



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.

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.

Non-native Grassland

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.).

Disturbed

The disturbed classification includes areas where the vegetation cover 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.

Developed

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 (*Sceloporus 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

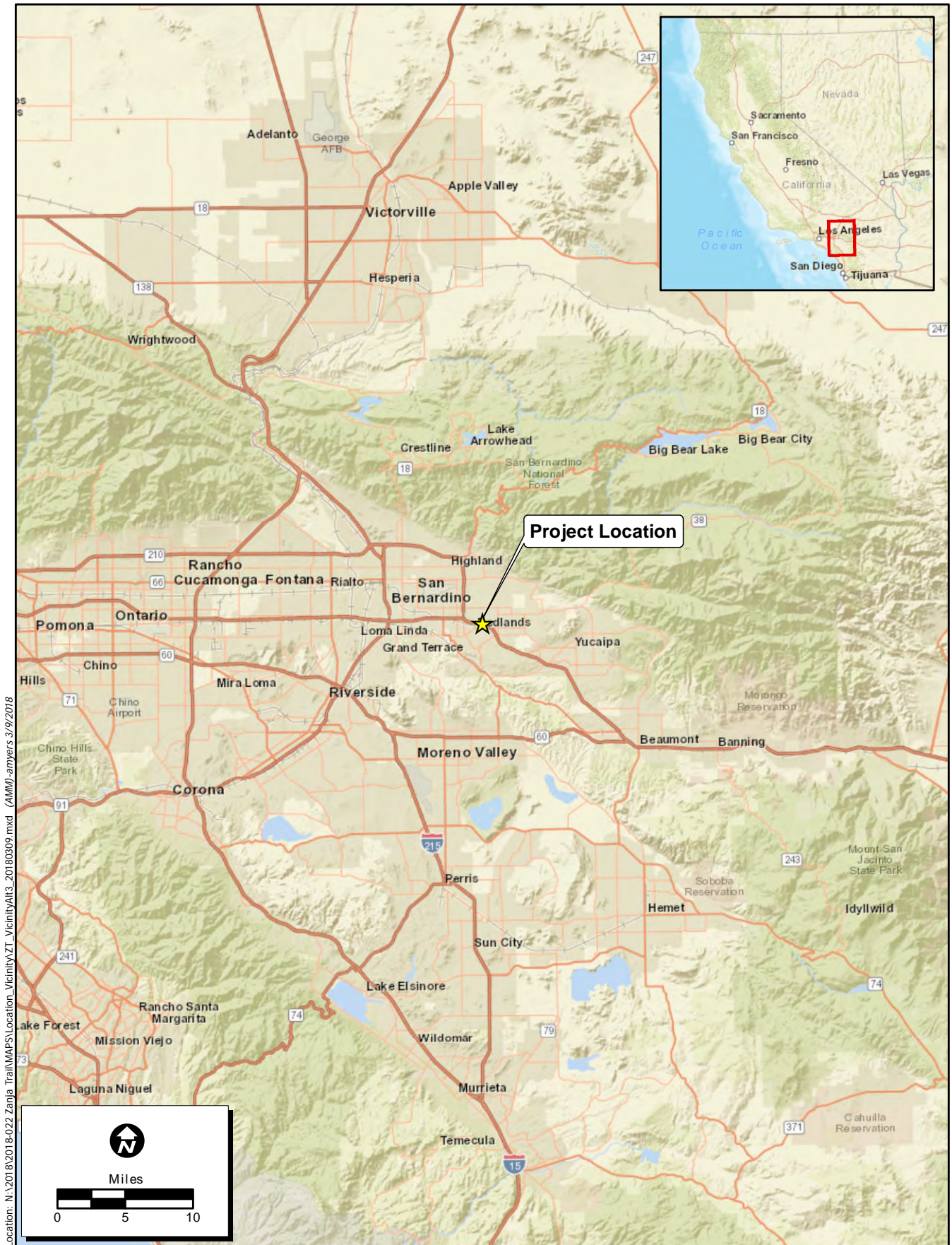
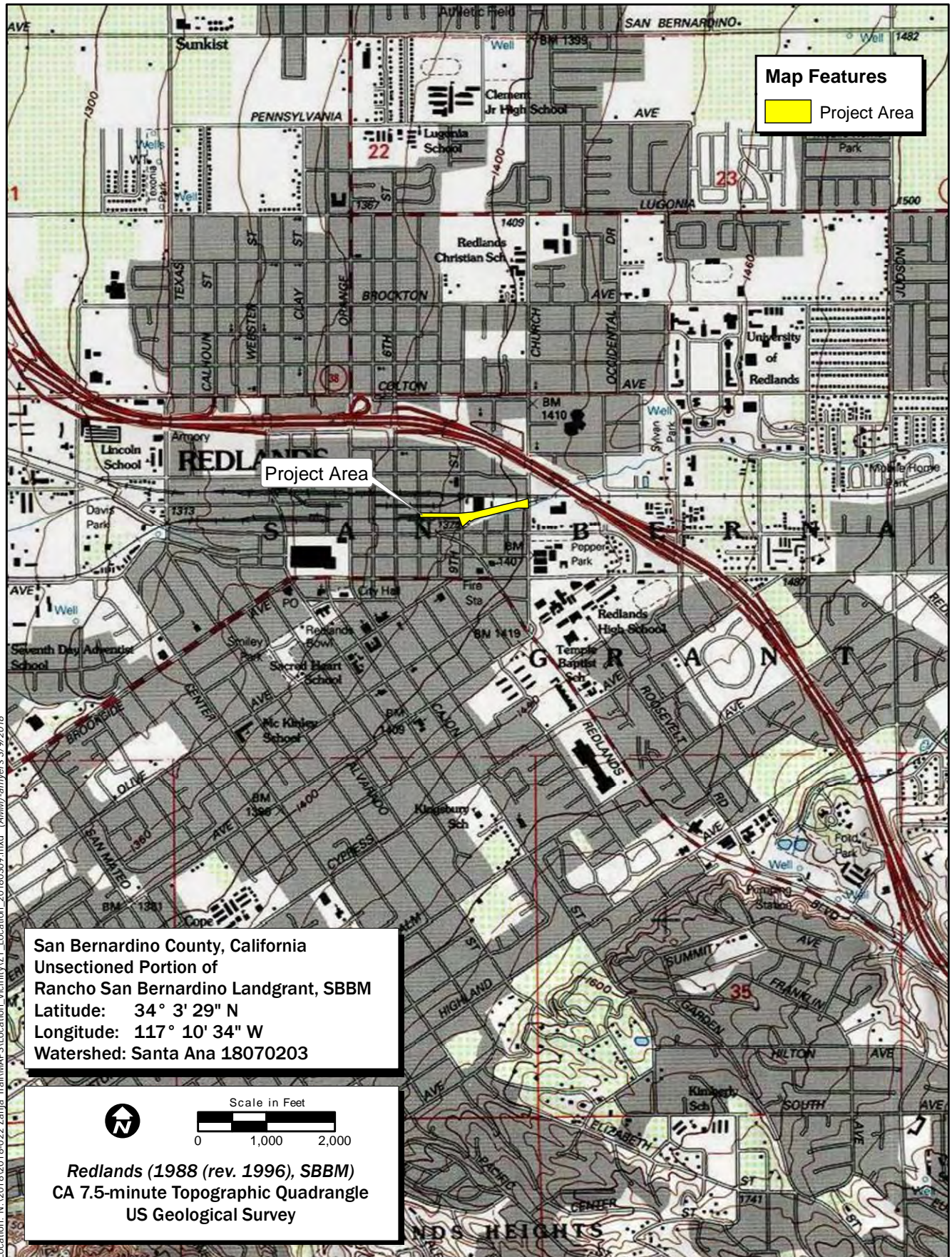


Figure 1. Project Vicinity

2018-022 Zanja Trail Project

Attachment 2: Project Location



Location: N:\2018\2018-022 Zanja Trail\MAPS\Location_Vicinity\ZT_Location_20180309.mxd (ANMP-armyers 3/9/2018)

Map Date: 3/9/2018
 iService Layer Credits: Copyright © 2013 National Geographic Society, I-cubed

Figure 2. Project Location
 2018-022 Zanja Trail Project

Attachment 3: Survey Results

Location: N:\2018\2018-022 Zanja Trail\MAPS\Jurisdictional_Delineation\Assessment_Level\Current\1\ZT_Prelim\JD_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

Figure 3. Biological Resources Assessment Results

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
<i>Rhus lancea</i>	African sumac
<i>Schinus molle</i> *	Peruvian pepper tree
ARECACEAE	PALM TREE FAMILY
<i>Washingtonia robusta</i>	Mexican fan palm
ASTERACEAE	SUNFLOWER FAMILY
<i>Baccharis salicifolia</i>	mulefat
CHENOPODIACEAE	GOOSEFOOT FAMILY
<i>Salsola tragus</i> *	Russian thistle; tumbleweed
MYRTACEAE	MYRTLE FAMILY
<i>Eucalyptus sp.</i>	Gum tree
POACEAE	GRASS FAMILY
<i>Bromus sp.</i>	Wild brome

*non-native species

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

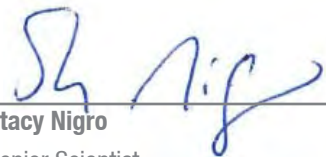
*non-native species

Attachment 6: Helix Jurisdictional Delineation Report

Zanja Creek and Greenway Park Project

Jurisdictional Delineation Report

August 11, 2015



Stacy Nigro
Senior Scientist

Prepared for:
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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.

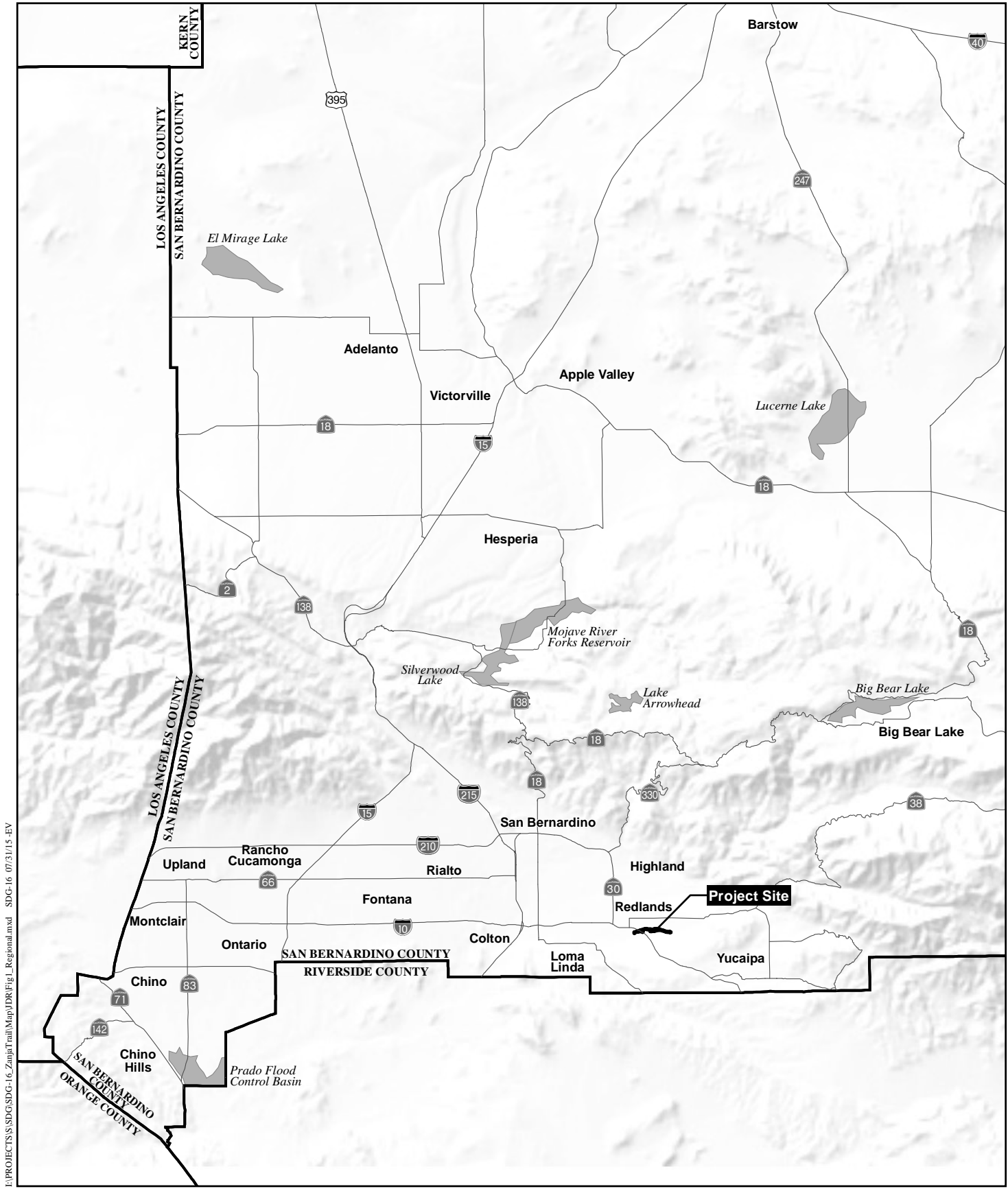
Two soil types are mapped within the PSA: Hanford coarse sandy loam, 2 to 9 percent slopes; and Ramona sandy loam, 2 to 9 percent slopes (NRCS 2015 [Table 1]). Soils in the Hanford series and Ramona series consist of soils that formed primarily from granitic alluvium. Hanford series soils are found in 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 AREA¹		
MAP SYMBOL	MAP UNIT NAME	ACREAGE²
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

¹Pursuant to the Natural Resources Conservation Service (NRCS) Web Soil Survey (2015).

²Rounded 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

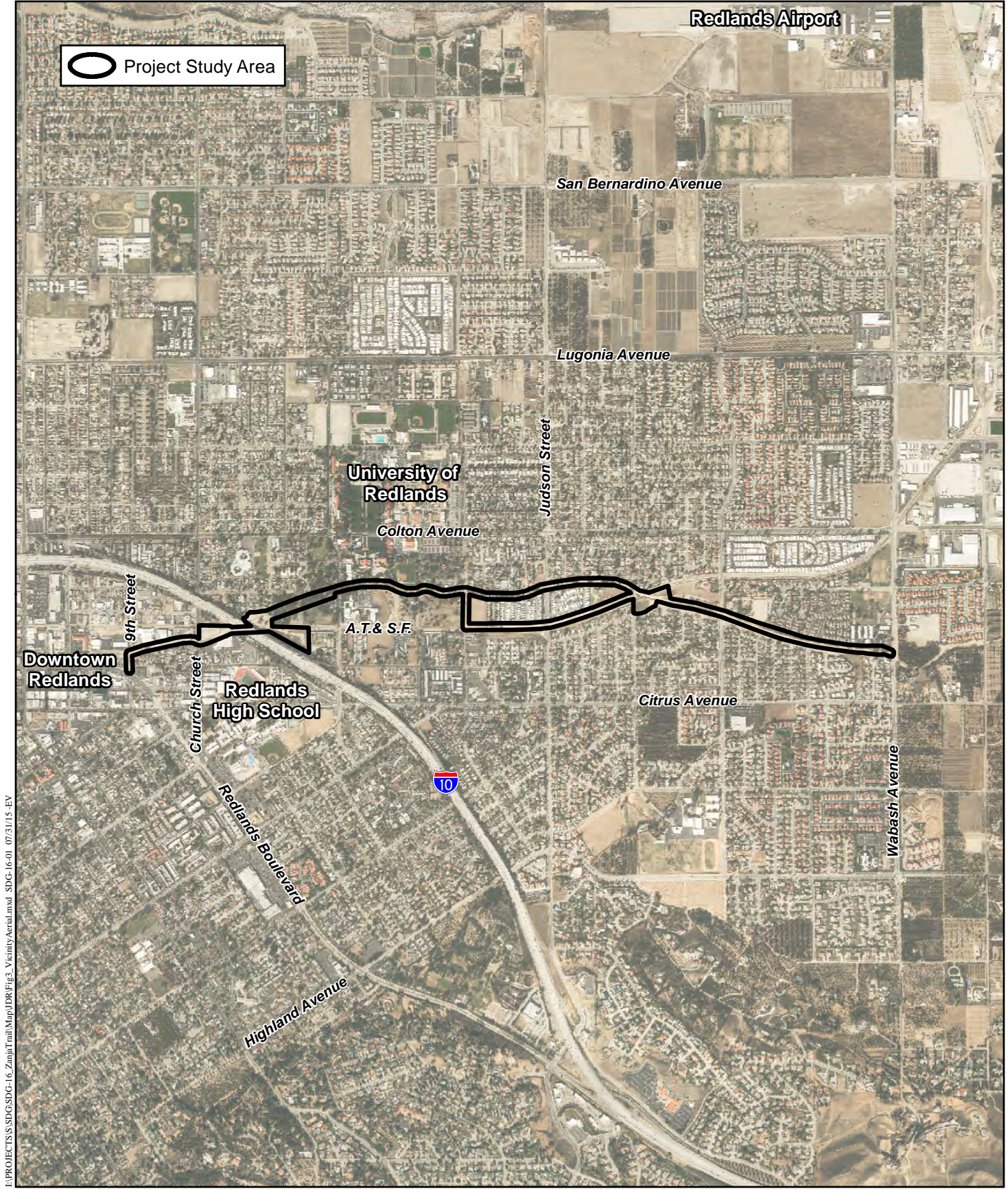


Figure 1



Source: Schmidt Design Group, Inc. 2015

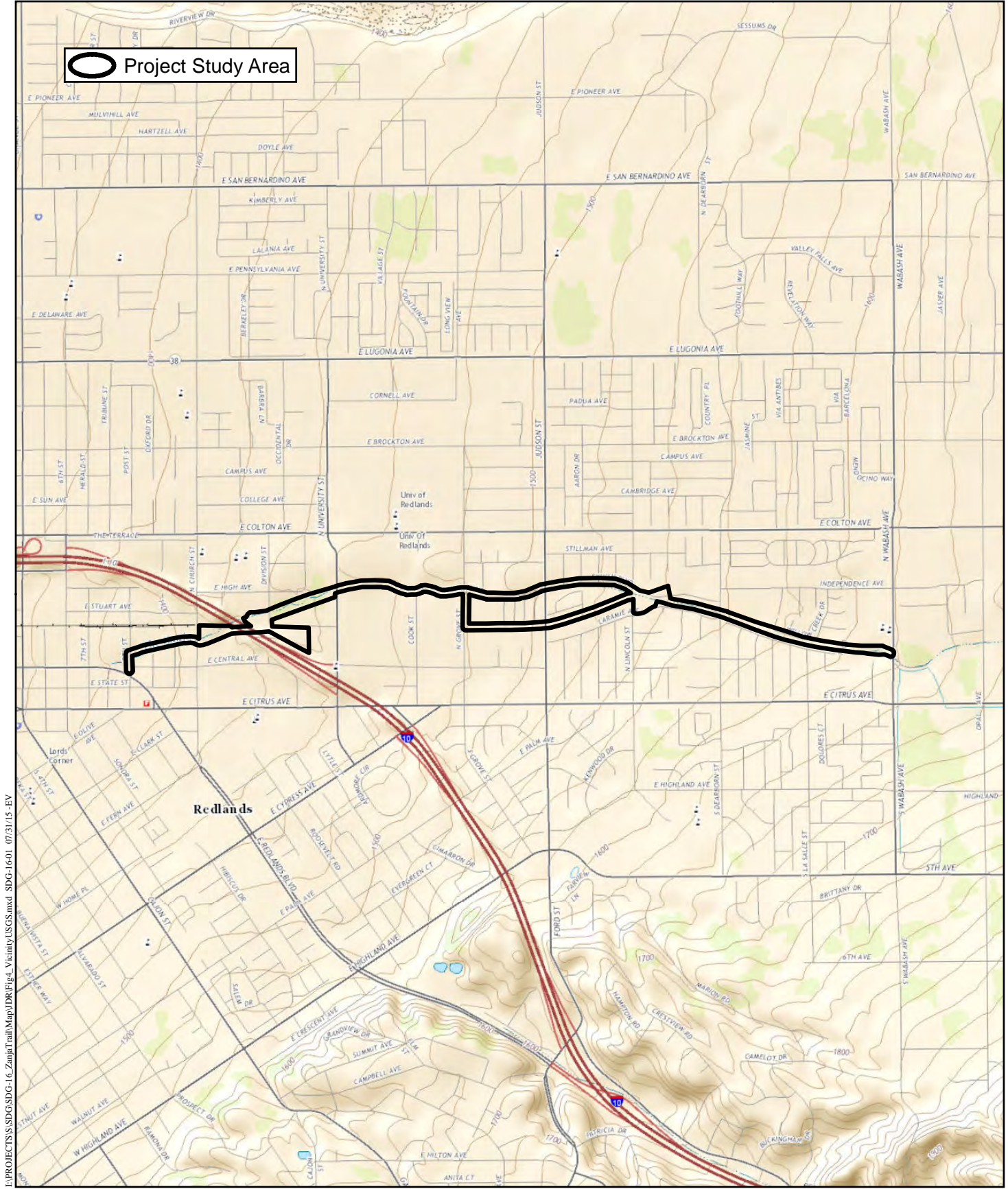
Proposed Trail Alignment
ZANJA TRAIL AND GREENWAY PARK PROJECT



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Project Vicinity (Aerial Photograph)

ZANJA TRAIL AND GREENWAY PARK PROJECT



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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 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.

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

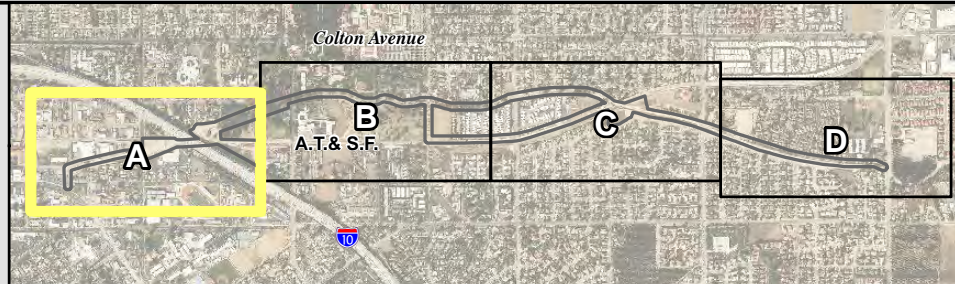
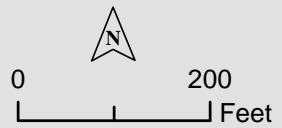
1. Riparian Woodland

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.



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- Project Study Area
- Non-vegetated Channel/Streambed
- Vegetation**
- Non-native Grassland
- Developed
- Non-native Vegetation
- Disturbed Habitat



Vegetation

ZANJA TRAIL AND
GREENWAY PARK PROJECT

Figure 5A



PROJECT: SDC-16_ZanjaTrailMapDIR: E:\Vegetation.mxd_SDC-16_072715_EV

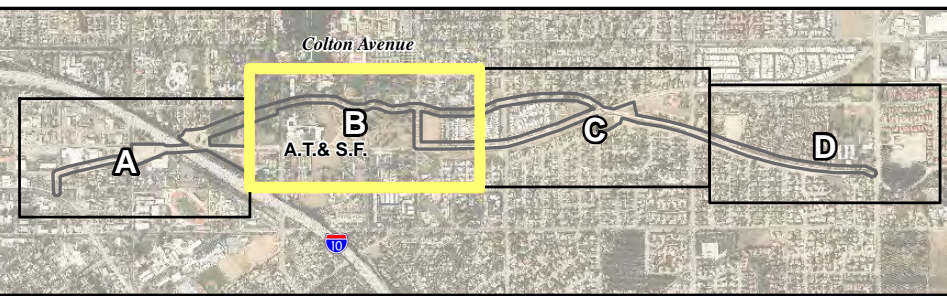
Legend

- Project Study Area
- Developed

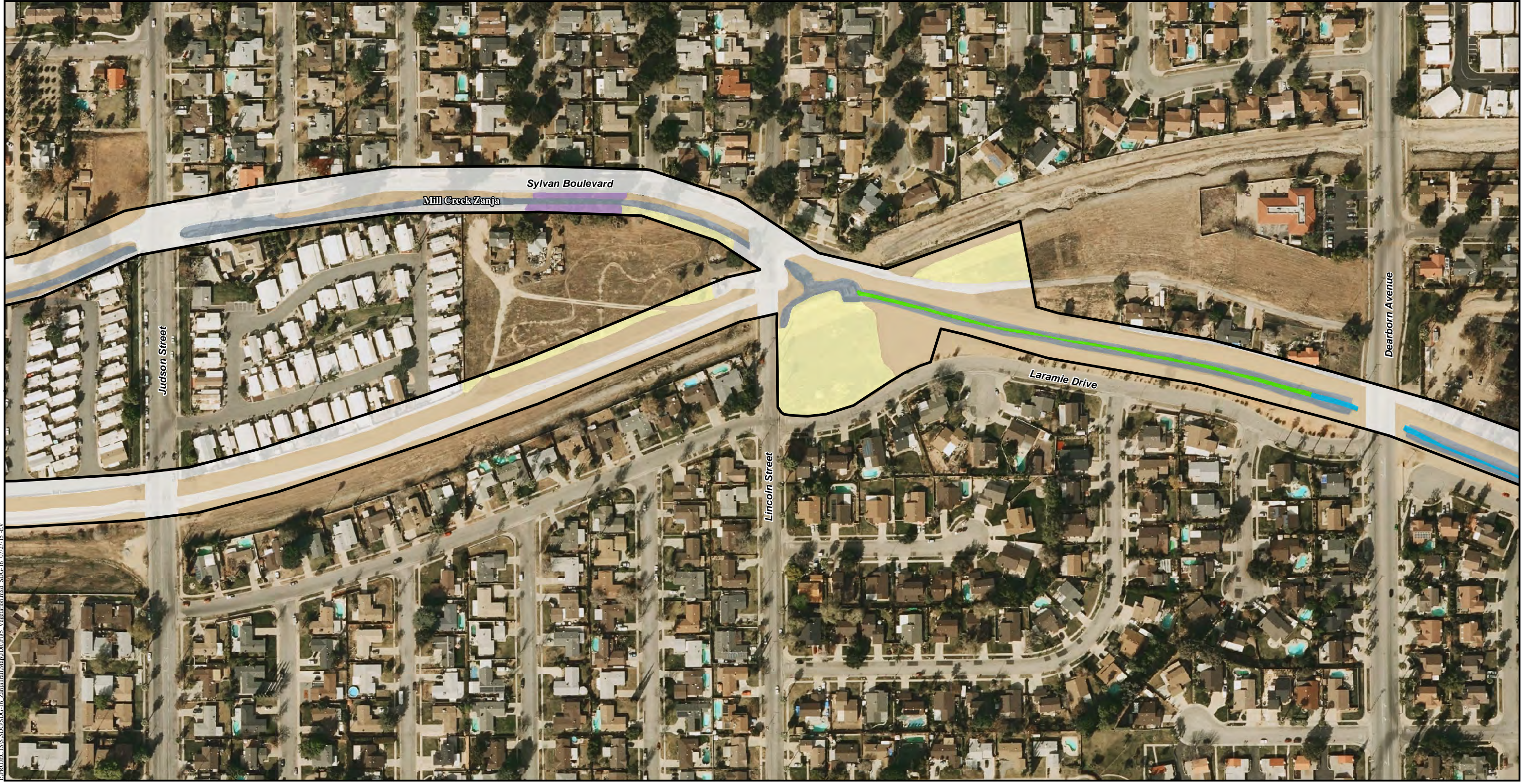
Vegetation

- Riparian Woodland
- Disturbed Habitat
- Non-vegetated Channel/Streambed

0 200 Feet

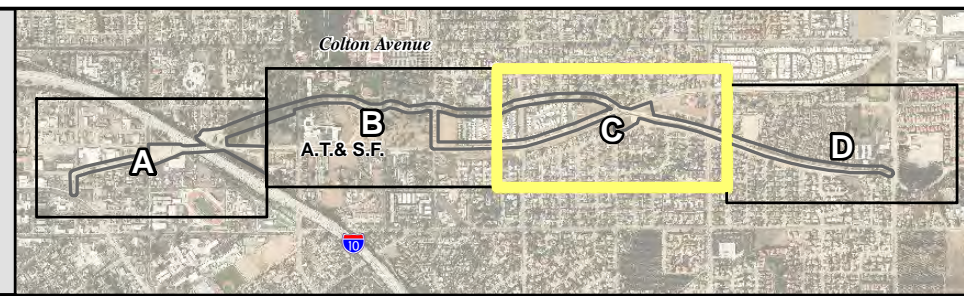
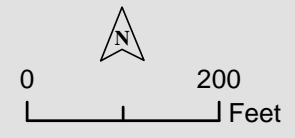


Vegetation
 ZANJA TRAIL AND
 GREENWAY PARK PROJECT
 Figure 5B

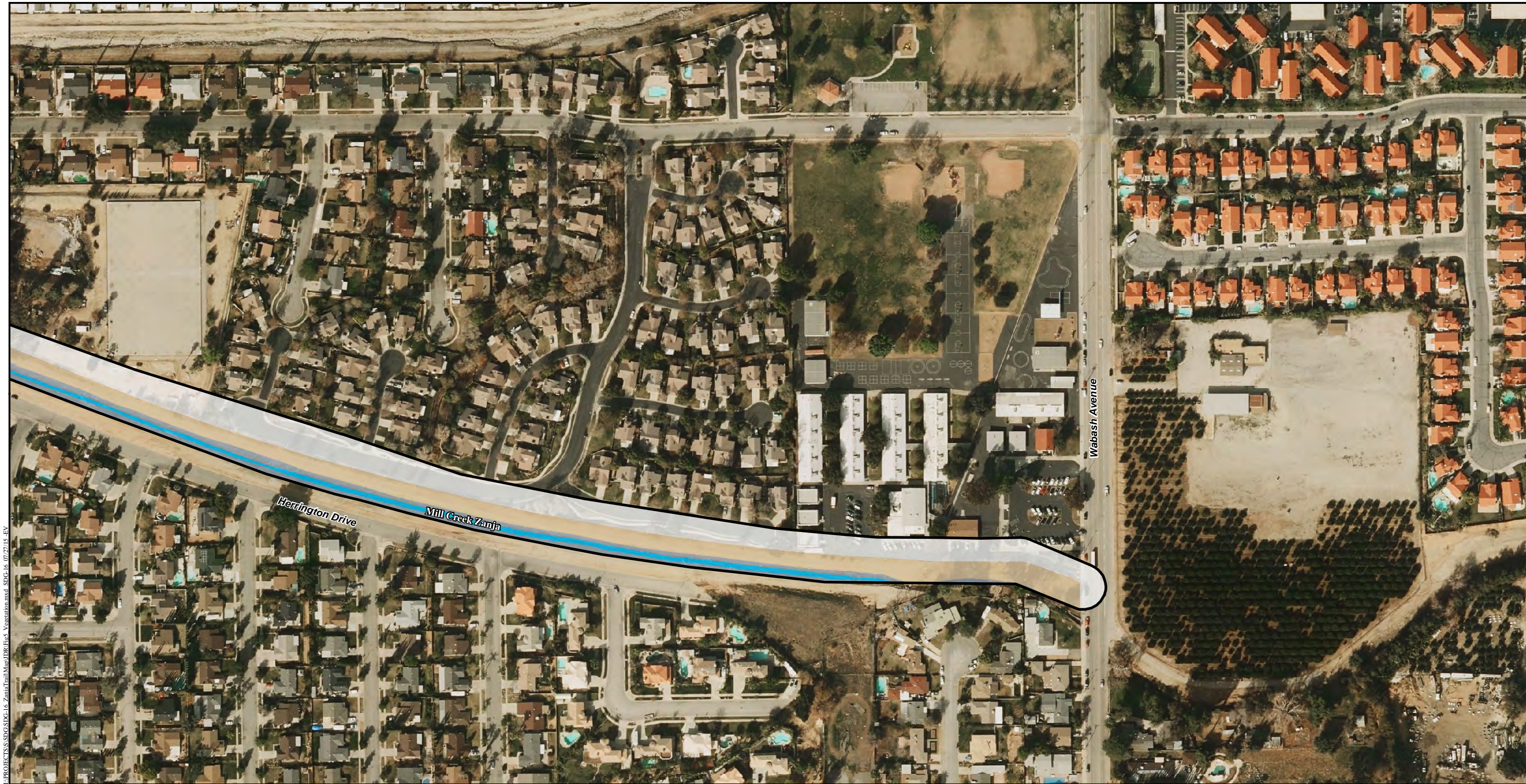


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- | | |
|----------------------------|---------------------------------|
| Project Study Area | Non-native Vegetation |
| Vegetation | Disturbed Habitat |
| Freshwater Marsh Disturbed | Non-vegetated Channel/Streambed |
| Riparian Scrub Disturbed |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

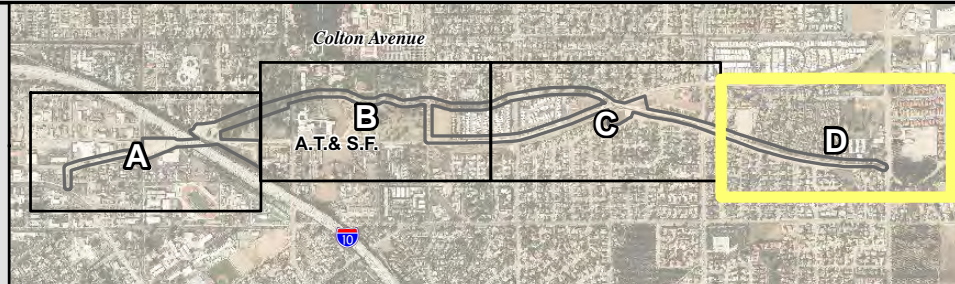


Vegetation
 ZANJA TRAIL AND GREENWAY PARK PROJECT
 Figure 5C



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-  Project Study Area
-  Developed
- Vegetation**
-  Freshwater Marsh Disturbed
-  Disturbed Habitat
-  Non-vegetated Channel/Streambed



Vegetation
 ZANJA TRAIL AND
 GREENWAY PARK PROJECT
 Figure 5D

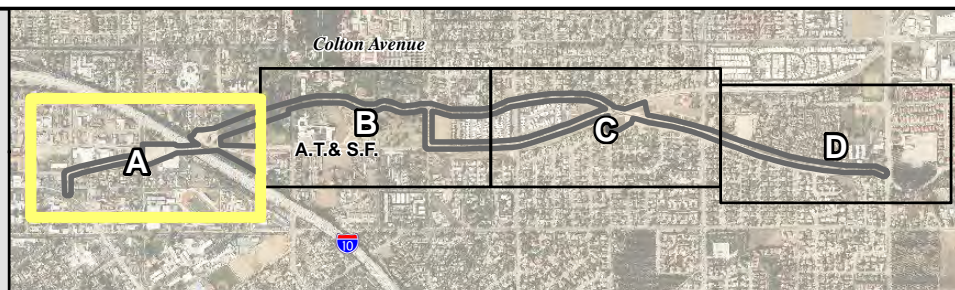
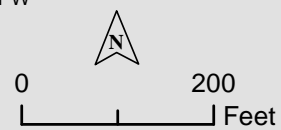


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- Project Study Area
- Photo Location
- Culvert

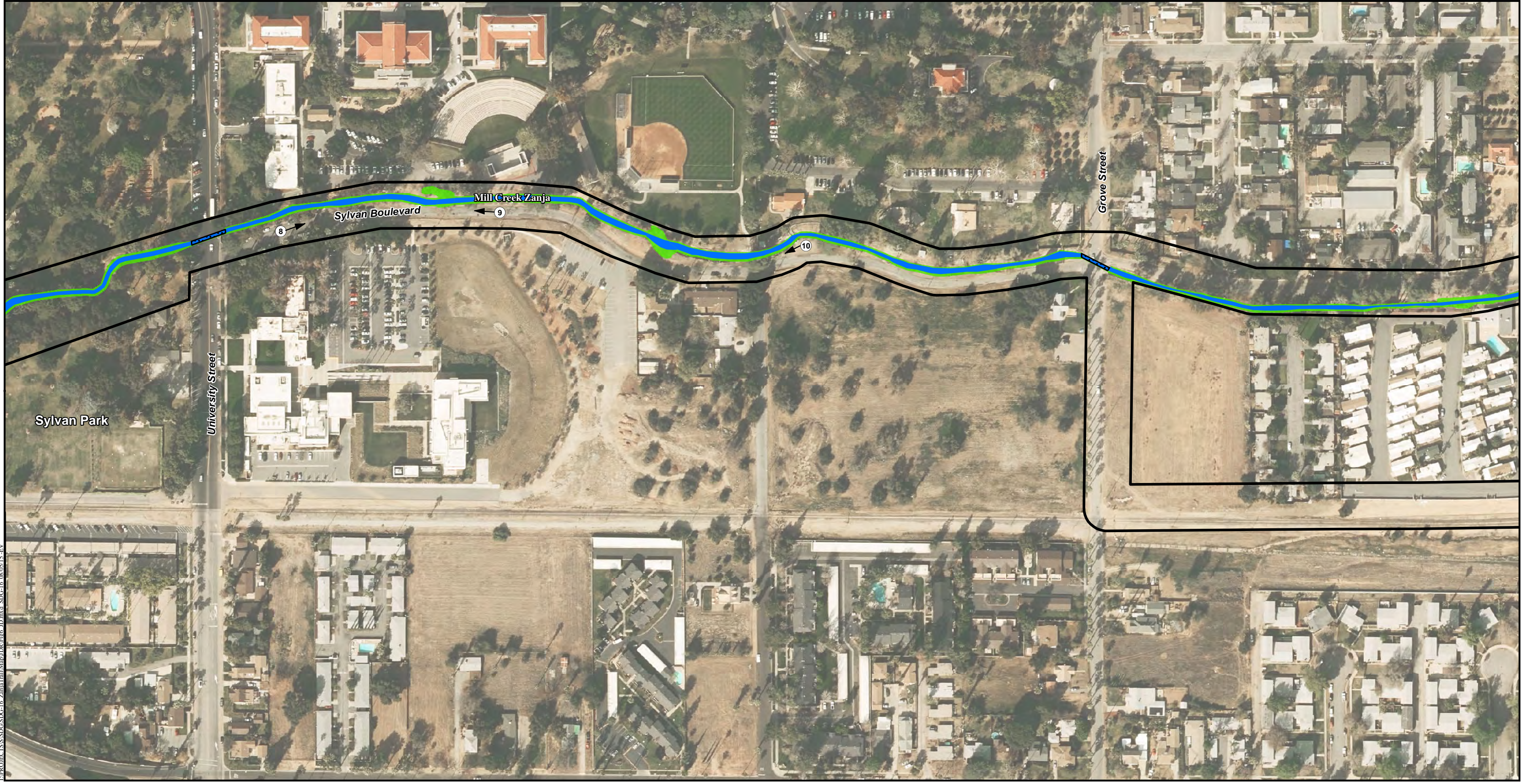
Jurisdiction

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








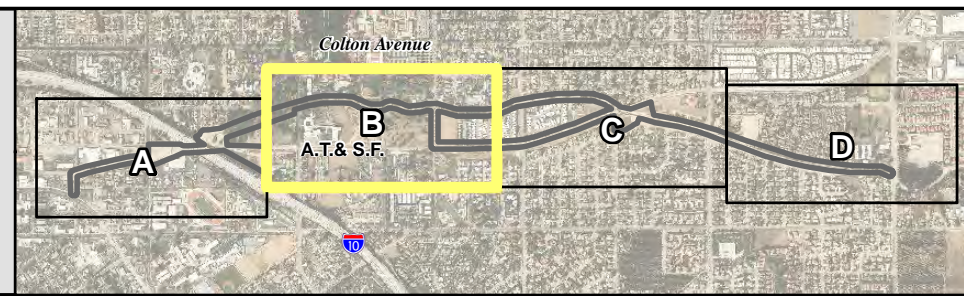
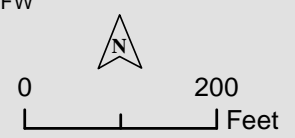
Wetland and Waters Delineation

ZANJA TRAIL AND GREENWAY PARK PROJECT
Figure 6A



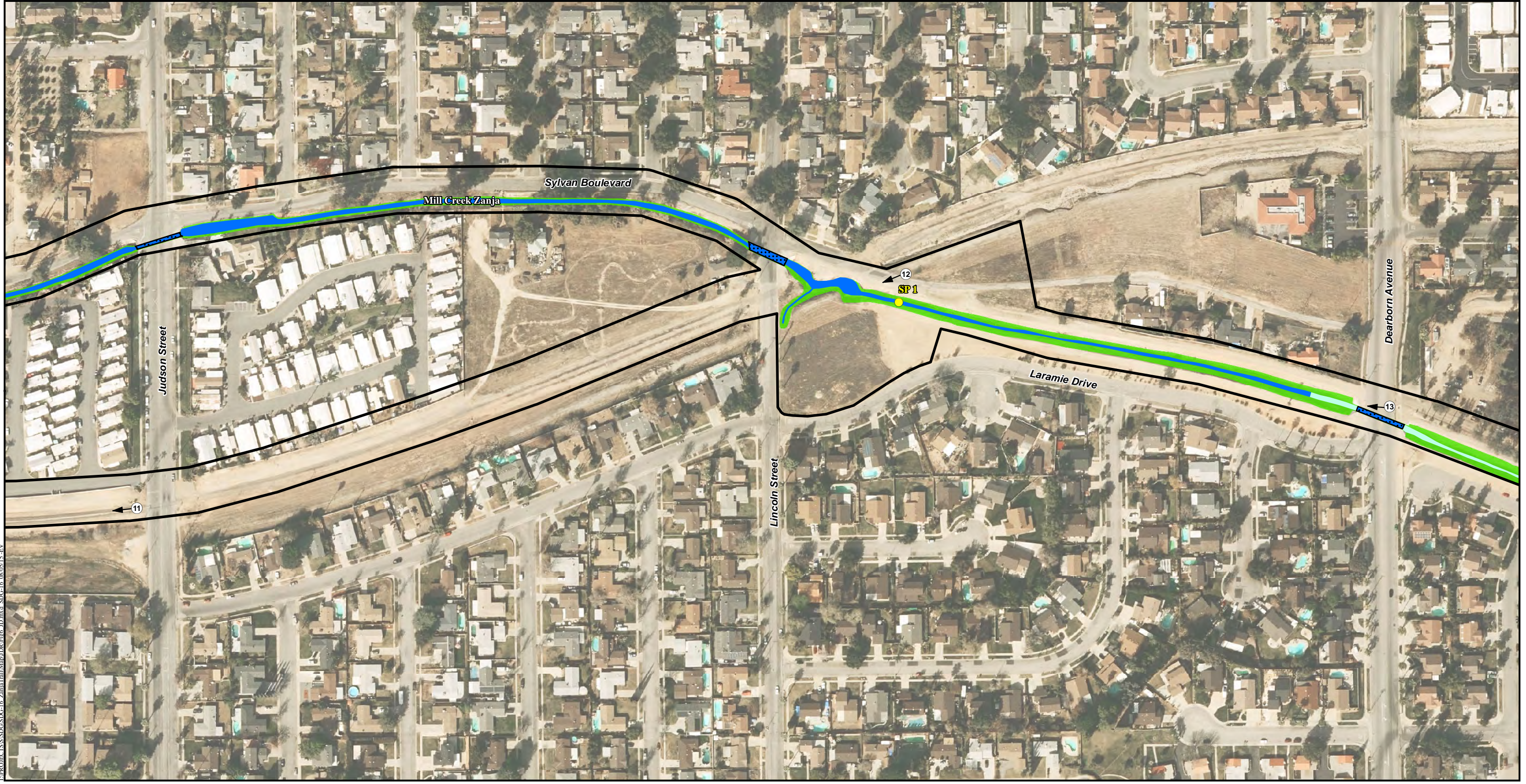
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- | | | |
|---|--------------------|---|
|  | Project Study Area | Jurisdiction |
|  | Photo Location |  USACE Non-wetland Waters of the U.S./CDFW |
|  | Culvert |  CDFW |



Wetland and Waters Delineation

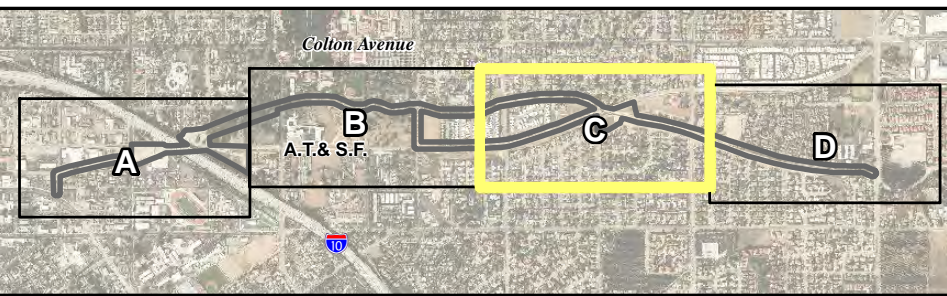
ZANJA TRAIL AND GREENWAY PARK PROJECT
Figure 6B



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HELIX
Environmental Planning

<ul style="list-style-type: none"> Project Study Area Photo Location Soil Pit (Sample Point) Culvert 	<p>Jurisdiction</p> <ul style="list-style-type: none"> USACE Non-wetland Waters of the U.S./CDFW USACE Wetland/CDFW CDFW 	
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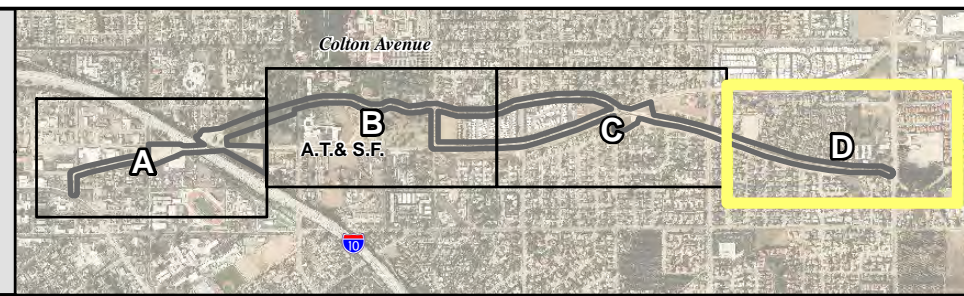


Wetland and Waters Delineation
ZANJA TRAIL AND GREENWAY PARK PROJECT
Figure 6C



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- | | |
|-------------------------|---|
| Project Study Area | Jurisdiction |
| Photo Location | USACE Non-wetland Waters of the U.S./CDFW |
| Soil Pit (Sample Point) | USACE Wetland/CDFW |
| | CDFW |



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

Wetlands and “Waters of the U.S.” Definitions

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

California Association of Resource Conservation Districts. 2002. Guide to Watershed Project Permitting for the State of California. Available at URL: <http://www.carcd.org/permitting/pguide.pdf>.

California Department of Fish and Wildlife (CDFW). Fish and Game Code Sections 1600 through 1616.

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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
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: <u>10'x50'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>N/A</u>				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
2. _____				
3. _____				
4. _____				
<u>0</u> = Total Cover				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 = _____
<u>Sapling/Shrub Stratum</u> (Plot size: <u>10'x50'</u>)				
1. <u>Salix goodingii</u>	<u>30</u>	<u>X</u>	<u>FACW</u>	
2. <u>Salix laevigata</u>	<u>5</u>		<u>FACW</u>	
3. <u>Populus fremontii</u>	<u>5</u>		<u>FAC</u>	
4. _____				
5. _____				
<u>40</u> = Total Cover				
<u>Herb Stratum</u> (Plot size: <u>10'x20'</u>)				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.
1. <u>Sorghum halepense</u>	<u>40</u>	<u>X</u>	<u>FACU</u>	
2. <u>Cynodon dactylon</u>	<u>10</u>		<u>FACU</u>	
3. <u>Paspalum dilatatum</u>	<u>10</u>		<u>FAC</u>	
4. <u>Cyperus eragrostis</u>	<u>5</u>		<u>FACW</u>	
5. _____				
6. _____				
7. _____				
8. _____				
<u>65</u> = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: <u>10'x20'</u>)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. <u>N/A</u>				
2. _____				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>30</u> % Cover of Biotic Crust <u>0</u>				

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		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 3/3	100	--	--	--	--	sandy lm	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Soils³:

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators 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 <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> 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: <u>10'x50'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>N/A</u>				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
2. _____				
3. _____				
4. _____				
<u>0</u> = Total Cover				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 = _____
<u>10</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10'x20'</u>)				
1. <u>Populus fremontii</u>	<u>5</u>	<u>X</u>	<u>FAC</u>	
2. <u>Fraxinus uhdei</u>	<u>5</u>	<u>X</u>	<u>FAC</u>	
3. _____				
4. _____				
5. _____				
<u>10</u> = Total Cover				
Herb Stratum (Plot size: <u>10'x20'</u>)				
1. <u>Typha sp.</u>	<u>55</u>	<u>X</u>	<u>OBL</u>	
2. <u>Sorghum halepense</u>	<u>25</u>	<u>X</u>	<u>FACU</u>	
3. <u>Cyperus eragrostis</u>	<u>5</u>		<u>FACW</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>85</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>10'x20'</u>)				
1. <u>N/A</u>				
2. _____				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>15</u> % Cover of Biotic Crust <u>0</u>				
Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)				
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> 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		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 3/2	100	--	--	--	--	lmy sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)
	<input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input checked="" type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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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)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine) <input checked="" type="checkbox"/> Sediment Deposits (B2) (Riverine) <input checked="" type="checkbox"/> Drift Deposits (B3) (Riverine) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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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.

Sampling Point and Site Photos

ZANJA TRAIL AND GREENWAY PARK



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.