of Native American groups that have historic or traditional ties to the Project area who may have knowledge about the Project area. It should be noted that this does not constitute consultation in compliance with Senate Bill (SB) 18 or Assembly Bill (AB) 52. A copy of all correspondence between ECORP and the NAHC is attached (Attachment A).

3.4 Field Methods

Archaeological field work was conducted by an ECORP archaeologist on February 20, 2018 and consisted of an intensive systematic pedestrian survey. The Project area was examined for the presence of cultural artifacts and features by walking the proposed approximately 1,600-foot pathway, and, where possible, conducting parallel east-west transects in 15-meter intervals. Notes and photographs were taken on the environmental setting and disturbances within the Project area.

Newly-discovered cultural resources were assigned a unique temporary number based on the project name and the order in which they were found (i.e. ZJ-001-I). As appropriate, the site boundary, features, and artifacts were mapped using Collector for ArcGIS, a cloud-based geospatial software with two to five-meter accuracy, with data later post-processed for submeter accuracy. Digital photographs were taken of select artifacts and features as well as general site overviews showing the general environment and the presence, if any, of human or naturally-occurring impacts. Following fieldwork, Department of Parks and Recreation (DPR) 523 records were prepared for each of the resources identified and location and sketch maps were created using data collected with the Collector ArcGIS application used in the field. All DPR site record forms and maps prepared by ECORP are located in confidential Attachment C.

Previously recorded cultural resources located within the Project area were revisited to assess any changes including man-made or naturally occurring disturbance and/or damage. Digital photographs were taken and features were mapped using Collector for ArcGIS. Previously recorded sites were updated to note any changes since the site had been originally recorded using DPR 523 Continuation Sheets (see Attachment C).

4.0 RESULTS

4.1 Records Search

The records search consisted of a review of previous research and literature, records on file with the SCCIC for previously recorded resources, historical aerial photographs, and maps of the vicinity.

4.1.1 Previous Research

The records search indicated that the Project area had been previously surveyed on three occasions, in 1937 as part of a documentation and compilation of the history of the Zanja, in 1985 as part of a cultural resources survey for the Mission Zanja Creek Flood Control Project, and in 1988 as part of a cultural resources study for the Seven Oaks Dam Project. Thirty-six additional cultural resources investigations were conducted within the one-mile records search radius between 1937 and 2016. Details of all 39 investigations are presented below in Table 1.

Table 1. Previous Cultural Studies In or Within One Mile of the Project Area

Report Number	Author(s)	Report Title	Year	Includes Portion of the APE?
00006	Rumble, Josephine R.	*History: The Mill Creek Zanja*	1937	Yes
01490	Lerch, Michael K., and Edward B. Weil	*Cultural Resource Survey: Mission Zanja Creek Flood Control Project, Redlands, California*	1985	Yes
01521	Brock, James	*Archaeological Field Reconnaissance of the Proposed Lugonia Postal Station Site in Redlands, California*	1985	No
01668	Brock, James, and John F. Elliott	*Preliminary Archaeological Monitoring Report for the Lafarge Project, Redlands, California*	1987	No
01782	Brock, James	*Redlands Chinatown and the Mission Zanja Creek Flood Control Project*	1988	No
01783	Hornbeck, David, and Howard Botts	*Seven Oaks Dam Project: Water Systems*	1988	Yes
01810	Lester, A. Ross	*Archaeological Monitoring of the Glaze Auto Center Project Site at the Southeast Corner of Oriental and Texas Streets, Redlands, San Bernardino County, California*	1988	No

Table 1. Previous Cultural Studies In or Within One Mile of the Project Area

Report Number	Author(s)	Report Title	Year	Includes Portion of the APE?
01838	Brock, James, William A. Sawyer, and Paul W. Wormser	*Artifacts from Lafarge Site, Redlands, California*	1988	No
02258	Swanson, Mark T.	*Cultural Resources Survey of Proposed Playground/Parking Lot for Sacred Heart Church, a 1-Acre Tract Containing 241/243, 245, 247/249/251, and 253 Eureka Street, and 242, 246, and 248 Fourth Street, Redlands, San Bernardino County, Calif.*	1991	No
02634	Swope, Karen K.	*Archaeological Monitoring at the Site of Seven Historical Structures (a 1-Acre Tract Containing 241/243, 245, 247/249/251, & 253 Eureka St., & 242, 246 &248 Fourth St.) Sacred Heart Church, Redlands, San Bernardino County, California*	1992	No
02938	Alexandrowicz, J. Stephen, Susan R. Alexandrowicz, and Ayse Taskiran	*Historic Preservation Investigations for the Redlands Theatre Project, City of Redlands, County of San Bernardino, California: The Archival Research Program*	1994	No
03137	Grenda, Donn R., and Deborah W. Gray	*Historic Resources Field Survey of a Parcel on the Southwest Corner of Orange & Pearl Streets in Redlands, CA*	1996	No
03675	Pardon, Beth, and Karen K. Swope	*Redlands Chinatown Archaeological Investigations for Krikorian Premier Theater Project, Redlands, San Bernardino County, CA*	1997	No
03734	Duke, Curt	*Cultural Resources assessment for the AT&T Fixed Wireless Services Facility #BC_458A, County of San Bernardino, CA*	2001	No
03738	Duke, Curt	*Cingular Wireless Facility #222-01, San Bernardino County, CA*	2002	No
03748	Waugh, Rebecca, and S. Greg Johnson	*Archaeological Monitoring & Testing: The Boston Market Parcel, Redlands, CA*	1998	No
04052	Goodwin, Riordan	*Cultural Resource Assessment: Control Temp Parcel, City of Redlands, San Bernardino County, CA*	2003	No
04053	McLean, Deborah K.B.	*Archaeological Assessment: Redlands I &II, Former Manufactured Gas Plant Sites, City of Redlands, San Bernardino County, CA*	2002	No
04057	White, Laurie S.	*Cultural Resource Assessment for Sprint PCS Facility SB54XC418E (Service & Supply Center) City of Redlands, San Bernardino County, CA*	2002	No
04067	Tang, Bai Tom	*APN: 297-021-04, -05 & the Southern Portion of 097-021-12, Due Diligence/Feasibility Investigation, City of Highland, San Bernardino County, CA*	2004	No
04593	Tang, Bai "Tom", Michael Hogan, Casey Tibbet, and John J. Eddy	*Historical/Archaeological Resources Survey Report: Assessor's Parcel Number 0169-271-44, City of Redlands, San Bernardino County, California.*	2005	No
04822	Hansen, Janet, and Tanya Sorrell	*Cultural Resources Assessment Redlands Y Alliance, City of Redlands, San Bernardino County, California*	2006	No
04823	Sander, Jay K.	*Cultural Resources Survey of an 8.90-Acre Parcel at Park Avenue and Alabama Street, Redlands, San Bernardino County California*	2006	No

Table 1. Previous Cultural Studies In or Within One Mile of the Project Area

Report Number	Author(s)	Report Title	Year	Includes Portion of the APE?
05163	Tang, Bai, Michael Hogan, Matthew Wetherbee, and Daniel Jacqueman	*Historical/Archaeological Resources Survey Report Krikorian Theatre Expansion and Retail Addition Project, Eureka Street and Stuart Avenue, City of Redlands, San Bernardino County California*	2005	No
05807	Tang, Bai "Tom", Terri Jacquemain, and Josh Smallwood	*Historic Building Evaluation: Former Redlands Mutual Orange Company Packinghouse, 330 North Third Street, City of Redlands, San Bernardino County, California*	2007	No
05858	Tang, Bai "Tom", Terri Jacquemain, and Josh Smallwood	*Historical/Archaeological Survey Report: A Center for the Arts, University of Redlands, City of Redlands, San Bernardino County, California.*	2007	No
06024	Sander, Jay K.	*Cultural Resources Inventory of 200 West Redlands Boulevard, Redlands, San Bernardino County, California.*	2008	No
06026	Bonner	*Cultural Resource Records Search Results and Site Visit for Royal Street Communications California, LLC Candidate LA0767D (Redlands Presbyterian Church), 100 Cajon Street, Redlands, San Bernardino County, California*	2008	No
06029	Hogan	*Archaeological Monitoring of Earth-Moving Operations, "A Center for the Arts" Project, University of Redlands, City of Redlands, San Bernardino County, California*	2008	No
06191	Jordan, Stacey C	*Archaeological Survey Report for Southern California Edison Company Deteriorated Pole Replacement Project for a Total of Ten Poles on IDA 12kV (#4579978E & #4744631E), Oak Glen 12kV (#4744626E), Bryn Mawr 12kV (#4744645E,) Stewart 4kV (#4760030E), Boulder 12kV (#4714250E), Lapins 12kV (#4759904E), Mesa Grande 12kV (#4759915E), Conine 12kV (#4759921E) and Preston 12kV (#4759658E) Circuits and Removal of One Pole on Bench 12kV (#782504H) Circuit on Private Lands in Riverside and San Bernardino Counties, California.*	2008	No
06435	Tang, Bai "Tom", Terri Jacquemain, and Josh Smallwood	*Historic Building Adaptive Use Study: The Historic Redlands AT&SF Railway Station, 351 Orange Street, City of Redlands, San Bernardino County, California.*	2009	No
06637	Hogan, Michael	*Final Report on Archaeological Monitoring of Earth-Moving Operations "A Center for the Arts" Project, University of Redlands, City of Redlands, San Bernardino County, California, CRM Tech Contract #2200*	2009	No
07453	Tang, Bai "Tom"	*Historic Building Evaluation: 1113 East Central Avenue, Assessor's Parcel No. 0170- 201-33, City of Redlands, San Bernardino County, California*	2013	No
07454	Glover, Amy and Sherri Gust	*Cultural Resources Phase I Study Redlands Park Once Transit Center Project, City of Redlands, San Bernardino County, California*	2012	No
07455	Mason, Roger D.	*Extended Phase I Report for P-36-023343, CA-SBR-14744H, Redlands Park Once Transit Center Project, Redlands, San Bernardino County, California*	2012	No

Table 1. Previous Cultural Studies In or Within One Mile of the Project Area

Report Number	Author(s)	Report Title	Year	Includes Portion of the APE?
07658	Lev-Tov, Justin E.	*Archaeological Monitoring at the 424 West Stuart Ave., Redlands, California*	2013	No
07659	Stanton, Patrick B.	*Archaeological Monitoring at the 6007 West Stuart Ave., Redlands, California.*	2014	No
07929	McKenna, Jeanette A.	*A Preliminary Assessment of the Existing Improvements at 219 Cajon Street, Redlands, San Bernardino County, California*	2016	No
08041	Widell, Cherilyn	*Rehabilitation of 123 Lugonia St., Redlands (AN) and 402 Alder St., San Bernardino (AS)*	1997	No

The records search also determined that 673 previously recorded historic-era cultural resources are located within one mile of the Project area. These are comprised of 670 historic-period buildings or structures, the NRHP-eligible Mill Creek Zanja, one monument, and one historic-period campsite. The Mill Creek Zanja (CA-SBR-8092H/P36-008092) was evaluated and recommend as eligible for the NRHP/CRHR in 1977 (Smallwood 2006, Swope 1996, Schmidt 1995, Toren 1994, Van Boven 1976). A portion of the Zanja, to the east of the Project area, is currently listed on the NRHP (NRHP-L-77-329) and is on the list of California Historical Landmarks (No. 43).

Two national/state historic districts are located within one-mile of the Project area. These are the Smiley Park, and the Redlands Santa Fe Depot Districts. There are also six local historic districts located within one mile of the Project area. These are the Eureka Street and Normandie Court Historic Districts; and the Early Redlands, the East Fern Avenue, the La Verne Street, and the Smiley Park Historic and Scenic Districts. These two national/state historic districts and six local historic districts encompass the majority of the 670 historic buildings identified during the records search. None of these districts are located within or adjacent to the Project area.

A review of the historic-period maps and historic aerial photographs indicates that a majority of the Project area was a railroad and irrigation corridor (Mill Creek Zanja) within an agricultural and residential area from the 1890s to 1970s (NETRonline 2018). The earliest USGS 15-minute Redlands Quadrangle maps show that there were few dwellings located along the Zanja and in the Project area in the early twentieth Century. Most of the development in the area is depicted west of the Project area.

On early 20th Century maps, the Mill Creek Zanja is depicted within the Project area, as well as a set of railroad tracks identified as the Redlands & San Bernardino Motor Line. A second set of tracks is depicted north of the Project area and is identified as the Highlands Division of the Southern California Railroad. East of the Project area, the two tracks converge and run parallel as they continue eastward (USGS 1899, 1901). The 1954 USGS 7.5-minute Redlands Quadrangle map shows increased development in areas adjacent to the Project area, with the nearest agricultural plots shown well east of the Project area. The railroad tracks depicted passing through the Project area are now identified as the Southern Pacific Railroad, and the tracks north of the Project area are identified as the Atchison, Topeka, and Santa Fe

Railroad. USGS quadrangle maps from the 1960s and 1970s show development increasing steadily at these locations (USGS 1963, 1969, 1973, 1979). By the 1980s housing developments had taken over most of the agricultural areas that surround the Project area.

On historic aerial photographs from 1938 to 1968, the Redlands & San Bernardino Motor Line/Southern Pacific Railroad tracks are visible and the portion of the Mill Creek Zanja within the Project area is obscured by dense vegetation growing around, and possibly within, the Zanja. The Mill Creek Zanja is clearly visible as it passes out of the Project area, extending southwest from 7th street. In aerial photographs from 1980, vegetation in and around the Mill Creek Zanja has been removed, and the Redlands & San Bernardino Motor Line/Southern Pacific Railroad tracks are no longer visible. By 1995, the western end of the Project area near 7th Street had been paved over for a parking lot. By 2002, the portion of the Mill Creek Zanja from 7th Street to Redlands Boulevard had been covered, now running underneath a paved automobile dealership lot (NETRonline 2018).

4.2 Sacred Lands File Results

The results of the search of the Sacred Lands File by the NAHC indicated the presence of a Native American Sacred Land within the Project area. As advised by the NAHC response, ECORP contacted the San Manuel Band of Mission Indians (SMBMI) by phone on March 1, 2018 to obtain further information regarding the resource located within the Project area. SMBMI Cultural Analyst Jessica Mauck responded to ECORP on March 5, 2018 by email and identified the Tribal Cultural Resource as the Mill Creek Zanja. Jessica Mauck stated that the SMBMI is involved in on-going consultation with the Redlands Conservancy and the City of Redlands for the Zanja Trail and Greenway Project. She further stated that SMBMI is not solely interested in the Zanja itself, but also sites associated with the Zanja located across the broader landscape. The NAHC also provided a list of 20 Native American groups that have historic or traditional ties to the Project area who may have knowledge about the Project area. It should be noted that this does not constitute consultation in compliance with SB 18 or AB 52. A copy of all correspondence between ECORP and the NAHC is provided as Attachment A.

4.3 Field Visit Results

The majority of the Project area appeared highly disturbed at the time of the survey. The banks of the Zanja, and proposed trail pathway have been graded for regular maintenance and ease of access to the channel. Ground visibility for the majority of the Project area is fair (approximately 95%); however, the majority of the western one-third of the Project area has been paved over. The majority of the Project area also contains a moderate amount of modern refuse including plastics, bottle glass, and non-diagnostic metal fragments.

As a result of the field survey, three historic-period isolated finds (ZJ-001-I, ZJ-003-I and ZJ-003-I) were recorded. In addition, a section of the San Bernardino Motor Line of the Southern Pacific Railroad (CA-SBR-31266H/P36-031266) and a section of the Mill Creek Zanja (CA-SBR-8092H/P36-008092) were field checked and updated. DPR 523 records for all five resources can be found in Attachment C.

4.3.1 Newly Identified Resources

ZJ-001-I is an isolated find consisting of one shard of sun-colored amethyst (SCA) glass and one railroad spike. Both artifacts were found embedded within the southern bank of the Mill Creek Zanja. In general, SCA glass dates between 1880 to the start of World War I (Lockhart 2006).

ZJ-002-I is a single shard of SCA glass found embedded in the surface near the north bank of the Mill Creek Zanja.

ZJ-003-I is an isolated find consisting of 24 shards of SCA glass. The shards appear to originate from a single bottle. The shards were found partially embedded in the surface, approximately five feet south of an east to west fence line.

4.3.2 Previously Recorded Resources

CA-SBR-8092H/P36-008092 -Mill Creek Zanja

The Mill Creek Zanja (CA-SBR-8092H, NRHP-L-77-329, CHL-43) was designed and begun in 1819 under the supervision of Franciscans from Mission San Gabriel Archangel. Its purpose was to provide irrigation water from Mill Creek to Guachama, a Native American village that was located about 3.44 miles (5.54 kilometers) west of the Project area. The engineer for the project was Pedro Alvarez, and excavation of the ditch was carried out by Native Americans from Guachama. The Zanja, which was completed in 1820, made agriculture possible for the village, as well as for European settlers in the vicinity. During the early years of Redlands, it served as the sole water supply for the town, and its flowing water also propelled a generator that provided Redlands with its first electricity.

The Zanja is one of the earliest remaining civil engineering infrastructure project in southern California, and is still in use as a flood control channel. In 1936, the Zanja was diverted into the Mission Storm Drain, which empties into the Santa Ana River and the old channel that turned southwest at Texas Street was buried (A.K. Smiley Public Library 2000). In 1965, the Zanja was designated California Historic Landmark Number 43. In 1977, a six-mile-long segment between its diversion point from Mill Creek in Mentone on the east and Division Street (Sylvan Park) in Redlands on the west was listed in the NRHP (Hinckley 1951; Scott 1976; Van Boven 1976).

The Project area includes a 1,016-foot long section of the Mill Creek Zanja. A six-mile segment of the Zanja located east of the Project area is listed on the NRHP. The NRHP-listed segment stretches from the intake at Mill Creek and ends just west of Sylvan Park. The section of the Mill Creek Zanja within the Project area, located between 9th Street and Church Street, is not included in the NRHP-listed segment of this resource. As part of the current project, this portion of the Mill Creek Zanja was updated and evaluated for inclusion in the CRHR. At 9th Street the Zanja exits the Project area to the southwest and goes underground as it enters the Redlands Business District. The Zanja continues underground until it passes beyond the Redlands Business District to the west.

The 9th to Church Street segment of the Zanja is an earthen ditch characterized by steeply sloped sides and a flat-bottomed bed containing large cobbles and boulders. The watercourse runs roughly east to west at this location. The ditch varies in width between 35 to 45 feet (10.7 to 13.7 meters) wide, and has an approximate depth of five to six feet (1.5 to 1.8 meters). Though the banks of the Zanja are largely earthen, many large cobbles and boulders are present within the bed of the Zanja, along with chunks of concrete and some embedded modern refuse.

This segment of the Mill Creek Zanja appears to be maintained regularly as the banks of the Zanja have been graded to provide flat maintenance access to the channel. The graded banks also serve as an informal pedestrian walkway. The western end of this segment of the Zanja contains a modern culvert improvement located east of 9th Street. A historic-period cobble and brick culvert with cobble and concrete wing walls is located at the east end of this segment, east of Church Street. Several yucca plants are growing in the bed of the Zanja near the Church Street culvert. Although the Zanja was dry at the time of survey, this portion of the resource is continuously maintained and remains an active part of the perennial drainage system.

CA-SBR-31266H/P36-031266-San Bernardino Motor Line of the Southern Pacific Railroad

In 1888, the San Bernardino & Redlands Railroad Company completed a spur from the Southern Pacific Railroad (SPRR) mainline, extending from the SPRR junction in Bryn Mawr and connecting the communities of Redlands, Crafton, and Craftonville. This spur was known as the Redlands & San Bernardino Motor Line by 1899. It was leased to the SPRR beginning in 1892 and sold to the SPRR in 1916 (Robertson 1998, USGS 1895). This line primarily served the area citrus packinghouses. The line was gradually cut back beginning in the 1960s, and was abandoned by the mid-1980s (Harrison 2016).

A portion of this historic-period resource was previously recorded in March 2016 during cultural resources investigations t of the Zanja Trail Project segment from Lincoln Street to Wabash Avenue in Redlands. The segment recorded in 2016 consists of the remnants of a railroad truss bridge and railroad tracks. The resource was evaluated at that time, and was recommended as eligible for inclusion in the CRHR based on its association with the development of the citrus industry in Redlands (Hicok and Blumel 2016).

Historic maps indicate that the San Bernardino Motor Line of the SPRR passed through the current 7th Street to Church Street Project area. The railroad tracks are indicated on USGS maps from 1899 to the present. The tracks are clearly visible in historic-aerial photographs from 1938, 1959, 1966, and 1968. Aerial photographs from 1980 show that the tracks within this segment of the SPRR San Bernardino Motor Line had been removed. During the survey it was confirmed that all features associated with this resource have been removed from the Project area.

5.0 EVALUATION OF ELIGIBILITY

5.1 State Evaluation Criteria

Under state law (CEQA) cultural resources are evaluated using CRHR eligibility criteria in order to determine whether any of the sites are Historical Resources, as defined by CEQA. CEQA requires that impacts to historical resources be identified and, if the impacts would be significant, that mitigation measures to reduce the impacts be applied.

A Historical Resource is a resource that:

1. is listed in or has been determined eligible for listing in the CRHR by the State Historical Resources Commission;
2. is included in a local register of historical resources, as defined in PRC 5020.1(k);
3. has been identified as significant in a historical resources survey, as defined in PRC 5024.1(g); or
4. is determined to be historically significant by the CEQA lead agency [CCR Title 14, § 15064.5(a)].

In making this determination, the CEQA lead agency usually applies the CRHR eligibility criteria.

For this Project, only the fourth definition of a historical resource is applicable because there are no resources previously determined eligible or listed on the CRHR, there are no resources included in a local register of historical resources, and no resources identified as significant in a qualified historical resources survey.

The eligibility criteria for the CRHR are as follows [CCR Title 14, § 4852(b)]:

- It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the U.S.;
- It is associated with the lives of persons important to local, California, or national history.
- It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or
- It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

In addition, the resource must retain integrity. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association [CCR Title 14, § 4852(c)].

Historical buildings, structures, and objects are usually eligible under Criteria 1, 2, and 3 based on historical research and architectural or engineering characteristics. Archaeological sites are usually eligible under Criterion 4, the potential to yield information important in prehistory or history. An archaeological test program may be necessary to determine whether the site has the potential to yield important data. The CEQA lead agency makes the determination of eligibility based on the results of the test program. Cultural resources determined eligible for the NRHP by a federal agency are automatically eligible for the CRHR.

Impacts to a historical resource (as defined by CEQA) are significant if the resource is demolished or destroyed or if the characteristics that made the resource eligible are materially impaired [CCR Title 14, § 15064.5(a)].

5.2 Evaluation

CA-SBR-8092H/P36-008092 -Mill Creek Zanja

The Mill Creek Zanja is a California Historical Landmark; a segment of the resource, located east of the Project area, is listed on the NRHP (and is therefore eligible for the CRHR); and the entire length of the resource is considered a Sacred Land by local Native American communities. The section of the Mill Creek Zanja within the Project area, located between 9th Street and Church Street in the City of Redlands, is not included in the NRHP-listed segment of this resource and has not been previously evaluated for inclusion in the CRHR. The NRHP Nomination Form ends the listed section at the western border of Sylvan Park arguing that west of Division Street the Zanja goes underground and no longer acts as a natural stream course. However, the portion of the Zanja within the current Project area is still east of the area where the Zanja goes underground and retains a fair amount of integrity. Because of this, the portion of the Zanja within the Project area was evaluated for eligibility for the CRHR.

The Zanja was constructed to provide irrigation water to the village of Guachama, and is among the earliest civil engineering projects in Southern California. In the latter part of the 19th century, settlement and development in the area occurred along the banks of the Zanja, as it was the only stable water source. Due to it being among the earliest civil engineering projects in the region, and its considerable impact on the development and settlement patterns of the area, the resource is evaluated as eligible for the CRHR under Criterion 1.

As stated in the NRHP Nomination Form, construction of the ditch was accomplished by Native Americans from the village of Guachama under their chief, Solano. Due to the association of the resource with the Native American residents of Guachama and their chief Solano, the resource is evaluated as eligible for the CRHR under Criterion 2.

This segment of the Zanja consists of a v-shaped ditch with earthen banks with steeply sloped sides and a flat-bottomed bed containing large cobbles and boulders. This segment of the Zanja is of utilitarian design and was not constructed to exhibit high aesthetic values. It is a typical example of an irrigation ditch with no unique architectural or engineering design characteristics. The feature does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of a master or possesses high artistic values. Therefore, the resource is evaluated as not eligible for the CRHR under Criterion 3.

Given the nature of the resource, it does not possess the potential to yield any additional information regarding the historical significance, construction, or design of the Mill Creek Zanja that is not already represented in the archival record. Therefore, the resource does not have the potential to yield information important in history and is not eligible for the CRHR under Criterion 4.

A study of maps and historic aerial photographs reveals that this section of the Zanja follows the original alignment and course of the resource and it still functions as a water conveyance feature. This segment of the Zanja has received minor alterations since the time of its original construction, but such alterations do not compromise the integrity or detract from the significance of the Zanja. This segment of the Zanja retains integrity of location, design, setting, materials, workmanship, feeling, and association.

The segment of the Mill Creek Zanja from Church Street to 9th Street is eligible for listing under Criterion 1, for its impact on settlement of the area, and Criterion 2, for its association with Guachama chief Solano. This portion of the Mill Creek Zanja retains integrity and is recommended as eligible for inclusion in the CRHR. Therefore, it is considered a Historical Resource under CEQA.

CA-SBR-31266H/P36-031266-San Bernardino Motor Line of the Southern Pacific Railroad

The San Bernardino Motor Line of the Southern Pacific Railroad was evaluated for CRHR eligibility in 2016. The resource was recommended as eligible for inclusion in the CRHR under Criterion 1 for its association with significant events or trends in local history, in this case, the growth of the citrus industry. Although the overall alignment is eligible for its historical associations, the segment within the project area (between 7th Street and Church Street) lacks integrity due to the removal of the tracks and all associated features. The segment within the Project area no longer retains integrity of design, materials, workmanship, feeling, and association with the resource as originally constructed. This segment does not retain enough integrity to be considered eligible for the CRHR. Consequently, this segment does not contribute to the eligibility of the resource and although the overall resource is eligible, this segment of the San Bernardino Motor Line is not a Historical Resource under CEQA.

Isolated Finds

ZJ-001-I, ZJ-002-I, and ZJ-003-I are isolated finds. Isolates are artifacts that are not associated with other artifacts or features and are not connected with the human activity that produced them. Isolates do not individually contribute to the broad patterns of history because they cannot be connected to a particular historical event (CRHR Criterion 1). Isolates are similarly difficult to associate with specific individuals due to their lack of association with archaeological or historical sites, and generally no information exists in the archival record to associate isolates with important individuals in history (CRHR Criterion 2). Isolates do not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values (CRHR Criterion 3). Finally, isolates in general do not provide important information in history or prehistory (Criterion 4). Therefore, these isolated finds do not meet the eligibility criteria for inclusion in the CRHR and are not considered Historical Resources under CEQA.

6.0 IMPACT ASSESSMENT FOR CRHR-ELIGIBLE RESOURCES

As a result of the field survey and evaluation, the portion of the Mill Creek Zanja (CA-SBR-8092H) within the project area is considered a Historical Resource under CEQA. As the proposed project design for the Zanja Trail Project currently stands, the installation of a walking path would avoid the Mill Creek Zanja (CA-SBR-8092H). Therefore, the project would not have any significant direct impacts on the Mill Creek Zanja (CA-SBR-8092H). However, the proposed project has the potential to result in indirect impacts to the Mill Creek Zanja. Indirect impacts could include increased dust during trail installation, increased foot traffic and attention to the resource by the general public, and a change in the visual landscape/setting in the immediate vicinity of the resource. Potential indirect impacts are discussed below.

The Mill Creek Zanja (CA-SBR-8092H/P36-008092), is listed on the NRHP and eligible for the CRHR for its association with the missions, the Mexican era, early development of inland southern California, and its status as the oldest surviving civil engineering infrastructure project in California. This portion of the Zanja is an earthen drainage ditch. A temporary increase in dust is not likely to have a significant impact on the resource. The proposed foot trail may increase foot traffic and allow the public more accessibility to the resource; however, the area immediately surrounding the resource contains suburban developments and an informal walking path already exists alongside this portion of the Zanja. The small increase in pedestrian traffic would not likely create a significant impact on the resource. The project would not result in a substantial change to the visual landscape or setting of the resource. The proposed Project will not alter the features of the resource that make it eligible for the CRHR, its association with historical events. As such, although the proposed Project may result in indirect impacts to the resource, these impacts would not be significant.

7.0 SUMMARY AND RECOMMENDATIONS

A cultural resources investigation was conducted for the Zanja Trail Project - 7th Street to Church Street, a 3.49-acre project in the City of Redlands, San Bernardino County, California. Two previously recorded resources, the Mill Creek Zanja (CA-SBR-8092H/P36-008092), and the San Bernardino Motor Line of the Southern Pacific Railroad (CA-SBR-31266H/P36-031266), are located within the Project area. The Mill Creek Zanja is listed on the NRHP and is eligible for the CRHR. The segment of the San Bernardino Motor Line in the Project Area lacks integrity and is not a Historical Resource for the purposes of CEQA. During the field survey, three additional historic-period resources, an isolated find consisting of a glass fragment and railroad spike (ZJ-001-I), and two isolated finds consisting of glass shards (ZJ-002-I and ZJ-003-I), were identified and documented within the Project area. ZJ-001-I, ZJ-002-I and ZT-003-I are isolated finds that are not eligible for inclusion in the CRHR, and therefore, are not Historical Resources under CEQA.

The Zanja Trail Project would not have any significant direct impacts on the Mill Creek Zanja. However, the proposed project has the potential to result in indirect impacts to the Mill Creek Zanja (CA-SBR-8092H/P36-008092). Indirect impacts could include increased dust during trail installation, increased foot traffic and attention to the resource by the general public, and a change in the visual landscape/setting in the immediate vicinity of the resource. As the design currently stands, the proposed Project will not alter the features of the resource that make it eligible for the CRHR. Although the proposed Project may result in indirect impacts to the resource, these impacts would not be significant. Should the design of the project be altered, an additional impact analysis may be necessary to assess potential impacts to Historical Resources.

The proposed Project will be constructed along the banks of the Mill Creek Zanja an NRHP-listed resource considered Sacred Land by local Native American communities. Sediments within the Project area are composed of Holocene alluvial sediments concurrent with human occupation of the region, which have the potential to hold archaeological cultural deposits. The surface of the Project area has been partially paved and partially graded with no evidence of prehistoric material present. However, there always exists the potential for the Project area to contain buried prehistoric material where surface-level manifestations are no longer present. Because of the presence within the Project area of the Mill Creek Zanja, coupled with the presence of Holocene sediments, the potential for the Project area to contain buried resources is considered high. ECORP recommends archaeological monitoring of all ground-disturbing activities that occur during the construction of the project. If new artifacts or features are encountered, recordation and evaluation of the resource(s) would be required. If found to be CRHR-eligible and significant impacts to the resource(s) cannot be avoided, additional mitigation measures would be required.

If human remains of any kind are found during construction, the requirements of CEQA Guidelines Section 15064.5(e) and AB 2641 shall be followed. According to these requirements, all construction activities must cease immediately and the San Bernardino County Coroner and a qualified archaeologist must be notified. The Coroner will examine the remains and determine the next appropriate action based on his or her findings. If the coroner determines the remains to be of Native American origin, he or she will notify the NAHC. The NAHC will then identify the most likely descendants (MLD) to be consulted regarding treatment and/or reburial of the remains. If an MLD cannot be identified, or the MLD fails to make a recommendation regarding the treatment of the remains within 48 hours after gaining access to the remains, the property owner shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance.

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1955 Redlands 7.5-minute topographic quadrangle map. Department of the Interior, Washington, D.C.

1963 Redlands 7.5-minute topographic quadrangle map. Department of the Interior, Washington, D.C.

1969 Redlands 7.5-minute topographic quadrangle map. Department of the Interior, Washington, D.C.

1973 Redlands 7.5-minute topographic quadrangle map. Department of the Interior, Washington, D.C.

1979 Redlands 7.5-minute topographic quadrangle map. Department of the Interior, Washington, D.C.

Van Boven, Alice

1976 National Register of Historic Places Nomination Form for NRHP-L-77-329, the Mill Creek Zanja. On file at the San Bernardino Archaeological Information Center, San Bernardino County Museum, Redlands, California.

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Warren, Claude N.

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Waugh, Georgie

1986 Intensification and Land-Use: Archaeological Indications of Transition and Transformation in a Late Prehistoric Complex in Southern California. Ph.D. dissertation, Department of Anthropology, University of California, Davis. UMI Dissertation Services, ProQuest, Ann Arbor.

LIST OF ATTACHMENTS

Attachment A – Sacred Lands File Coordination

Attachment B – ***Confidential*** Site Location Map

Attachment C – ***Confidential*** Cultural Resource Site Locations and Site Records

ATTACHMENT A

Sacred Lands File Coordination

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Zanja Trails Project 7th to Church Street

County: San Bernardino County

USGS Quadrangle Name: Redlands (1988)

Township: 1S **Range:** 3W **Section(s):** Unsectioned portion of the San Bernardino Land Grant

Company/Firm/Agency: ECORP Consulting, Inc.

Street Address: 215 North Fifth Street

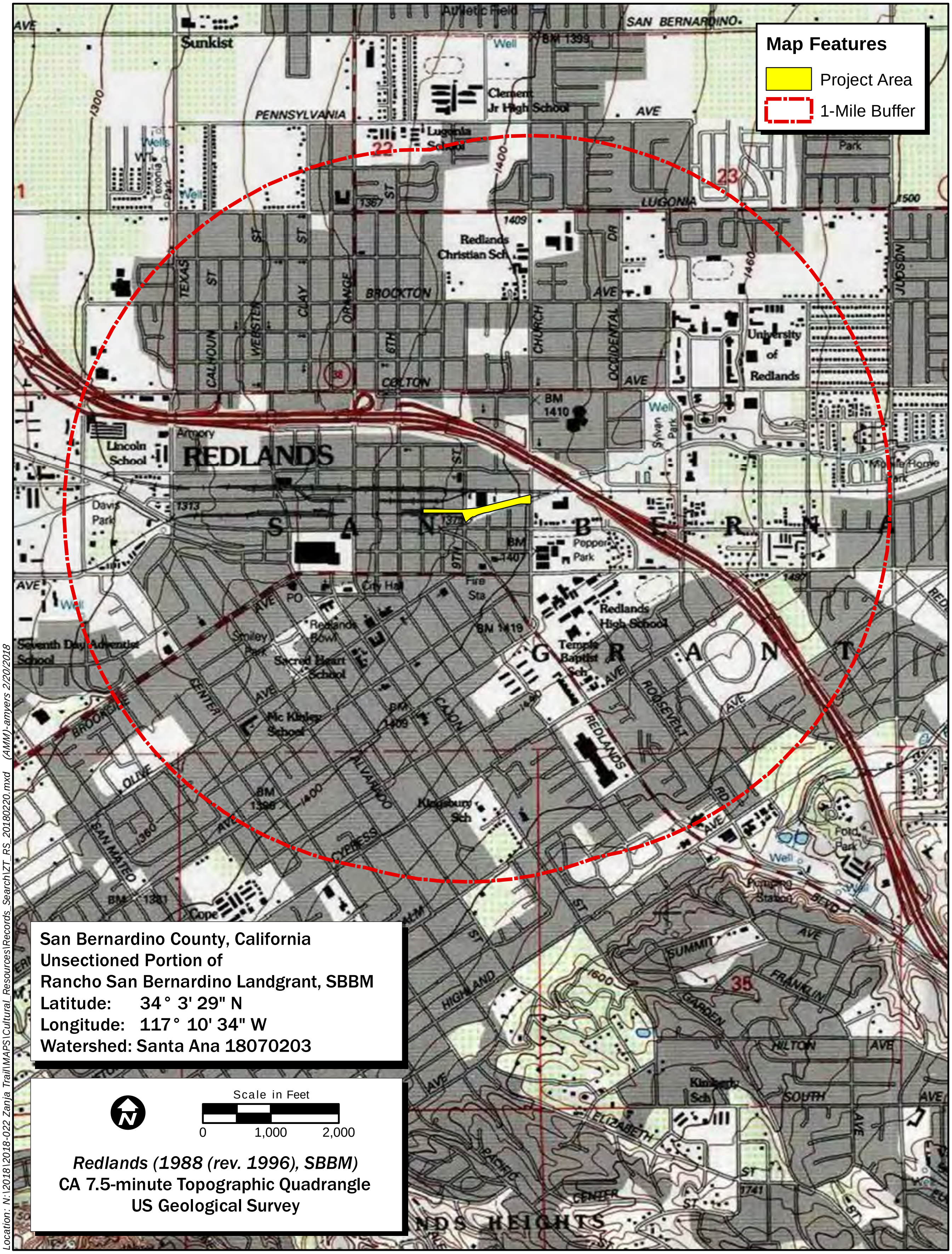
City: Redlands **Zip:** 92374

Phone: (909) 307-0046

Fax: (909) 307-0056

Email: wblumel@ecorpconsulting.com

Project Description: The Redlands Conservancy has requested that ECORP conduct a cultural resources study for an approximately 0.3-mile stretch of the Zanja Trails project located between 7th Street and Church Street in the City of Redlands. This project proposes to develop a pedestrian and bike path adjacent to the National Register of Historic Places-listed Mill Creek Zanja (a historic-age water conveyance feature). The study will be used to support an Initial Study for the project.



Location: N:\2018\2018-022 Zanja Trail\MAPS\Cultural_Resources\Records_Search\ZT_RS_20180220.mxd (AMM)-amyers 2/20/2018

Map Date: 2/20/2018

iService Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Records Search Map

2018-022 Zanja Trail Project 7th to Church

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION

Environmental and Cultural Department
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710

February 22, 2018

Wendy Blumel
ECORP Consulting, Inc.

Sent by E-mail: wblumel@ecorpconsulting.com

RE: Proposed Zanja Trails 7th to Church Street Project, City of Redlands; Redlands USGS Quadrangle, San Bernardino County, California

Dear Ms. Blumel:

Attached is a list of tribes that have cultural and traditional affiliation to the areas of potential project effect (APE) referenced above. I suggest you contact all of those listed, if they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. By contacting all those on the list, your organization will be better able to respond to claims of failure to consult, as may be required under particular state statutes. If a response has not been received within two weeks of notification, the Native American Heritage Commission (NAHC) requests that you follow-up with a telephone call to ensure that the project information has been received.

THIS INFORMATION IS CONFIDENTIAL! PLEASE DO NOT INCLUDE IN PUBLIC DOCUMENTS. A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* (SLF) was completed for the area of potential project effect (APE) for the above referenced project. Sites have been located within the APE you provided that may be impacted by the project. Please immediately contact the San Manuel Band of Mission Indians at (909) 864-8933 for more information about these sites.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance, we are able to assure that our lists contain current information. If you have any questions, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst
(916) 373-3714

Native American Heritage Commission
Native American Contact List
San Bernardino County
2/22/2018

Agua Caliente Band of Cahuilla Indians
Jeff Grubbe, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264 — Luiseno
Phone: (760) 699 - 6800
Fax: (760) 699-6919

Agua Caliente Band of Cahuilla Indians
Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264 — Luiseno
Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

Augustine Band of Cahuilla Mission Indians
Amanda Vance, Chairperson
P.O. Box 846 — Cahuilla
Coachella, CA, 92236
Phone: (760) 398 - 4722
Fax: (760) 369-7161

Cabazon Band of Mission Indians
Doug Welmas, Chairperson
84-245 Indio Springs Parkway — Cahuilla
Indio, CA, 92203
Phone: (760) 342 - 2593
Fax: (760) 347-7880

Cahuilla Band of Indians
Daniel Salgado, Chairperson
52701 U.S. Highway 371 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 5549
Fax: (951) 763-2808
Chairman@cahuilla.net

Los Coyotes Band of Mission Indians
John Perada, Environmental Director
P. O. Box 189 — Cahuilla
Warner Springs, CA, 92086
Phone: (760) 782 - 0712
Fax: (760) 782-2730

Los Coyotes Band of Mission Indians
Shane Chapparosa, Chairperson
P.O. Box 189 — Cahuilla
Warner Springs, CA, 92086-0189
Phone: (760) 782 - 0711
Fax: (760) 782-0712
Chapparosa@msn.com

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Rroad — Cahuilla
Banning, CA, 92220 — Serrano
Phone: (951) 849 - 8807
Fax: (951) 922-8146

Morongo Band of Mission Indians
Denisa Torres, Cultural Resources Manager
12700 Pumarra Rroad — Cahuilla
Banning, CA, 92220 — Serrano
Phone: (951) 849 - 8807
Fax: (951) 922-8146
dtorres@morongo-nsn.gov

Pauma Band of Luiseno Indians - Pauma & Yuima Reservation
Temet Aguilar, Chairperson
P.O. Box 369 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 1289
Fax: (760) 742-3422

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Zanja Trails Project, San Bernardino County.

Native American Heritage Commission
Native American Contact List
San Bernardino County
2/22/2018

Ramona Band of Cahuilla Mission Indians
John Gomez, Environmental Coordinator
P. O. Box 391670 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
jgomez@ramonatribe.com

Ramona Band of Cahuilla Mission Indians
Joseph Hamilton, Chairperson
P.O. Box 391670 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
admin@ramonatribe.com

San Fernando Band of Mission Indians
John Valenzuela, Chairperson
P.O. Box 221838 — Kitanemuk
Newhall, CA, 91322 — Serrano
Phone: (760) 885 - 0955 — Tataviam
tsen2u@hotmail.com

San Manuel Band of Mission Indians
Lee Clauss, Director of Cultural Resources
26569 Community Center Drive — Serrano
Highland, CA, 92346
Phone: (909) 864 - 8933
Fax: (909) 864-3370
lclauss@sanmanuel-nsn.gov

Santa Rosa Band of Mission Indians
(951) 659-2700Steven Estrada, Chairperson
P.O. Box 391820 — Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228

Serrano Nation of Mission Indians
Goldie Walker, Chairperson
P.O. Box 343 — Serrano
Patton, CA, 92369
Phone: (909) 528 - 9027

Soboba Band of Luiseno Indians
Scott Cozart, Chairperson
P. O. Box 487 — Cahuilla
San Jacinto, CA, 92583 — Luiseno
Phone: (951) 654 - 2765
Fax: (951) 654-4198

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 — Cahuilla
San Jacinto, CA, 92581 — Luiseno
Phone: (951) 663 - 5279
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

Soboba Band of Luiseno Indians
Carrie Garcia, Cultural Resources Manager
P. O. Box 487 — Cahuilla
San Jacinto, CA, 92583 — Luiseno
Phone: (951) 654 - 2765
Fax: (951) 654-4198
carrieg@soboba-nsn.gov

Torres-Martinez Desert Cahuilla Indians
Michael Mirelez, Cultural Resource Coordinator
P.O. Box 1160 — Cahuilla
Thermal, CA, 92274
Phone: (760) 399 - 0022
Fax: (760) 397-8146
mmirelez@tmdci.org

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Zanja Trails Project, San Bernardino County.

From:	Wendy Blumel
To:	"Jessica Mauck"
Subject:	RE: Zanja - 7th St and Church
Date:	Monday, March 05, 2018 4:41:18 PM
Attachments:	image001.jpg image003.png image004.png

Hi Jessica,

Thank you for the input. I will incorporate this information into our Phase I study. As a long-time Redlands resident, I appreciate the sensitivity of this resource to the SMBMI and look forward to seeing the results of your consultation with the City in the IS/MND.

Thanks,

Wendy (Jones) Blumel

Assistant Cultural Group Manager

ECORP Consulting, Inc.

cid:image002.jpg@01D30F5A.5365F360

215 N. Fifth St. Redlands, CA 92374

Ph:909.307.0046 ♦ Fax: 909.307.0056

wblumel@ecorpconsulting.com ♦ www.ecorpconsulting.com

From: Jessica Mauck [mailto:JMauck@sanmanuel-nsn.gov]
Sent: Monday, March 05, 2018 4:27 PM
To: Wendy Blumel
Subject: RE: Zanja - 7th St and Church

Hi Wendy,

Thank you for the below project information. SMBMI has been involved in on-going consultation efforts with Redlands Conservancy and the City for the Zanja Tail and Greeenway Park Project – there is a great deal of interpretive signage that will accompany the trail. I recently entered into consultation for the Orange Blossom Trail with the City and they are currently working to determine the level of impact in certain areas of the project – it is undecided whether or not we will suggest interpretive panels for that trail. However, this trail segment runs along the Zanja and SMBMI will likely be interested in the same thing. With regards to physical impacts, your description does give me an understanding of what to expect.

I do want to point out that the Tribe is concerned with more than just the Zanja itself, as there have been many work camps, burials, etc. found across the broader landscape that are associated with the Zanja. In addition, we are working with the City on minimal levels of effort for the field within their jurisdiction, to include subsurface testing, so that we have a better understanding of any subsurface materials that may be present, and work toward avoidance if feasible.

I greatly appreciate the information you have provided. This landscape has undergone a lot of recent change and SMBMI has a strong interest in all projects that come through the area.

Regards,

Jessica Mauck

CULTURAL RESOURCES ANALYST

O: (909) 864-8933 x3249

M: (909) 725-9054
26569 Community Center Drive, Highland California 92346

From: Wendy Blumel [mailto:wblumel@ecorpconsulting.com]
Sent: Monday, March 5, 2018 4:01 PM
To: Jessica Mauck
Subject: RE: Zanja - 7th St and Church

Hi Jessica,

Thank you for the response. I have attached a project location map above and pasted a draft version of the project description below. To my knowledge, although the project will include the installation of a walking path along the Zanja, it will not include any alterations to the Zanja itself. The Zanja goes underground in the western portion of the project area and is an exposed channel in the eastern portion. The impacts should be similar to those associated with the Zanja Trails project near Wabash Avenue that was constructed last year. I look forward to receiving your input on this project.

1.1 Project Background

The information in the Project Background is taken from the ***Zanja Trail and Greenway Park Project Master Plan*** (Redlands Conservancy 2015). This Master Plan was accepted by the Redlands City Council on December 15, 2015 as the guiding document for development of the Zanja Trail.

The City of Redlands Park and Open Space Plan, adopted in 1987, calls for eight major features, one of which is the creation of "a strip park and related trails following the Zanja from Crafton through the downtown area to the westerly city limits." Much of this 1987 plan was incorporated into the City's Open Space and Conservation Element of the General Plan. The General Plan specifically refers to the Zanja as one of the five trail corridors and as an example of a Primary Community Trail. The Zanja Trail is planned to be part of a regional trail network which also includes the Orange Blossom Trail and Santa Ana River Trail.

The Redlands Conservancy has prepared a Master Plan, which identifies the route, potential amenities, and opportunities and constraints of the full Zanja trail alignment, which originally extended from Wabash Avenue to 9th Street/Redlands Boulevard and has since been revised to extend to 7th Street, approximately 2.3 miles. This Initial Study focuses only on the 7th Street to Church Street portion of the trail.

1.2 Project Characteristics

The Proposed Project would begin at 7th Street and end at Church Street. The Proposed Project includes two elements, a Zanja Trail Gateway Monument at its westernmost end at 7th Street, and a 0.4-mile trail from 7th Street to Church Street. The trail is characterized as a pedestrian trail from 7th street to 9th street and a multipurpose trail from 9th street to Church Street.

7th Street to 9th Street Trail Segment

This trail segment would be approximately 600 feet long, within a 54 to 60-foot-wide alignment from the western curb of 7th Street to the western curb of 9th Street. In this area the Zanja channel has been placed underground. This space is currently used as a surface parking for a religious facility located north of the Hatfield Buick dealership.

The trail would begin at the western curb of 7th Street, north of Redlands Boulevard, where an enhanced paving crosswalk would be installed. On the eastern side of 7th Street a Zanja Trail Gateway Monument would be installed. A 6-foot-wide natural surface pedestrian trail would be built within a 12 to 18 foot wide strip of landscaping north of the Hatfield Buick dealership. Landscaping would include native trees and shrubs to provide shade and help shield pedestrians from vehicles using the parking lot. Interpretive way-finding and mile-marking signs would also be installed along the route and at the northwest corner of Redlands Boulevard and 7th Street. The area north of the trail would include a 40 space parking lot with a two-way drive aisle. Existing fencing on both the north and south side of the existing parking lot would remain.

9th Street to Church Street Trail Segment

This trail segment would be approximately 1,050 feet long and extend from the western curb of 9th Street to the western curb of Church Street. This segment of the trail alignment would be constructed within an area owned by City of Redland's Successor Agency and within right of way owned by the San Bernardino County Flood Control District.

Improvements would include an enhanced pavement street crossing at 9th Street. The proposed trail alignment would consist of a 6-foot-wide natural surface pedestrian trail and a 12-foot-wide Class I bicycle lane, which would be part of the Orange Blossom Trail alignment. Along this segment, both the pedestrian trail and the Class I bicycle lane would be located north of the Zanja channel with a soft fence consisting of a 30-inch-high post and rail wood fence separating the path from the channel. Additionally, along the north side of the Orange Blossom Trail bicycle path a 6-foot-high rubberized chain link fence would be installed. Along the route, interpretive way-finding and mile-marking signs would be installed. Removable lockable bollards would be installed at the trail entrances at 9th Street and Church Street to deter motorized vehicles from entering the trail. If necessary, the Orange Blossom Trail bicycle path would also serve as an access road for San Bernardino Flood Control District vehicles. Trash receptacles and dog waste removal units would be installed at road crossings. Native plantings and shade trees would be planted along the route.

Proposed site improvements would avoid work in the Zanja channel or the portions of its banks that have been designated as under the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board and/or California Department of Fish and Wildlife.

Wendy (Jones) Blumel

Assistant Cultural Group Manager

ECORP Consulting, Inc.

cid:image002.jpg@01D30F5A.5365F360

215 N. Fifth St. Redlands, CA 92374

Ph:909.307.0046 ♦ Fax: 909.307.0056

wblumel@ecorpconsulting.com ♦ www.ecorpconsulting.com

From: Jessica Mauck [mailto:JMauck@sanmanuel-nsn.gov]
Sent: Monday, March 05, 2018 11:36 AM
To: Wendy Blumel
Subject: Zanja - 7th St and Church

Hi Wendy,

Thank you for reaching out to the San Manuel Band of Mission Indians (SMBMI) regarding the above referenced project, as evidenced by the voicemail you left for Director Clauss on 1 march 2018. The positive Sacred Lands File (SLF) concerns the Mill Creek Zanja, the Asistencia, Guachama (*Guaaschna*), and resources within the surrounding landscape. It is a TCR that has been often misunderstood by Agencies and CRM firms alike with regards to its heightened level of sensitivity to the Serrano people (as well as the nearby Gabrieleno, Cahuilla, and Luiseno groups). As a result, SMBMI had the landscape placed on the SLF so that I, as their representative, could work directly with the CRM firms prior to consultation on constructing a culturally appropriate narrative for nearby projects. If you would please provide a project location map, as well as any details regarding the depth of proposed disturbance for the project, I can get back to you with information for the cultural study within 24 hours.

Regards,

Jessica Mauck

CULTURAL RESOURCES ANALYST
O: (909) 864-8933 x3249
M: (909) 725-9054
26569 Community Center Drive, Highland California 92346

THIS MESSAGE IS INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY TO WHICH IT IS ADDRESSED AND MAY CONTAIN INFORMATION THAT IS PRIVILEGED, CONFIDENTIAL AND EXEMPT FROM DISCLOSURE UNDER APPLICABLE LAW. If the reader of this message is not the intended recipient or agent responsible for delivering the message to the intended recipient, you are hereby notified that any dissemination or copying of this communication is strictly prohibited. If you have received this electronic transmission in error, please delete it from your system without copying it and notify the sender by reply e-mail so that the email address record can be corrected. Thank You

ATTACHMENT B

Confidential Site Location Map

ATTACHMENT C

Attachment C – ***Confidential*** Cultural Resource Site Locations and Site Records

APPENDIX E

Paleontological Records Search

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Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

NATURAL
HISTORY
MUSEUM
LOS ANGELES COUNTY

Vertebrate Paleontology Section
Telephone: (213) 763-3325

e-mail: smcleod@nhm.org

7 March 2018

ECORP Consulting, Inc.
215 North Fifth Street
Redlands, CA 92374

Attn: Wendy Blumel, Assistant Cultural Group Manager

re: Paleontological resources for the proposed Zanja Trails 7th to Church Street Project, ECORP Project # 2018-022, in the City of Redlands, San Bernardino County, project area

Dear Wendy:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed Zanja Trails 7th to Church Street Project, ECORP Project # 2018-022, in the City of Redlands, San Bernardino County, project area as outlined on the portion of the Redlands USGS topographic quadrangle map that you sent to me via e-mail on 21 February 2018. We do not have any vertebrate fossil localities that lie directly within the proposed project boundaries, but we do have a localities at some distance from sedimentary deposits similar to those that may occur subsurface in the proposed project area.

The entire proposed project area has surface deposits composed of soil and younger Quaternary Alluvium, derived primarily as alluvial fan deposits from the Crafton Hills to the east, via The Zanja drainage that flows through or adjacent to the proposed project area. Typically these types of deposits do not contain significant vertebrate fossils in the uppermost layers and we have no vertebrate fossil localities very nearby from these deposits. At varying depths, however, these deposits always have the potential to contain significant fossil vertebrate remains. Our closest vertebrate fossil locality from somewhat similar deposits is LACM 4540, south-southeast of the proposed project area on the northeastern side of the San Jacinto Valley just west of Jack Rabbit Trail, that produced a specimen of fossil horse, *Equus*. Our next closest fossil vertebrate locality from similar deposits is LACM 7811, west-southwest of the proposed project area in the Jurupa Valley north of Norco and west of Mira Loma, that produced a fossil specimen of coachwhip, *Masticophis flagellum*.

Shallow excavations in the younger Quaternary Alluvium found at the surface throughout the proposed project area probably will not uncover any significant vertebrate fossils. Deeper excavations there that extend down into the older sedimentary deposits, however, may well encounter significant fossil vertebrate remains. Any substantial excavations in the proposed project area, therefore, should be closely monitored to quickly and professionally collect any fossils discovered without impeding development. Sediment samples should also be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

APPENDIX F

Traffic Memorandum

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May 16, 2018

Mr. Don Young, PE
City of Redlands
35 Cajon St, Suite 15-A
Redlands CA 92373

Reference: Traffic Memorandum
Zanja Trail - 7th Street to Church Street

Project No. 18-1004

Mr. Young:

This memorandum is in response to the CEQA questions in traffic section listed in the Draft Initial Study and Mitigated Negative Declaration (IS and MND) for Zanja Trail. A recreation trail (pedestrians, bicycles, etc.) has been proposed along the historic Zanja irrigation channel in the City of Redlands. The first portion of the Zanja Trail is under construction between Lincoln Street and Wabash Avenue.

This traffic memorandum was developed to answer the CEQA questions and assess the potential impact to the roadway system due to the further development of the trail.

Project Description

The Project will begin at west side of 7th Street and end with a crossing at Church Street. The Project includes two elements: a Zanja Trail Gateway Monument at the eastside end of 7th Street, and a 0.3-mile trail from 7th Street to Church Street. The trail is characterized as a pedestrian trail from 7th Street to 9th Street and a multipurpose trail from 9th Street to Church Street.

The following project information is based on the drafted IS and MND prepared by ECORP Consulting, Inc.

The Redlands Conservancy prepared a Master Plan that was accepted by Redlands City Council on December 15, 2015. It identifies the route, potential amenities, and opportunities and constraints of the full Zanja trail alignment, which originally extended from Wabash Avenue to 9th Street/Redlands Boulevard and has since been revised to

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extend to 7th Street, approximately 2.3 miles. This Initial Study focuses only on the 7th Street to Church Street portion of the trail.

7th Street to 9th Street Trail Segment:

This trail segment will be approximately 600 feet long, within a 54 to 60-foot-wide alignment from 7th Street to 9th Street. This space is currently used as a surface parking for a religious facility located north of the Hatfield Buick dealership. In this area the Zanja Channel has been placed underground.

The trail will begin at the western curb of 7th Street, north of Redlands Boulevard, where an enhanced paving crosswalk will be installed. A Zanja Trail Gateway Monument will be installed on the eastern side of 7th Street. A 6-foot-wide natural surface pedestrian trail will be built within a 12 to 18 foot wide strip of landscaping north of the Hatfield Buick dealership. Currently part of the west part of the area is a paved parking. Paving will be removed from this area and be replaced with new paving on the east end of this segment.

Landscaping will include native trees and shrubs to provide shade and help shield pedestrians from vehicles using the parking lot. Interpretive way-finding and mile-marking signs will also be installed along the route and at the northwest corner of Redlands Boulevard and 7th Street. The area north of the trail will include a two-way drive aisle and parking. Existing fencing will remain in place.

9th Street to Church Street Trail Segment:

This trail segment will be approximately 1,050 feet long and extend from the western curb of 9th Street to the western curb of Church Street. This segment of the trail alignment will be constructed within an area owned by City of Redland's Successor Agency and within right of way owned by the San Bernardino County Flood Control District.

Improvements will include an enhanced pavement street crossing at 9th Street. The proposed trail alignment will consist of a 6-foot-wide natural surface pedestrian trail and a 12-foot-wide Class I bicycle lane. This segment will also be part of the Orange Blossom Trail alignment. Along this segment, both the pedestrian trail and the Class I bicycle lane will be located north of the Zanja Channel with a soft fence consisting of a 30-inch-high post and rail wood fence separating the path from the channel.

Along the route, interpretive way-finding and mile-marking signs will be installed. Removable lockable bollards will be installed at the trail entrances at 9th Street and Church Street to deter motorized vehicles from entering the trail. If necessary, the

DRAFT

Orange Blossom Trail bicycle path will also serve as an access road for San Bernardino Flood Control District vehicles. Trash receptacles and dog waste removal units will be installed at road crossings. Native plantings and shade trees will be planted along the route.

Proposed site improvements will avoid work in the Zanja Channel or the portions of its banks that have been designated as under the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board and/or California Department of Fish and Wildlife.

Existing Conditions

The study area includes the streets intersecting with the Zanja Trail, which are 7th Street, 9th Street, and Church Street for this project.

7th Street is a two-lane north-south street. 7th Street is a 60-foot wide local street based on the Figure 5-5 and Figure 5-6 in City of Redlands General Plan 2035(GP).

9th Street is a two-lane north-south street. 9th Street is a 60-foot wide local street based on the Figure 5-5 and Figure 5-6 in City of Redlands GP.

Church Street is two-lane north-south street. Church Street is a 64-foot wide Collector as shown in GP Figure 5-5 and Figure 5-6. Church Street is categorized as a collector residential (standard) as shown in GP Figure 5-6. The posted speed limit is 35 mph near the Zanja Channel.

According to the City of Redlands GP, this portion of the Zanja Trail is classified as Class I route (bike path).

Omnitrans provides public transit operations in the area. However, there are no routes on 7th Street, 9th Street, and Church Street. The nearest bus route is OmniTrans Route 19 on Citrus Avenue, about 1,000 feet south of Church Street at the Zanja Trail, and OmniTrans Route 8 on Orange Street, about 1,000 feet west of 7th Street at the Zanja Trail.

Project Trip Generation

Project trips are the number of vehicle trips that are generated by a project. While the creation of a new trail or the extension of a trail may draw a few vehicles to the area so that people can walk the trail, HKA anticipates that the number of vehicles added to the area to walk this 1,650 feet of trail will be less than 10 trips a weekday. This is less than the average daily fluctuation of traffic volumes.

The reason that anticipated traffic volumes will not increase much is that proposed project is making an attractive, identified trail of an area that is currently used by pedestrians and non-motorized vehicles. The less than a half a mile project planned do not include restaurants, parks, or other amenities that will generate project trips. No additional analysis of vehicle project trips is required.

Vehicular Traffic

This portion of the Zanja Trail crosses 7th Street, 9th Street, and Church Street, 24 hour counts were taken by Counts Unlimited. On April 10, 2018, the 24 hour volumes on 7th Street, from Stuart Avenue to East Redlands Boulevard, was 595, on 9th Street from Stuart Avenue to East Central Avenue was 801, and on Church Street from Stuart Avenue to East Central Avenue was 7,582. The following table summarizes the ADTs and peak hour volumes.

Table 1: ADT in 2018 Vehicular Volume

Street	Segment	ADT	AM Peak Hour	PM Peak Hour	Street Peak
7th Street	Stuart Avenue to Redlands Boulevard	595	39	47	56
9th Street	Stuart Avenue to Redlands Boulevard	801	72	68	80
Church Street	Stuart Avenue to Central Avenue	7,582	601	664	664

AM Peak Hour – Highest hourly volume between 7 – 9 AM.
PM Peak Hour – Highest hourly volume between 4 – 7 PM.
Street Peak – Highest hourly volume in a 24 hour period.

Pedestrian Warrant

The non-vehicular traffic volumes along the Orange Blossom Trail and at Church Street north of Redlands High School was compared to the Manual of Uniform Traffic Control Devices (MUTCD) Warrant 4 "Pedestrian Warrant" to determine if the traffic control signals are needed at the crossings of the three streets.

Based on the Section 4C.05 Warrant 4, Pedestrian Volume in MUTCD, the need for traffic control signals at any crossings is determined by analyzing the situation with the following criteria:

1. For each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the

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corresponding pedestrians per hour crossing the major street (total of all crossings) all fall above the curve in Figure 4C-5 (see attachment); or

2. For 1 hour (any four consecutive 15-minute periods) of an average day, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) falls above the curve in Figure 4C-7 (see attachment)

3. The Pedestrian Volume signal warrant shall not be applied at locations where the distances to the nearest traffic control signal or STOP sign controlling the street that pedestrians desire to cross is less than 300 feet, unless the proposed traffic control signal will not restrict the progressive movement of traffic.

4. If this warrant is met and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E.

If one of the standards is met, a traffic control signal at the crossing may be required.

The project's path follows the Zanja Channel which currently provides informal pedestrian and non-motorized access between downtown Redlands, University of Redlands and businesses and residences in the general area. The proposed path crosses Church Street less than 500 feet north of Redlands High School and probably provides walking and biking access between the high school and the students' homes.

Besides the current non-motorized traffic experience, additional users are expected when the trail is developed and landscaped. To gauge the impacts of the additional traffic, the current non-motorized traffic in the area was counted at the proposed trail crossing at Church Street and counts were taken of the users of the developed portion of the Orange Blossom Trail where it crosses Dearborn Street.

The Orange Blossom Trail currently provides a paved and a natural surface path from Wabash Avenue to Grove Street. It has been opened for more than two years and is probably a good indicator of the number of additional users that will be added in the project area. Since the number of users of the Orange Blossom, or any trail, is probably highest on the weekend, the counts were taken for 8 hours on a Saturday. The counts are attached and a summary is included in Table 2 below.

The number of existing users of the path north of the school were counted twice. The count of pedestrians and non-motorized vehicles at the project location on Church Street were taken during a weekday AM peak period when the most students will be

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traveling to school. Redlands High School students starts most days at 7:30 am. The students' departure times vary due to after-school sports or activities, work or other commitments so there is not a concentration of student traffic in the afternoon as there is in the morning.

The count of pedestrians and non-motorized vehicles at the project location on Church Street were also taken during the middle of the day on a weekend. The results are shown in the table below.

Table 2: Non-vehicular Traffic Counts

<table>
<tr><th rowspan="2">Location</th><th colspan="4">Peak Counts</th></tr>
<tr><td colspan="4">10:45 AM – 11:45 AM (Saturday)</td></tr>
<tr><td>Orange Blossom Trail</td><td colspan="4">33</td></tr>
<tr><td rowspan="3">Church Street at Channel – North of High School</td><td colspan="2">7:00 AM – 8:00 AM (Weekday)</td><td colspan="2">11:00 AM– 12:00 PM (Saturday)</td></tr>
<tr><td>Street</td><td>Channel</td><td>Street</td><td>Channel</td></tr>
<tr><td>15</td><td>1</td><td>11</td><td>3</td></tr>
<tr><td>Future Total on Channel</td><td colspan="2">34</td><td colspan="2">36</td></tr>
</table>

Adding the counts from the highest hour counted at the Orange Blossom Trail to the existing users of the project area at Church Street will provide a conservative volume of anticipated additional users to the proposal project.

Figures 4C-5 and 4C-7 attached shows the total anticipated crossings of Church Street per hour in this project are below the standard curve in these two figures. This number of crossing does not meet the lower limit of the criteria. A traffic control signal is not required at the Church Street crossing of Zanja Street.

The Zanja Trail intersects 7th Street within 300 feet of a stop control on 7th Street. The trail crossing will be 190 feet from the traffic control at the 7th Street and Redlands Boulevard Intersection. Therefore, the Pedestrian Volume signal warrant shall not be applied to the Zanja Trail crossing on 7th Street.

The Zanja Trail intersects 9th Street within 300 feet of a stop control on 9th Street. The trail crossing will be 200 feet from the traffic control at the 9th Street and Central Avenue Intersection. Therefore, the Pedestrian Volume signal warrant shall not be applied to the Zanja Trail crossing on 9th Street.

CEQA Questions

The following questions are from Section 4.17.2 Transportation / Traffic (XVII) Environmental Checklist and Discussion in Drafted IS and MND:

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Would the project conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒

The proposed project will not conflict with current applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, as low average daily vehicular trips will have minimum impact on the intersections, streets, highways, and freeways, pedestrian and bicycle paths, and mass transit. No impact.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐

The proposed project will comply with the San Bernardino Associated Governments' Congestion Management Plan (SANBAG's CMP). The project trips are far below the average daily fluctuation of traffic counts. A less than significant impacts will occur.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒

No airport or air transit facility is nearby the proposed project site. Proposed project is the construction of new recreation facilities for pedestrian and bicycle activities only. No impact will occur.

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	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐

The Zanja Trail will intersect with 7th Street, 9th Street and Church Street which may result in an increase to potential hazards when people cross the streets. At the Church Street crossing, enhanced pavement paths will mitigate traffic accidents between vehicles and pedestrians or bicycle riders.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e) Would the project result in inadequate emergency access?	☐	☐	☐	☒

Since the trail will be an open space for non-vehicular traffic, the proposed project will not impact emergency access. Therefore, no impact will occur.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f) Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities or otherwise decrease the performance or safety of such facilities?	☐	☐	☒	☐

The nearest bus routes are OmniTrans Route 19 on Citrus Avenue, about 1,000 feet south of Church Street at the Zanja Trail, and OmniTrans Route 8 on Orange Street, about 1,000 feet west of 7th Street at the Zanja Trail. Some pedestrian or bicyclists might use this transit route and use the existing sidewalks or roads to reach the trail and parks. A less than significant impact will occur.

<u>Mitigation Measures / Recommendation</u>

The Zanja Trail will intersect with 7th Street, 9th Street, and Church Street that may result in an increase to potential hazards when people crossing the streets. At the 9th Street crossing, enhanced pavement paths will mitigate traffic accidents between vehicles and pedestrians or bicycle riders.

Conclusions

HKA anticipates that the number of vehicles added to the area to walk this 1,650 of the trails will be less than 10 trips a weekday which is less than the average daily fluctuation of traffic counts.

Pedestrian Warrant 4 of the MUTCD does not apply for 7th Street and 9th Street as both streets are stopped controlled within 300 feet of the proposed Zanja Trail crossing.

Taking the pedestrian and non-motorized vehicle volumes at the existing Orange Blossom Trail resulted in a highest hourly volume of 33. Adding those 33 pedestrian and non-motorized vehicle volumes to the existing volumes of the pedestrian and non-motorized vehicle volumes existing at Church Street resulted in less than 50 pedestrian and non-motorized vehicle volumes per hour. That number of pedestrian and non-motorized vehicle crossings does not meet any criteria under Pedestrian Warrant 4. No traffic control is required at the Church Street and proposed Zanja Trail crossing.

HKA recommends no additional analysis of the traffic impacts be required.

If you have any questions regarding this analysis, please feel free to contact either myself or Sergio Mendoza at (909) 884-3222.

Sincerely,

Anne M. Hernandez, P.E.
Principal

Attachments: 8 Hour Pedestrian and Non-Motorized Vehicle Counts
ADT Classified Counts
MUTCD Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume
MUTCD Figure 4C-7. Warrant 4, Pedestrian Peak Hour