Final

RAINBOW WATER QUALITY IMPROVEMENT PROJECT

Aquatic Resources Delineation Report

Prepared for
County of San Diego Department of Public Works

March 2021

ESA

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CHAPTER 1
Introduction

This report describes the methodology and results of an aquatic resources delineation conducted by Environmental Science Associates (ESA) for the County of San Diego (County) Department of Public Works (DPW) Rainbow Water Quality Improvement Project (project). The project would install structural Best Management Practices (BMPs) in the form of subsurface wetland channels to attain Total Maximum Daily Load (TMDL) compliance for nutrients in the Rainbow Creek watershed, which is located in the unincorporated community of Rainbow in northern San Diego County. All aquatic resources and boundaries described in this report are considered preliminary pending the agreement of the regulatory agencies.

The purpose of the delineation was to identify potential waters of the U.S. subject to the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the federal Clean Water Act (CWA); waters of the state subject to the regulatory jurisdiction of the San Diego Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the federal CWA and the Porter-Cologne Water Quality Control Act; and streambed and riparian habitat subject to the regulatory jurisdiction of the California Department of Fish and Wildlife (CDFW) pursuant to Sections 1600 et seq. of Fish and Game Code (FGC).

1.1 Survey Area

The 41.18-acre aquatic resources survey area is located in the unincorporated community of Rainbow in northern San Diego County, California (**Figure 1**). The survey area is based on the project area, plus an approximate 100-foot buffer. The buffer is approximate because the project area was modified after the survey area was established, but the entire project area is still entirely within the survey area. The survey area includes lands within Sections 1 and 12 of Township 9 South, Range 3 West of the Temecula U.S. Geological Survey (USGS) 7.5-minute quadrangle topographic map (**Figure 2**). Lands within and around the survey area are mainly developed or disturbed with residential, commercial, and agricultural land uses (**Figure 3a**).

The survey area consists of the following four sites, as shown in Figure 3a:

- Site 2 – Huffstatler and Fifth streets, south of Rainbow Creek (17.5 acres)
- Site 3 – Rainbow Valley Boulevard north to Chica Road (5.6 acres)
- Site 4 – Rainbow Valley Boulevard north to West Rainbow Valley Boulevard (9.6 acres)
- Site 5 - Huffstatler Street, north of Rainbow Creek (8.5 acres)

Directions to the Survey Area

The portion of the survey area along public roadways is publicly accessible; however, buffer areas may extend into private lands. The survey area can be accessed from I-15 north or south by taking the West Rainbow Valley Boulevard exit and turning east. Turn left on Rainbow Valley Boulevard to access Site 4 and Site 3. Continue south to Fifth Street and turn right on Fifth Street to access Site 2. Turn left (south) on Huffstatler Street to access the remainder of Site 2, and turn right (north) to access Site 5.

1.2 Contact Information

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CHAPTER 2
Existing Conditions

Prior to completing the aquatic resources delineation, ESA conducted a review of available background information pertaining to the survey area setting. The following resources were reviewed:

- Natural Resources Conservation Service (NRCS), Web Soil Survey (NRCS 2020).
- USGS 7.5' topographic quadrangle map Temecula (USGS 2016);
- Current and historical aerial imagery (Google Earth 2020 and HistoricAerials.com 2020). Historic aerials are included as **Figure 3b**.
- Precipitation data from the Antecedent Precipitation Tool (APT), (USACE 2020) and Applied Climate Information System (National Oceanic and Atmospheric Association [NOAA] 2020).
- The National Wetlands Inventory (NWI) (U.S. Fish and Wildlife Service 2020).
- National Hydrography Dataset (NHD), (USGS 2020).
- Federal Emergency Management Agency (FEMA) flood mapping (FEMA 2020).

2.1 Vegetation Communities and Land Cover Types

Vegetation communities and land cover types in the survey area are summarized in **Table 1** and depicted in **Figures 4a-b**. Vegetation communities and cover types within the survey area were classified according to *Preliminary Descriptions of the Terrestrial Communities of California* by Holland (1986) as revised by Oberbauer (2008) with modifications to describe site-specific cover types related to aquatic resources.

TABLE 1
VEGETATION COMMUNITIES AND LAND COVER TYPES

Vegetation Community/Land Cover Type	Survey Area (acres)
Developed (concrete ditch)	0.39
Developed/Disturbed	39.77
Disturbed (earthen ditch)	0.27
Disturbed Wetland	0.04
Emergent Wetland	0.07
Eucalyptus Woodland	0.46
Non-Vegetated Channel	0.07

Vegetation Community/Land Cover Type	Survey Area (acres)
Riparian Forest	0.10
Total	41.18[1]

1 Total does not sum exactly due to rounding.

Developed/Disturbed

The majority of the survey area is comprised of developed/disturbed land cover. This land cover type includes areas characterized by disturbance, development, ornamental plantings, and/or nurseries. Within the survey area, this cover type describes areas which have been physically disturbed or significantly modified by human activity and are no longer recognizable as native or naturalized vegetation associations. Disturbed habitat continues to retain a soil substrate whereas developed habitats include paved areas and structures. Vegetation, if present, is nearly exclusively composed of non-native plant species such as ornamentals or ruderal exotic species that take advantage of disturbance.

Disturbed (earthen ditch)

Disturbed ditch describes earthen ditches and is a subtype of disturbed/developed habitat that was mapped separately to distinguish where ditches occur. Within the survey area, disturbed ditches are subject to high levels of sediment and erosion from adjacent agricultural operations and irregular inundation. Based on the observed lack of vegetation where vegetation would normally be expected to occur, vegetation in some ditches within the survey area may be treated with herbicide or mechanically removed. Where present, vegetation is predominantly weedy or invasive species. Species observed included Bermudagrass (*Cynodon dactylon*; FACU[1]), smilograss (*Stipa miliacea*; UPL[2]), crabgrass (*Digitaria sanguinalis*; FACU), rabbitfoot grass (*Polypogon monspeliensis*; FAC), Mexican sprangletop (*Leptocholoa fusca*; FACW[3]), Italian rye grass (*Festuca perennis*; FAC[4]), castor bean (*Ricinus communis*; FACU), short-pod mustard (*Hirschfeldia incana*; UPL), and Hooker's evening primrose (*Oenothera elata*; FACW).

Disturbed Wetland

Disturbed wetlands include areas permanently or periodically inundated by water which have been significantly modified by human activity and are often unvegetated. Disturbed wetland within the survey area occurs at the channel crossing (unnamed tributary or Tributary 1) at Rainbow Valley Boulevard. East of Rainbow Valley Boulevard and within the active floodplain, vegetation was absent, potentially as a result of herbicide treatment or physical removal. It was

1 FACU – Facultative upland species (usually occurs in uplands but occasionally occurs in wetlands).

2 UPL – Upland species (almost never occurs in wetlands). Species not listed on the National wetland plant list are assumed to be upland unless evidence suggests otherwise.

3 FACW – Facultative wetland species (usually occurs in wetlands, but may occur in non-wetlands).

4 FAC – Facultative species (occurs in wetlands and non-wetlands).

assumed that under normal conditions, the active flood plain would support emergent wetland vegetation, similar to vegetation on the west side of the road.

Emergent Wetland

Emergent wetlands are generally persistent wetlands dominated by low growing, perennial wetland species. Within the survey area, emergent wetlands occur along Rainbow Creek and Tributary 1. Dominant species include watercress (*Nasturtium officianale*; OBL[5]), common knotweed (*Persicaria lapathifolia*; FACW), tall flatsedge (*Cyperus eragrostis*; FACW), and Mexican sprangletop.

Developed (concrete ditch)

Developed concrete-lined channel shares the attributes of non-vegetated channel and urban/developed land as described in Oberbauer et al. 2008. In the survey area, this cover type consists of concrete-lined ditches.

Eucalyptus Woodland

Eucalyptus woodland within the survey area consists of a grove of naturalized river red gum (*Eucalyptus camaldulensis*; FAC) with an understory of St. Augustine grass (*Stenotaphrum secundatum*; FAC). This area occurs within the outer (100-year) floodplain of Rainbow Creek.

Non-Vegetated Channel

Non-vegetated channel or floodway (Oberbauer et al. 2008), refers to the sandy, gravelly, or rocky substrates of waterways or flood channels that remain unvegetated or with less than 10 percent total cover on a relatively permanent basis as a result of natural flood processes. Non-vegetated channel occurs at Rainbow Creek and Tributary 1 within the survey area.

Southern Riparian Forest

Southern riparian forest occurs along streams and rivers. Within the survey area, southern riparian forest occurs along Rainbow Creek and is dominated by black willow (*Salix gooddingii*; FACW) with California sycamore (*Platanus racemosa*; FAC) also present. The understory consists of weedy, non-native forbs and grasses such as rabbitsfoot grass, Canada horseweed (*Erigeron Canadensis*; FACU), short pod mustard (*Hirschfeldia incana*; UPL), and castor bean (*Ricinus communis*; FACU). Additional species observed included seep monkeyflower (*Erythranthe guttata*; OBL), Peruvian pepper tree (*Schinus molle*; FACU), Mexican fan palm (*Washingtonia robusta*; FACW), and watercress.

[5] OBL – Obligate species (almost always occurs in wetlands).

2.2 Soils

Soils within the survey area are shown in **Figure 5** (USDA 2020) and described below. Soils in the survey area are disturbed due to agricultural (nursery) operations and residential and commercial development.

Arlington coarse sandy loam, 2 to 9 percent slopes

This soil map unit is not considered a hydric soil in San Diego County. Arlington coarse sandy loam consists of soils sourced from weekly cemented alluvium derived from granite, commonly occurring in alluvial fans. The mean annual precipitation is about 12 inches. These soils are well-drained, high runoff with moderately low to moderately high permeability.

Fallbrook sandy loam, 5 to 9 percent slopes, eroded

This soil map unit is not considered a hydric soil in San Diego County. Fallbrook sandy loam consists of deep, well drained soils that formed in material weathered from granitic rocks. The mean annual precipitation is about 15 inches. These soils are well-drained, medium to very rapid runoff with moderately slow permeability.

Fallbrook sandy loam, 9 to 15 percent slopes, eroded

This soil map unit is not considered a hydric soil in San Diego County. Fallbrook sandy loam consists of deep, well drained soils that formed in material weathered from granitic rocks. The typical profile consists of sandy loam from 0 to 6 inches and sandy loam and loam from 6 to 34 inches. This soil map unit is considered well-drained with typical depth to water table of more than 80 inches. It is not subject to flooding or ponding.

Grangeville fine sandy loam, 0 to 2 percent slopes

Within San Diego County, this soil map unit is considered a hydric soil when found within alluvial fans. As shown in Figure 5, within the survey area, this soil occurs in a highly developed area and is not located in an alluvial fan feature. Grangeville fine sandy loam consists of very deep, somewhat poorly drained soils that formed in moderate course textured alluvium dominantly from granitic rock sources. The typical profile consists of sandy loam from 0 to 11 inches and sandy loam, fine sandy loam, and very fine sandy loam from 11 to 60 inches. This soil map unit is considered well-drained with a typical depth to water table of more than 80 inches. It is not subject to flooding or ponding.

Placentia sandy loam, 0 to 2 percent slopes

Within San Diego County, this soil map unit is considered a hydric soil within depressions that exhibit hydric soil indicators. Placentia sandy loam is found on nearly level to moderately sloping fans and terraces at elevations of 50 to 2,500 feet. These soils are formed in alluvium from granite and other rocks of similar composition and texture. The typical profile consists of sandy loam from 0 to 13 inches and sandy clay l from 13 to 34 inches. This soil map unit is considered well-

drained or moderately well-drained with a typical depth to water table of more than 80 inches. It is not subject to flooding or ponding.

Visalia sandy loam, 0 to 2 percent slopes

Within San Diego County, this soil map unit is considered a hydric soil within floodplains that exhibit hydric soil indicators. Visalia sandy loam is found on alluvial fans or plains and consists of alluvium derived from granite. The typical profile consists of sandy loam at 0 to 12 inches, sandy loam and fine sandy loam at 12 to 40 inches. This soil type is considered well-drained with a typical depth to water table of more than 80 inches. It is rarely subject to flooding and not subject to ponding.

Vista rocky coarse sandy loam, 15 to 30 percent slopes

This soil map unit is not considered a hydric soil in San Diego County. Vista rocky coarse sandy loam is found on hills and is derived from residuum weathered from granodiorite and quartz-diorite. The typical profile consists of sandy loam from 0 to 6 inches and sandy loam and loam from 6 to 34 inches. This soil type is well-drained with medium runoff, high permeability, and a typical depth of greater than 80 inches to the water table. It is not subject to flooding or ponding.

Vista rocky coarse sandy loam, 30 to 65 percent slopes

This soil map unit is not considered a hydric soil in San Diego County. This soil map unit shares the characteristic of Vista rocky coarse sandy loam described above, but occurs on steeper slopes.

2.3 Hydrology

The survey area is within the Santa Margarita Watershed (USGS Hydrologic Unit Code 18070302). As shown in Figure 1, overall site hydrology drains toward Rainbow Creek, which is identified on Figure 3a as an NHD blue-line intermittent stream. Additional NHD features include Tributary 1, an unnamed tributary to Rainbow Creek depicted in NHD as ephemeral, but determined to be intermittent based on observations in the field and aerial imagery.

The six existing roadside ditches (Ditches 1, 2, 3, 4, 5, and 6) within the survey area convey ephemeral and intermittent flows from the roads and surrounding development to Rainbow Creek. The ephemeral ditches convey immediate and short-term flows from both natural rainfall events and, more frequently, runoff from adjacent agricultural operations, while the intermittent ditches convey semi-persistent flows from surrounding agricultural operations.

Site 2 includes Ditches 1, 2, and 3; Site 3 includes Tributary 1 and Ditch 5; Site 4 includes Ditch 6; and Site 5 includes Rainbow Creek and Ditches 1, 2, and 4.

In the Water Quality Control Plan for the San Diego Basin (9) (Basin Plan; RWQCB 2016), the survey area is within the Santa Margarita Hydrologic Unit, Deluz Hydrologic Area, and Vallecitos Hydrologic Subarea (902.23). Identified beneficial uses include municipal; agriculture; industrial service supply; contact and non-contact water recreation; warm freshwater habitat; cold

freshwater habitat; wildlife habitat; and habitat for spawning, reproduction, and/or early development.

Rainbow Creek was placed on the 303(d) list of "water quality limited" water bodies in 1996 because data indicated that beneficial uses in the creek were impaired. Nutrient concentrations in Rainbow Creek did not meet the objective for nitrates in a municipal supply or the numeric goals for biostimulatory substances (total nitrogen and total phosphorus) contained in the Basin Plan. Elevated nutrient concentrations have caused excessive algal growth in portions of the creek.

2.4 Climate

The USACE Antecedent Precipitation Tool was used to query the field survey dates and HUC12 Watershed (180703020503). The results are included as Appendix C. The tool indicated that field surveys were conducted during the dry season with a June 2019 average score of 13.8 (normal conditions) and a July 2020 score of 15.6 (wetter than normal conditions). In addition, the Agricultural Applied Climate Information System Wetlands (WETS) climate table for the Escondido No. 2 Field Station is included below (**Table 2**; NOAA 2020). Precipitation in the year prior to the survey (June 2019 to June 2020), and within the three months prior to the field survey, was above normal. The total precipitation for the period of April through June, based on records from 1980 to 2019, is typically between 1.48 and 4.81 inches, but in 2020 was 5.43 inches.

TABLE 2
WETS TABLE FOR ESCONDIDO NO. 2 STATION (INCHES)

Time Interval	WETS Station: Escondido No. 2, CA				Within Normal Range?
	Total Precip	Average (1980-2019)	30% Chance Less	30% Chance More	
Annual (June 2019-June 2020)	21.9	14.65	10.77	17.1	No (above normal)
Jun	0.14	0.11	0	0.07	No (above normal)
Jul	0.02	0.1	0	0.08	Yes
Aug	0	0.06	0	0	Yes
Sep	0.22	0.21	0	0.14	No (above normal)
Oct	0	0.64	0.1	0.49	No (below normal)
Nov	4.75	1.4	0.54	1.56	No (above normal)
Dec	4.47	2.05	0.82	2.39	No (above normal)
Jan	0.47	2.92	0.95	3.31	No (below normal)
Feb	0.79	3.35	1.53	4.09	No (below normal)
Mar	5.61	2.46	1.14	2.87	No (above normal)
Apr	5.27	1.02	0.41	1.15	No (above normal)
May	0.02	0.34	0.12	0.35	No (below normal)

Jun	0.14	2.92	0.95	3.31	No (below normal)
April-June 2020 Total (3 months prior to survey)	5.43	4.28	1.48	4.81	No (above normal)

2.5 National Wetlands Inventory

NWI includes freshwater forested/shrub and riverine wetlands within the survey area (**Figure 6**). The NWI wetlands within Sites 3 and 5 associated with Rainbow Creek and Tributary 1 were verified as present during the field survey, occurring as forested, emergent, and riverine wetlands. No wetlands were present where NWI wetlands are mapped in Site 4, and the area has been developed for agricultural operations.

CHAPTER 3
Regulatory Framework

3.1 Waters of the U.S.

Clean Water Act

The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the U.S. and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1972.

In 1986, the term "waters of the United States" was defined as follows (33 CFR 328.3[a]):

> *(1) 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;*
>
> *(2) All interstate waters including interstate wetlands;*
>
> *(3) All other waters such as intrastate 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 or foreign commerce including any such waters:*
>
> *(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or*
>
> *(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or*
>
> *(iii) Which are used or could be used for industrial purpose by industries in interstate commerce;*
>
> *(4) All impoundments of waters otherwise defined as waters of the United States under the definition;*
>
> *(5) Tributaries of waters identified in paragraphs (a)(1) through (4) of this section;*
>
> *(6) The territorial seas; and*
>
> *(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1) through (6) of this section.*

> *(8) Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.*

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not considered waters of the U.S.

Wetlands (including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas) are considered waters of the U.S. (subject to the significant nexus test), and are defined by USACE as "those areas that are inundated or saturated by surface or groundwater 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" (33 CFR 328.3[b]; 40 CFR 230.3[t]). Indicators of three wetland parameters (i.e., hydric soils, hydrophytic vegetation, and wetlands hydrology), as determined by field investigation, must be present for a site to be classified as a wetland by USACE (Environmental Laboratory 1987).

Section 404 of the CWA establishes a program to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands. Activities in waters of the U.S. regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports) and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into waters of the United States, unless the activity is exempt from Section 404 regulation (e.g., certain farming and forestry activities).

Section 401 of the CWA gives the state authority to grant, deny, or waive certification of proposed federally licensed or permitted activities resulting in discharge to waters of the U.S. The State Water Resources Control Board (State Water Board) directly regulates multi-regional projects and supports the Section 401 certification and wetlands program statewide. The RWQCB regulates activities pursuant to Section 401(a)(1) of the federal CWA, which specifies that certification from the State is required for any applicant requesting a federal license or permit to conduct any activity including but not limited to the construction or operation of facilities that may result in any discharge into navigable waters. The certification shall originate from the State or appropriate interstate water pollution control agency in/where the discharge originates or will originate. Any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the CWA.

Navigable Waters Protection Rule

The Navigable Waters Protection Rule (NWPR) was published by the U.S. Army Corps of Engineers (USACE) and the Environmental Protection Agency (EPA) on April 21, 2020 and became effective on June 22, 2020. The NWPR redefines waters of the U.S. and places them into four distinct categories including territorial seas and traditional navigable waters, perennial and intermittent tributaries to those waters, certain lakes, ponds, and impoundments, and wetlands

adjacent to jurisdictional waters. In addition, the rule also includes 12 categories of exclusions such as ephemeral features, groundwater, many ditches, prior converted cropland, and waste treatment systems. The rule helps clarify key elements of the federal Clean Water Act jurisdiction by removing proposed separate categories for jurisdictional ditches and impoundments and refine or define terms such as “typical year” and “adjacent wetlands.”

3.2 Waters of the State

Most projects involving water bodies or drainages are regulated by the RWQCB, the principal state agency overseeing water quality of the state at the local/regional level. The survey area is located within the jurisdiction of the San Diego RWQCB. Where waters of the state overlap with waters of the U.S., pending verification from the USACE, those waters would be regulated under Section 401 of the CWA which is described above in Section 3.1.

In the absence of waters of the U.S., waters may be regulated under the Porter-Cologne Water Quality Control Act if project activities, discharges, or proposed activities or discharges could affect California's surface, coastal, or ground waters. The permit submitted by the applicant and issued by the RWQCB is either a Water Quality Certification in the presence of waters of the U.S. or a Waste Discharge Requirement in the absence of waters of the U.S.

3.3 CDFW Resources

Pursuant to Division 2, Chapter 6, Section 1600 et seq. of the FGC, CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. A Lake or Streambed Alteration Notification (LSAN) must be submitted to CDFW for “any activity that may substantially change the bed, channel, or bank of any river, stream, or lake.” In addition, CDFW has authority under FGC over wetland and riparian habitats associated with lakes and streams. The CDFW reviews proposed actions and, if necessary, submits to the applicant a proposal that includes measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the applicant is the Lake and Streambed Alteration Agreement (LSAA).

CHAPTER 4
Methodology

Aquatic resources delineated within the entire survey area on July 15, 2020 by ESA biologist Julie Stout and within Site 2 on June 13, 2019 by May Lau and Lily Sam. The 2019 survey was conducted for the Huffstatler Street and Fifth Street Biofiltration Project. The results presented in this report are based on the field data collected in both 2019 and 2020 and include updates to the 2019 field data due to changes in existing conditions in the survey area. Field data were collected using a sub-meter-accuracy Trimble Geo7x GPS unit. Linear feet were measured within the central-most polygon of each linear feature.

4.1 Waters of the U.S.

Potential waters of the U.S. were delineated based on the definition in the NWPR. Delineation of potential non-wetland waters of the U.S., as determined by the presence of an ordinary high water mark (OHWM), was based on the guidance in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008). Waters type was determined based on observed hydrological regime and the hydrological connection between the watercourse and a downstream Traditional Navigable Water (TNW).

Delineation of potential wetland waters of the U.S. used the "Routine Determination Method" as described in the 1987 *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), hereafter called the "1987 Manual." The 1987 Manual was used in conjunction with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE 2008), hereafter called the "Arid West Supplement." For areas where the 1987 Manual and the Arid West Supplement differ, the Arid West Supplement was followed. Wetlands and waters were classified using commonly accepted habitat types. The Cowardin classification (Cowardin et al. 1979) of each feature type was also determined.

4.2 Waters of the State

Waters of the state regulated under CWA Section 401 were delineated using the same methodology as waters of the U.S. Waters of the state outside of CWA Section 401 jurisdiction and subject to Porter-Cologne Water Quality Cologne Act were delineated to also include outer portions of the flood extent beyond the OHWM based on informal guidance from the San Diego RWQCB on Region 9 projects. Within the survey area, waters of the state under Porter-Cologne were considered congruent with CDFW jurisdiction. State wetlands were delineated pursuant to the State Wetland Procedures (SWRCB 2019). State wetlands are defined as areas where, under

normal circumstances, (1) the continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation. Unlike federal wetlands, state wetlands require no connection to waters of the U.S. and areas lacking vegetation may still be considered wetlands where hydric soils and wetland hydrology is present.

4.3 CDFW Resources

CDFW river, stream, and lake resources were delineated based on the presence of features that could meet CDFW's broadly applied interpretation of streams and lakes, including areas that exhibit regular and natural ponding and drainage features that exhibit a bed and bank. CDFW resources were also delineated to include streambanks up to the top of the bank (for natural channel banks), and associated wetlands and riparian vegetation, to the outer dripline.

CHAPTER 5
Results

Potential aquatic resources within the survey area include Rainbow Creek, an unnamed tributary to Rainbow Creek (Tributary 1), and six roadside ditches. Seven wetland determination sample points were sampled in total with two sampled at the roadside ditches, two at Rainbow Creek, and three at Tributary 1 to determine the presence or absence of wetlands; OHWM data points were collected at Rainbow Creek and Tributary 1. Wetland and OHWM sample point data sheets are included in **Appendix A** and sample point photographs are included in **Appendix B**. Potential aquatic resources within the 41.18-acre survey area are summarized in **Table 3**, described below by jurisdiction, and depicted in **Figures 7a through 9b**.

TABLE 3
SUMMARY OF AQUATIC FEATURES IN THE SURVEY AREA[1]

Feature	Average OHWM (ft)	Cowardin Types[2]	USACE/RWQCB/CDFW			CDFW/RWQCB (non-federal)[2] (acres/lf)	CDFW Only (non-federal)[2] (acres/lf)
			Wetland[1] (acres/lf)	Non-Wetland (acres/lf)	Total (acres/lf)		
Rainbow Creek	21	PEM, PFO, R4SB, R4SBr	0.06/-	0.05/289	0.11/242	0.09/-	0.43/-
Tributary 1	20.9	PEM, PUB, R4SBx	0.09/112	0.02/115	0.11/227	0.07/-	-
Totals[3]:			**0.15/112**	**0.07/357**	**0.22/469**	**0.17/-**	**0.43/-**

1 Ditches and culverts are not included in acreage totals.
2 Based on the USACE definition
3 Totals may not sum exactly due to rounding.

5.1 Potential Waters of the U.S.

(a)(2) and (a)(4) Waters

The CWA § 328.3 defines waters of the U.S. to include (a)(2) waters as tributaries and (a)(4) waters as adjacent wetlands. Potential wetlands and non-wetland waters of the U.S. within the survey area include Rainbow Creek (NWW-1 and WW-1) and Tributary 1 (NWW-2 and WW-2), as shown in **Figures 7a-c** and summarized in **Table 4**.

Rainbow Creek (NWW-1/WW-1)

Rainbow Creek is an NHD-mapped intermittent tributary to the Santa Margarita River, a TNW. At the time of the survey, Rainbow Creek appeared to flow southwest over Huffstatler Street; however, based on information provided by the County, it is assumed that Rainbow Creek normally flows below Huffstatler Street due to the presence of culverts. The culverts were buried by sand at the time of the field survey; however, due to regular maintenance, it is assumed that under normal circumstances these culverts are functional. The Rainbow Creek culverts were not included in acreage totals for this delineation.

Rainbow Creek includes a non-vegetated low-flow channel considered non-wetland waters of the U.S. and vegetated wetlands within the floodplain and on sandbars within the channel. The average OHWM width was 24 feet with typical depths of 6 inches or less. Substrate within the survey area was sandy and OHWM indicators included sediment deposits, drift and debris, change in vegetation, and bank cutting. Rainbow Creek has the potential to support benthic macroinvertebrates due to sustained flows and presence of organic materials and natural substrate.

Wetlands associated with Rainbow Creek were sampled at SP-2 and adjacent uplands at SP-3 (Figure 7c). Wetlands on the east side of Huffstatler Street included vegetated sandbars with emergent vegetation characterized by herbaceous hydrophytic vegetation such as watercress growing within the channel. These areas had a high water table and sandy soils that were presumed to be hydric despite lacking hydric soil indicators due to their recent deposition and the presence of hydrophytic vegetation and wetland hydrology. On the west side of Huffstatler Street, wetlands along the creek included mature riparian forest vegetation dominated by black willow with similar understory species to those at SP-2 and wetland hydrology indicated by visibly saturated soils and debris deposits.

Tributary 1 (NWW-2/WW-2)

Within the survey area, Tributary 1 flows directly into Rainbow Creek and is mapped in NHD as an ephemeral drainage. Based on aerial imagery, presence of wetland vegetation, and observed flow at the time of the field survey, the unnamed tributary now appears to sustain intermittent hydrology, likely due to development of the surrounding area and year-round input from surrounding land uses. Tributary 1 has the potential to support benthic macroinvertebrates due to sustained flows and presence of organic materials and natural substrate. Rainbow Valley Boulevard crosses over Tributary 1 via bridge crossing with concrete sidewalls. Based on review of historic imagery, Tributary 1 appears to be a naturally-occurring stream that has been artificially excavated and channelized.

West of Rainbow Valley Boulevard, the entire channel is vegetated with hydrophytic species such as common knotweed, watercress, and Mexican sprangletop. Wetlands associated with Tributary 1 were sampled at SP-5 and adjacent uplands at SP-6.

Below and east of Rainbow Valley Boulevard, the tributary includes non-wetland waters (non-vegetated channel) as a result of shading from the bridge and continuous flow and erosion within the low-flow channel. Within the active floodplain and outside of the apparent low-flow channel, vegetation was absent, potentially as a result of herbicide treatment or physical removal. It was assumed that under normal conditions, the active floodplain would support wetland vegetation,

similar to vegetation on the west side of the road. Soils within the channel appear recently disturbed and are not necessarily expected to exhibit hydric indicators. Wetland hydrology was considered to be present based on saturation visible at the time of the site visit and in aerial imagery.

Non-Jurisdictional Waters

The CWA § 328.3 definition of non-jurisdictional waters includes (b)(5) Ditches where it states that ditches are not waters identified in paragraph (a)(1) or (a)(2) of CWA § 328.3, and those portions of ditches constructed in waters identified in paragraph (a)(4) that do not satisfy the conditions of paragraph (c)(1). Six roadside ditches were mapped within the survey area that consisted of excavated channels with identifiable bed and banks. Due to the relatively steep, excavated side walls of the ditches and apparent regular flooding to excavated capacity, the OHWM of ditches within the survey area was considered approximately congruent with top of bank. Wetland determination sample points SP-1 and SP-4 were sampled in Ditch 1 and Ditch 4, respectively, where hydrophytic vegetation was present, but these samples did not meet the required parameters to be considered wetlands due to not meeting the prevalence or dominance criteria for hydrophytic vegetation, and/or a lack of hydric soils indicators.

The roadside ditches in the survey area are constructed in and draining uplands. In addition, the ditches do not meet the definition of (a)(1) waters as territorial seas or waters subject to the ebb and flow of the tide. A review of historical aerial photographs of the survey area dating back to 1938 does not indicate the roadside ditches were constructed in former drainages or tributaries (**Figure 3b,** Historic Aerials 2020). As such, Ditches 1 through 6 are not relocated tributaries, excavated in a tributary, nor do they drain wetlands, and therefore, do not meet the definition of (a)(2) tributaries or (a)(4) adjacent wetlands. The U.S. Army Corps of Engineers provided preliminary feedback during a virtual meeting on December 18, 2020, that they would support a determination that the features are non-jurisdictional.

Some ditches were earthen while others were asphalt or concrete lined. Substrate within earthen ditches appeared to primarily be recently deposited or recently excavated loose loams and sandy loams. Vegetation within ditches in the survey area was characteristic of frequently disturbed and agricultural areas and limited to first-year growth of weedy grasses and forbs. Vegetation within some ditches may be affected by frequent re-excavation or herbicide treatments.

Hydrology of the ditches within the survey area was considered ephemeral or intermittent and subject to irregular patterns of year-round flooding and drying as a result of watering activities at adjacent nurseries. Ditches within the survey area are entirely above the water table and flow only in direct response to adjacent nursery watering or precipitation events. OHWM indicators included break in slope natural lines on the earthen banks or concrete sidewalls, and sediment or drift deposits within the channels. Because these ditches are regularly disturbed/maintained and are expected to have poor water quality due to roadside runoff and contaminants, the overall likelihood is low for benthic macroinvertebrates to be present. Concrete or asphalt-lined ditches (portions of Ditch 1 and Ditch 6) have low potential to support benthic macroinvertebrates which generally need suitable organic substrate to burrow, forage, and live. Intermittent segments of ditches that retain ponded water for prolonged periods of time have the potential to support benthic macroinvertebrates.

Ditch 1 is located on the west side of Huffstatler Street, originates from the southern end of Huffstatler Street, and carries flows north until its confluence with Rainbow Creek (photographs are in Appendix B, P-1a, P-1b, P-2a, P-2e, P-6d). Ditch 1 is partially earthen and partially asphalt-lined. Water in the ditch primarily appears to originate at a single culvert inlet from the nursery at 2150 Huffstatler Street while additional culvert inlets may contribute to flow. One sample point (SP-1) was taken along Ditch 1 in 2019 in an area where hydrophytic vegetation was present to assess soils and hydrology. Vegetation in the sample plot was dominated by rabbitsfoot grass, broad-leafed cattail (*Typha latifolia*; OBL), and wild radish (*Raphanus sativus*; UPL), and met the USACE's criteria for presence of hydrophytic vegetation. Soils in the upper 6 inches were sandy and the lower 2 inches exhibited redox features concentrated along pore linings, but no hydric soil indicators were observed. A restrictive layer (asphalt) at 8 inches in depth was detected. Soils located at SP-1 consist of Fallbrook sandy loam soils which are not listed as hydric soils in San Diego County. Wetland hydrology indicators observed included a high water table (A2) and saturation (A3), thereby meeting the USACE's wetland hydrology criteria. Surface water was not present. This sample did not meet the USACE's hydric soil criteria and is therefore not considered to be wetland waters of the U.S.

Ditch 2 is an earthen ditch on the east side of Huffstatler Street that intercepts flows from Huffstatler Street and Fifth Street towards Rainbow Creek (photographs are in Appendix B, P-2b and 6c). Ditch 3 is a roadside concrete v-ditch that originates at Rainbow Valley Road and runs south along the eastern boundary of the survey area, then continues west along Fifth Street where it enters underground culverts and connects with Ditch 2 on the east side of Huffstatler Street (photographs are in Appendix B, P-2c, P-3b, P-3c, P-5a, and P-5e). Ditch 2 and Ditch 3 were either non-vegetated or did not contain hydrophytic vegetation within the OHWM, therefore, no sample points were taken.

Ditch 4 is an earthen (or deteriorated concrete) channel that originates from private property to the east and conveys flow from north to south along the west side of Rainbow Valley Boulevard and ends prior to connecting to another ditch. After Ditch 4 ends, overflow (visible in aerial imagery) continues via sheet flow along the road until connecting to Rainbow Creek to the south. A mix of hydrophytic and upland vegetation was observed at the north end of Ditch 4 and a wetland sample point was taken (SP-4); however, the point did not meet the vegetation criteria for hydrophytic vegetation. Soils could not be adequately sample due to hitting broken concrete at 4 inches (either concrete rubble or remnants of concrete lining).

Ditches 5 is entirely earthen and Ditch 6 includes both earthen and concrete-lined segments. Ditches 5 and 6 are either unvegetated or contain disturbed or ruderal upland vegetation (photographs are in Appendix B, P-10d for Ditch 5 and P-11b, P-11c, and P-11d for Ditch 6).

A swale (Swale 1) immediately south of Ditch 2 originating on the east side of Huffstatler Street and the south side of Fifth Street also supports disturbed (ornamental) habitat in the form of a maintained lawn of St. Augustine grass. The swale did not contain an OHWM or bed or bank features, and therefore, was not mapped and assumed excluded as diffuse stormwater runoff and directional sheetflow in upland under (b)(4).

TABLE 4
POTENTIAL WETLANDS AND NON-WETLAND WATERS OF THE U.S. WITHIN THE SURVEY AREA

Feature	Waters Name	Cowardin Type[1]	Acres[2]	Length (ft)	Width (ft)	Coordinates	Vegetation/Land Cover Type
Non-Wetland Waters							
Rainbow Creek	NWW-1.1	R4SBF	0.04	151	10.5	33.415593, -117.151756	Non-Vegetated Channel
Rainbow Creek	NWW-1.3	R4SBF	0.01	91	5.2	33.415310, -117.152083	Non-Vegetated Channel
Tributary 1	NWW-2.1	R4SBFx	0.02	115	7.8	33.418071, -117.147659	Non-Vegetated Channel
Non-Wetland Waters Subtotal			**0.07**	**357**			
Wetlands							
Rainbow Creek	WW-1.1	R4EM2F	0.02	-	0	33.415507, -117.151889	Emergent Wetland
Rainbow Creek	WW-1.2	R4EM2F	0.01	-	0	33.415340, -117.152048	Emergent Wetland
Rainbow Creek	WW-1.3	PFOF	0.01	-	0	33.415300, -117.152150	Riparian Forest
Rainbow Creek	WW-1.4	PFOF	0.03	-	0	33.415250, -117.152088	Riparian Forest
Tributary 1	WW-2.1	R4EM2Fr	0.05	112	17.6	33.418071, -117.147937	Emergent Wetland
Tributary 1	WW-2.2	PUBFr	0.03	-	0	33.418105, -117.147502	Disturbed Wetland
Tributary 1	WW-2.3	PUBFr	0.02	-	0	33.418060, -117.147571	Disturbed Wetland
Wetland Waters Subtotal			**0.15**	**112**			
Total Wetland and Non-Wetland Waters			**0.22**	**469**			
Non-Jurisdictional Waters							
Ditch 1	D-1.01	R4SBArx	0.06	348	8	33.414532, -117.15203	Developed (concrete ditch)
Ditch 1	D-1.02	R4SBAx	0.01	49	4.9	33.41374, -117.152023	Disturbed (earthen ditch)
Ditch 1	D-1.03	R4SBArx	0.01	67	5	33.413492, -117.15202	Developed (concrete ditch)
Ditch 1	D-1.04	R4SBArx	0.01	92	5	33.413141, -117.152019	Developed (concrete ditch)
Ditch 1	D-1.05	R4SBAx	0.01	106	5	33.412568, -117.152007	Disturbed (earthen ditch)
Ditch 1	D-1.06	R4SBAx	0.01	82	5	33.412209, -117.152008	Disturbed (earthen ditch)
Ditch 1	D-1.07	R4SBAx	0.01	98	5	33.411268, -117.151991	Disturbed (earthen ditch)
Ditch 1	D-1.08	R4SBAx	0.01	84	5	33.411519, -117.151996	Disturbed (earthen ditch)
Ditch 1	D-1.09	R4SBArx	0.01	89	5	33.412834, -117.152011	Developed (concrete ditch)
Ditch 1	D-1.10	R4SBAx	0.01	94	5	33.411899, -117.152003	Disturbed (earthen ditch)

Feature	Waters Name	Cowardin Type[1]	Acres[2]	Length (ft)	Width (ft)	Coordinates	Vegetation/Land Cover Type
Ditch 1	D-1.11	R4SBA	0.00	15	5.9	33.415247, -117.152037	Disturbed (earthen ditch)
Ditch 2	D-2.1	R4SBArx	0.04	368	5	33.414503, -117.151923	Developed (concrete ditch)
Ditch 2	D-2.2	R4SBAx	0.01	71	4.9	33.415318, -117.151922	Disturbed (earthen ditch)
Ditch 3	D-3.1	R4SBArx	0.05	510	4	33.413981, -117.150605	Developed (concrete ditch)
Ditch 3	D-3.2	R4SBArx	0.03	332	4	33.413987, -117.149161	Developed (concrete ditch)
Ditch 3	D-3.3	R4SBArx	0.00	40	4	33.413989, -117.148501	Developed (concrete ditch)
Ditch 3	D-3.4	R4SBArx	0.03	295	4	33.414059, -117.147952	Developed (concrete ditch)
Ditch 4	D-4.1	R4SBAx	0.01	106	0.5	33.419383, -117.152183	Disturbed (earthen ditch)
Ditch 4	D-4.2	R4SBAx	0.05	614	2.8	33.418456, -117.152036	Disturbed (earthen ditch)
Ditch 5	D-5.1	R4SBAx	0.01	45	7.8	33.418173, -117.14782	Disturbed (earthen ditch)
Ditch 5	D-5.2	R4SBAx	0.03	199	6.2	33.41879, -117.147799	Disturbed (earthen ditch)
Ditch 5	D-5.3	R4SBAx	0.02	129	5.2	33.419322, -117.147805	Disturbed (earthen ditch)
Ditch 5	D-5.4	R4SBAx	0.03	220	5.8	33.419837, -117.147811	Disturbed (earthen ditch)
Ditch 6	D-6.1	R4SBAx	0.01	96	4	33.428121, -117.141438	Disturbed (earthen ditch)
Ditch 6	D-6.2	R4SBAx	0.01	113	3.1	33.427744, -117.141597	Disturbed (earthen ditch)
Ditch 6	D-6.3	R4SBArx	0.02	313	2.4	33.427327, -117.141757	Developed (concrete ditch)
Ditch 6	D-6.4	R4SBArx	0.13	69	79.8	33.426097, -117.142087	Developed (concrete ditch)
Ditch 6	D-6.5	R4SBAx	0.03	713	1.7	33.424456, -117.142704	Disturbed (earthen ditch)
Ditch 6	D-6.6	R4SBAx	0.01	138	1.6	33.423951, -117.14308	Disturbed (earthen ditch)
Excluded Features Subtotal			**0.65**	**5,495**			

Source: ESA 2020

1 Cowardin Type – PFO = Palustrine forested; PSS = Palustrine scrub shrub; PEM = Palustrine emergent; R4SB = Riverine intermittent streambed; A = temporarily flooded; F = semipermanently flooded; r = artificial; x = excavated 1.

2 Totals may not sum exactly due to rounding.

5.2 Potential Waters of the State

Waters of the state subject to CWA Section 401 are summarized in **Table 5** below and depicted in **Figures 8a-c**. All waters of the U.S. described in Table 5-2 above fall within the CWA Section 401 authority of the RWQCB and are considered waters of the state. Excluded features under the NWPR may be considered waters of the state subject to RWQCB authority under the Porter-Cologne Water Quality Control Act. All federal wetlands were also considered state wetlands. Intermittent, non-vegetated stream channel is included in Table 5-3 as stream channel, but is also assumed to meet the state wetland definition due to the presence of hydric soils and wetland hydrology. Wetland determination sample points were taken within ditches where hydrophytic vegetation was present, but these samples did not meet criteria for state wetlands due to not meeting the prevalence or dominance criteria for hydrophytic vegetation, and/or a lack of hydric soils indicators.

Roadside ditches are potential Waters of the State; however, the Regional Water Quality Control Board indicated in a site visit on December 3, 2020, that they do not intend to regulate these features within the survey area. Therefore, ditches (Ditches 1 through 6) are not included as potential waters of the state for the purpose of this project-specific delineation. A swale immediately south of Ditch 2 originating on the east side of Huffstatler Street and the south side of Fifth Street did not contain an OHWM, and therefore, was not mapped.

Riparian zone waters of the state (outer flood extent and riparian habitat adjacent to the stream channels) associated with Rainbow Creek and Tributary 1, were mapped to the top of flood bank.

TABLE 5
WETLANDS AND WATERS OF THE STATE[1]

Aquatic Resource Type	Acres	Linear Feet
Riparian Zone	0.17	-
Stream Channel	0.07	357
Wetland	0.15	112
Total[2]	**0.39**	**469**

1 Ditches and culverts are not included
2 Totals may not sum exactly due to rounding.

5.3 Potential CDFW Resources

Features potentially subject to regulation under FGC Section 1602 are summarized in **Table 6** and shown in **Figures 9a-b**. Potential CDFW resources included all waters of the state described above associated with Rainbow Creek and Tributary 1, plus a grove of eucalyptus woodland riparian habitat adjacent to Rainbow Creek.

Ditches within the survey area did not appear to be relocated streams, carry flow diversions from streams, or contain sensitive fish or wildlife resources and CDFW indicated in an email dated November 30, 2020, that the ditches within the survey area would not be considered streams subject to FGC Section 1602.

Under FGC Section 1602, notification to CDFW is required for any activity that would divert or obstruct the natural flow of any river, stream, or lake; change the bed, channel, or bank of any river, stream, or lake; use material from any river, stream, or lake; or deposit or dispose of material into any river, stream, or lake. "Stream" is not defined specific to FGC Section 1602 and the interpreted definition, as applied by CDFW, has varied and can include ditches.

TABLE 6
CDFW RIPARIAN RESOURCES[1]

Vegetation Community/Land Cover Type	Acres	Linear Feet
Developed/Disturbed	0.07	0
Disturbed Wetland	0.04	0
Emergent Wetland	0.07	112
Eucalyptus Woodland	0.46	0
Non-Vegetated Channel	0.07	357
Riparian Forest	0.10	0
Total[2]	**0.82**	**469**

1 Ditches and culverts are not included
2 Totals may not sum exactly due to rounding.

CHAPTER 6
Project Information and Impacts Discussion

Regulated activities affecting jurisdictional aquatic resources may require regulatory agency notifications and/or approvals. While the extent of aquatic resources and interpretation of regulated activities is determined by the regulatory agencies, the information below is provided as a discussion of the survey results and to inform project permitting based on the delineation results and impact estimates from the proposed project design.

6.1 Project Purpose

The project purpose is to attain TMDL compliance for nutrients in the Rainbow Creek watershed. Rainbow Creek was placed on the 303(d) list of "water quality limited" water bodies in 1996 because data indicated that beneficial uses in the creek were impaired. Nutrient concentrations in Rainbow Creek did not meet the objective for nitrates in a municipal supply or the numeric goals for biostimulatory substances (total nitrogen and total phosphorus) contained in the RWQCB, Water Quality Control Plan for the San Diego Basin (9) (Basin Plan). Elevated nutrient concentrations have caused excessive algal growth in portions of the creek.

6.2 Project Description

The project would install structural BMPs in the form of subsurface wetland channels and pre-treatment channels to help attain Total Maximum Daily Load (TMDL) compliance for nutrients in the Rainbow Creek watershed, which is located in the unincorporated community of Rainbow in northern San Diego County. Multiple MS4 outfalls receive runoff with high nutrient loads from adjacent land uses and discharge directly into Rainbow Creek, which converges with the Santa Margarita River. The existing concrete-lined and earthen roadside ditches would be converted into subsurface wetland channels that would filter and treat stormwater runoff. Adjacent to the subsurface wetland channels would be pre-treatment channels that would remove sediment from the surface water prior to flowing into the subsurface wetland channels. Additional improvements include driveway reconstruction, new sidewalk, and curb and gutter in deficient areas.

The project is located within the survey area along portions of Fifth Street, Huffstatler Street, and Rainbow Valley Boulevard between the road shoulder and adjacent residential or commercial developments, and consists of Sites 2, 3, 4, and 5.

Six facilities under the County's Regional General Permit-53 (RGP-53) permit program are within the project impact area and are subject to maintenance by DPW. The six maintained

facilities are numbered; Facility 57-015 is the existing 5-foot wide concrete-lined channel along the north side of Fifth Street; Facilities 57-110, 57-016, and 57-017 are the roadside ditches along Huffstatler Street; and Facilities 57-012 and 57-013 are the roadside ditches along Rainbow Valley Boulevard. County DPW maintains these facilities by removing sediment, vegetation, and debris. The total quantity of cut for the project is approximately 11,000 cubic yards and the total quantity of fill is approximately 4,300 cubic yards. Construction is anticipated to last approximately 8 months. Total project impacts, including impacts within upland areas, are summarized in **Table 7**.

TABLE 7
PROJECT IMPACT ACREAGES

Location	Temporary	Permanent	Total
Site 2	0.45	2.23	2.68
Site 3	0.15	0.65	0.81
Site 4	0.29	1.52	1.80
Site 5	0.16	0.79	0.95
Total[1]	1.05	5.18	6.24

1 Totals may not sum exactly due to rounding.

6.2.1 Site 2

The two proposed subsurface wetland channels, which are currently functioning as maintained roadside ditches at Site 2, are identified as Sites 2A and 2B. Site 2A is located along the west side of Huffstatler Street, south of Fifth Street, and would include improvements for a lined subsurface wetland channel with a pre-treatment channel. Site 2B is located along the north side of Fifth Street between Rainbow Valley Boulevard and extends past Huffstatler Street and would include improvements for a lined subsurface wetland channel with a pre-treatment channel. Site 2C is located south of the intersection of Fifth Street and Huffstatler Street and would include sidewalk, curb, and gutter improvements. Site 2D is located within Rainbow County Park and would include swale improvements.

6.2.2 Site 3

Site 3 is located south of Chica Road along the west side of Rainbow Valley Boulevard and would include improvements for lined subsurface wetland channels with a pre-treatment channel.

6.2.3 Site 4

Site 4 is located along the west side of Rainbow Valley Boulevard between Rainbow Valley Boulevard West and Rainbow Creek Road and would include improvements for lined and unlined subsurface wetland channels.

6.2.4 Site 5

Site 5 is located along Huffstatler Street, approximately 335 feet south of Second Street to approximately 625 feet north of Second Street and would include improvements for lined subsurface wetland channels with a pre-treatment channel.

6.3 Project Impacts to Aquatic Resources

Based on the proposed project design, which was modified to avoid impacts to aquatic resources, and correspondence with the regulatory agencies indicating they would not regulate impacts within ditches in the survey area, no permits are anticipated for the project if the regulatory agencies concur with the results of this aquatic resources delineation. The results of this delineation report are based on the assumption that Rainbow Creek passes below Huffstatler Street under normal, maintained conditions due to the presence of culverts. To avoid impacts to Rainbow Creek, a water of the U.S. and State and stream subject to FGC Section 1602, the culverts must be functioning at the time of project implementation so that Rainbow Creek is not flowing over Huffstatler Street and within the work area.

6.3.1 Waters of the U.S.

No project impacts to potential waters of the U.S. are anticipated, as depicted in **Figures 10a-c**. Temporary and permanent impact within Huffstatler Street would avoid where Rainbow Creek is assumed to normally pass below Huffstatler Street via underground culverts. Impacts within Huffstatler Street would occur within the paved roadway above the culverts and would not affect the culverts. Within Site 3, the project would avoid impacts to Tributary 1. All other aquatic resources within the project area consist of ditches that are considered (b)(5) non-jurisdictional waters and excluded from CWA regulation under the NWPR.

6.3.2 Waters of the State

No project impacts to waters of the state are anticipated, as depicted in **Figures 11a-c.** As described above, Rainbow creek is assumed to pass below Huffstatler Street via culverts that would not be impacted by the project and all project impacts at Rainbow Creek would remain outside of waters of the state and within the paved roadway. Within Site 3, the project would avoid impacts to all waters of the State at Tributary 1. Roadside ditches are potential Waters of the State; however, the Regional Water Quality Control Board indicated in a site visit on December 3, 2020, that they do not intend to regulate these features within the survey area.

6.3.3 CDFW Resources

No project impacts to CDFW streambed are anticipated, as depicted in **Figures 12a-b**. Informal confirmation from CDFW is recommended for concurrence that no formal notification of Lake or Streambed Alteration is required because project activities are not expected substantially alter the bed or bank of Rainbow Creek, which is assumed to flow beneath Huffstatler Street under normal conditions, and the project will not deposit debris where they may pass into Rainbow Creek.

Within Site 3, the project would avoid impacts to the CDFW bed and banks of Tributary 1. CDFW indicated in an email dated November 30, 2020, that the ditches within the survey area would not be considered streams subject to FGC Section 1602.

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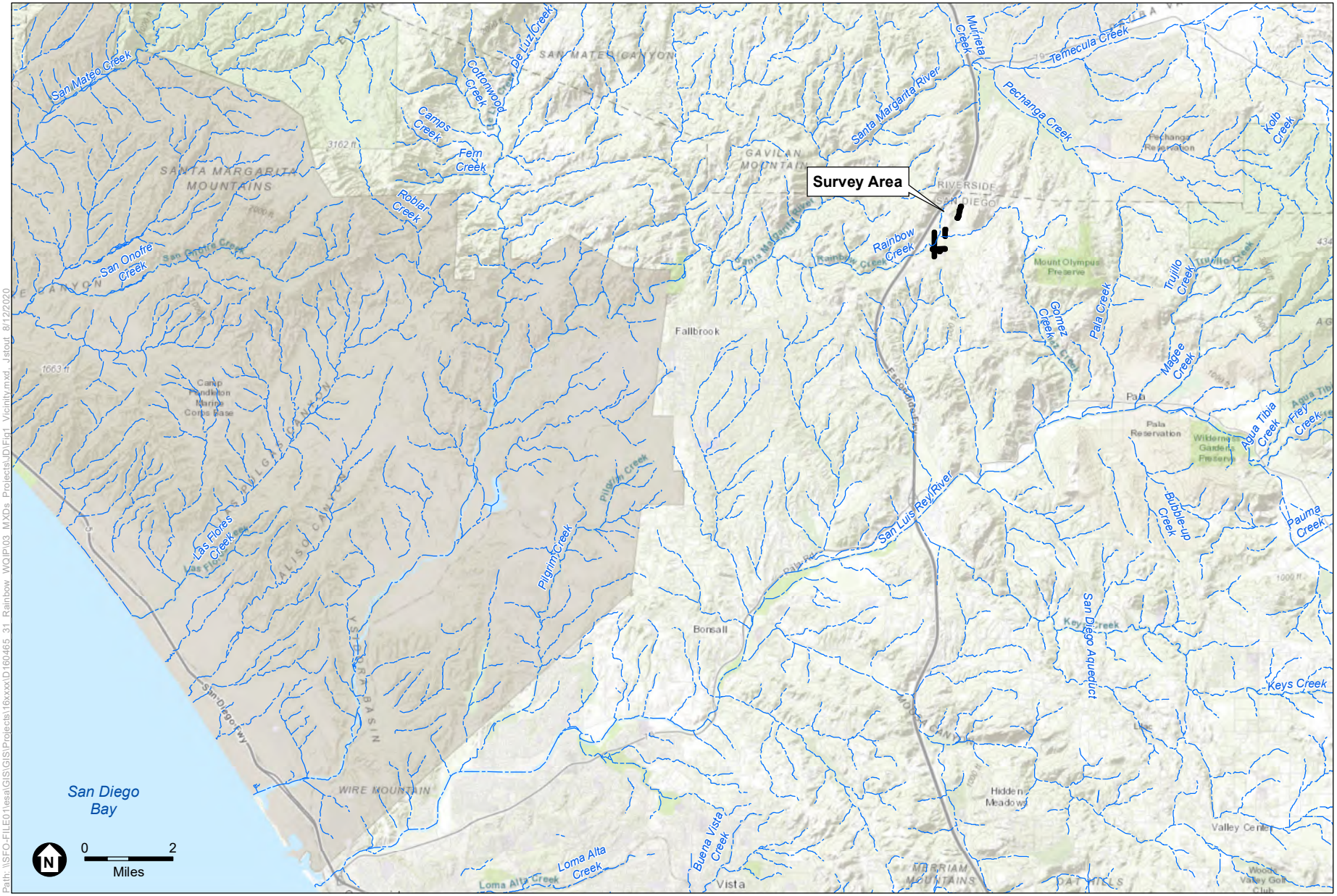
U.S. Geological Survey (USGS). 2020. National Map Viewer. Accessed in July 2020.

Figures



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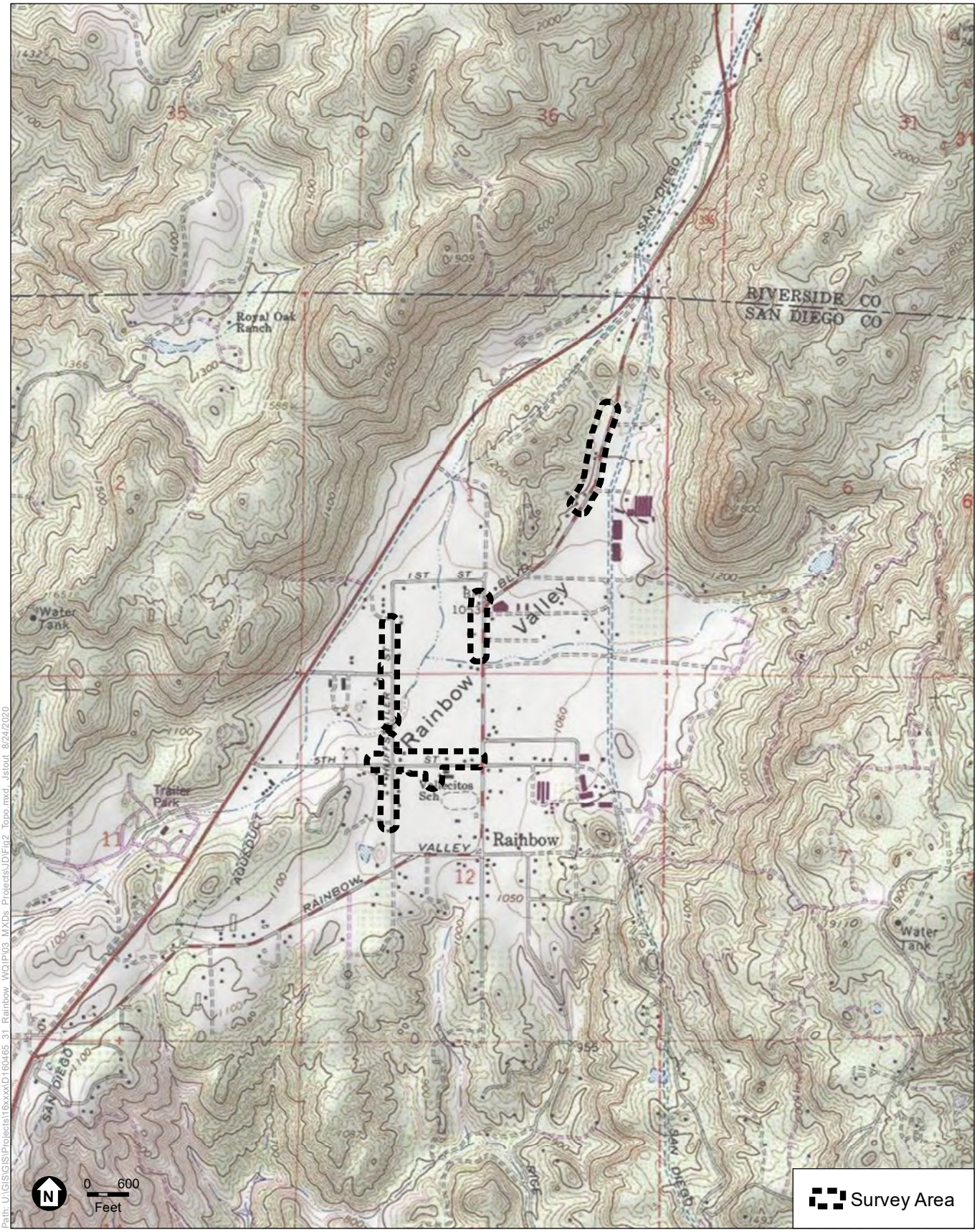
SOURCE: ESRI World Topographici Map

Rainbow WQIP

Figure 1
Vicinity Map

ESA



Path: U:\GIS\GIS\Projects\16xxxx\D160465_31_Rainbow_WQIP\03_MXDs_Projects\JD\Fig2_Topo.mxd Jstout 8/24/2020

SOURCE: USGS 7.5' Temecula Topoquad 2016

Rainbow WQIP

Figure 2
USGS 7.5' Quad Topo

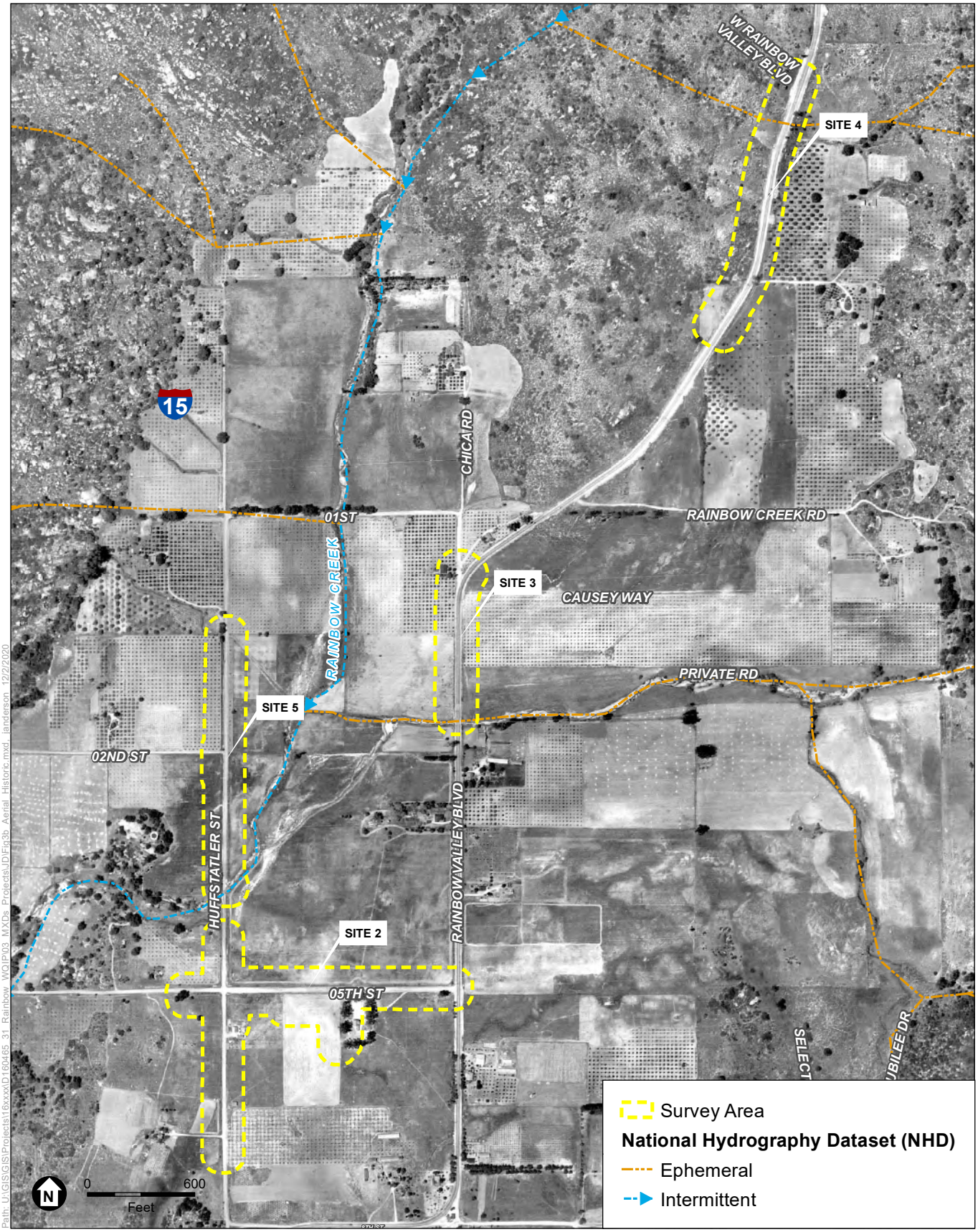
ESA

SOURCE: ESRI 2019; NHD 2020.

Rainbow WQIP

Figure 3a
Aerial and NHD

ESA

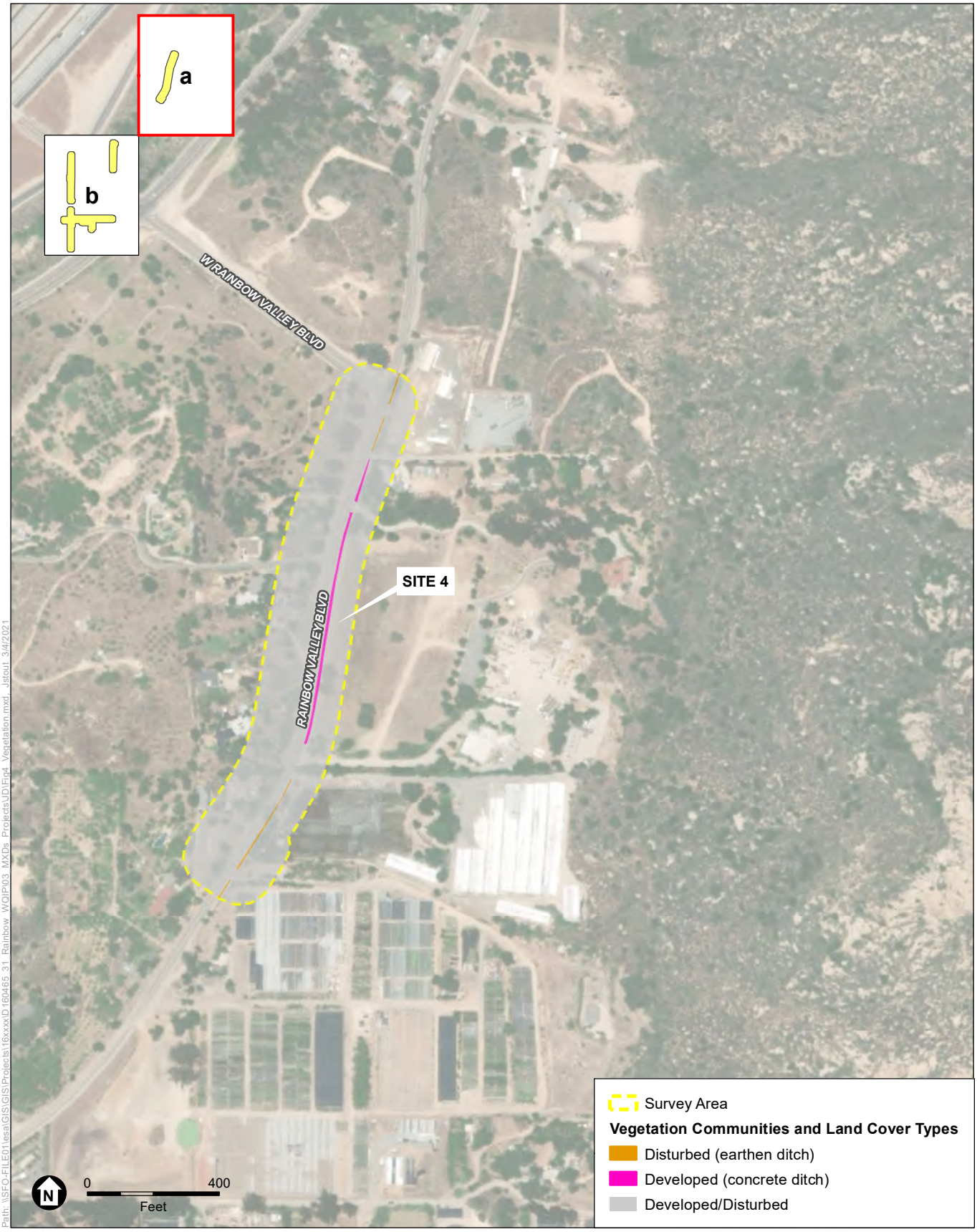


SOURCE: Historic Aerials, 2020; NHD 2020.

Rainbow WQIP

Figure 3b
Historic Aerial (1938)

ESA

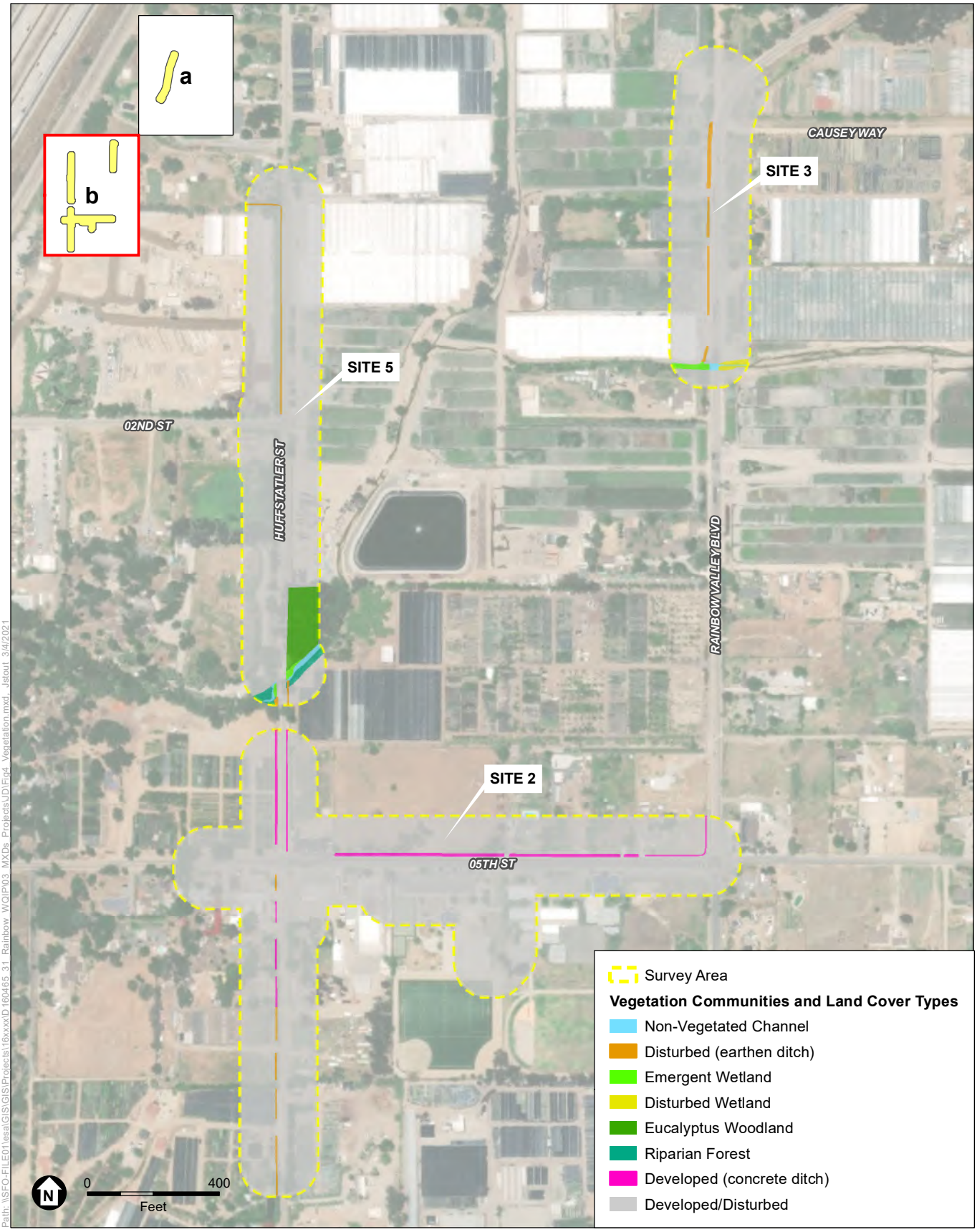


SOURCE: ESRI, 2019

Rainbow WQIP

Figure 4a
Vegetation Communities and Land Cover Types

ESA

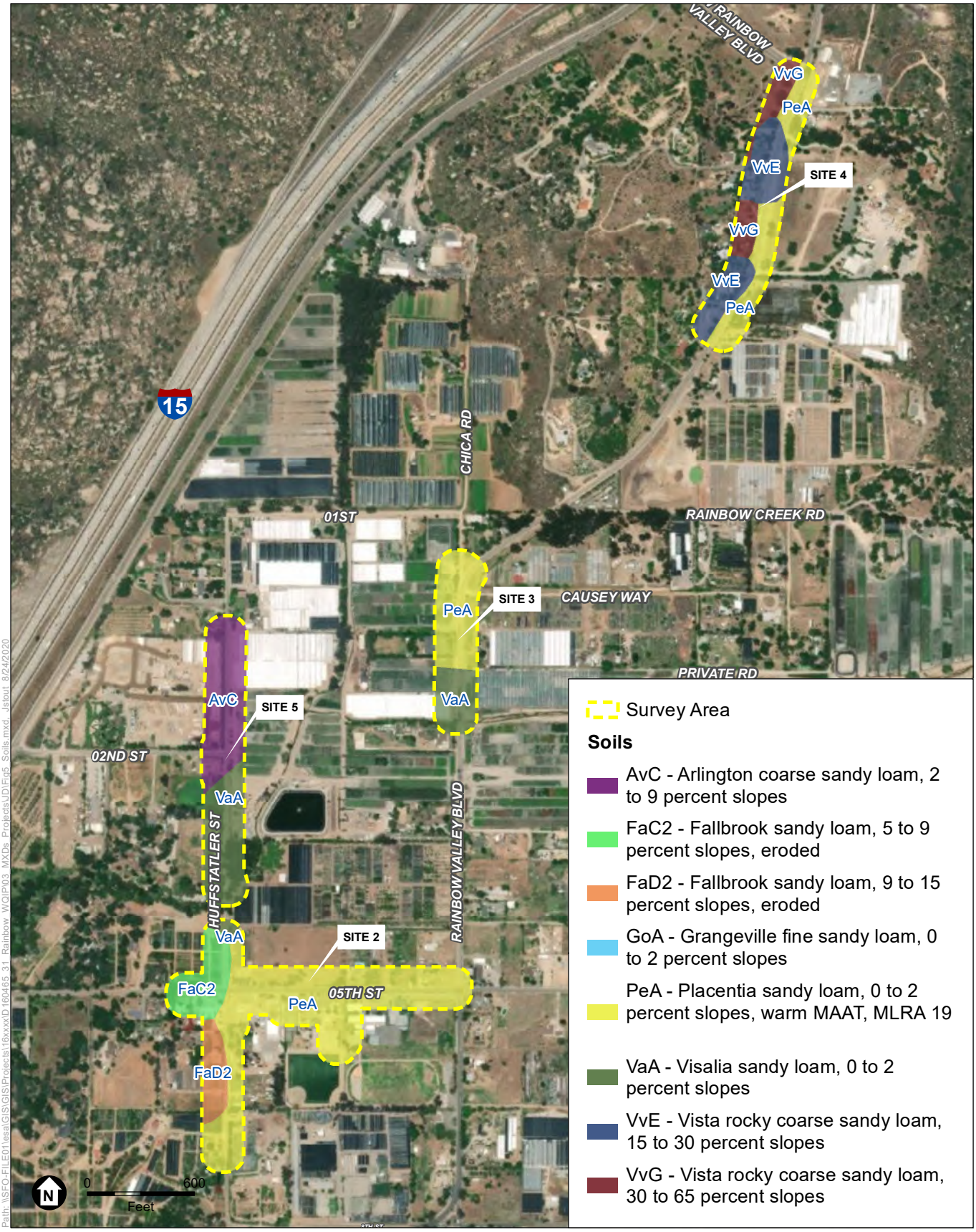


SOURCE: ESRI, 2019

Rainbow WQIP

Figure 4b
Vegetation Communities and Land Cover Types

ESA



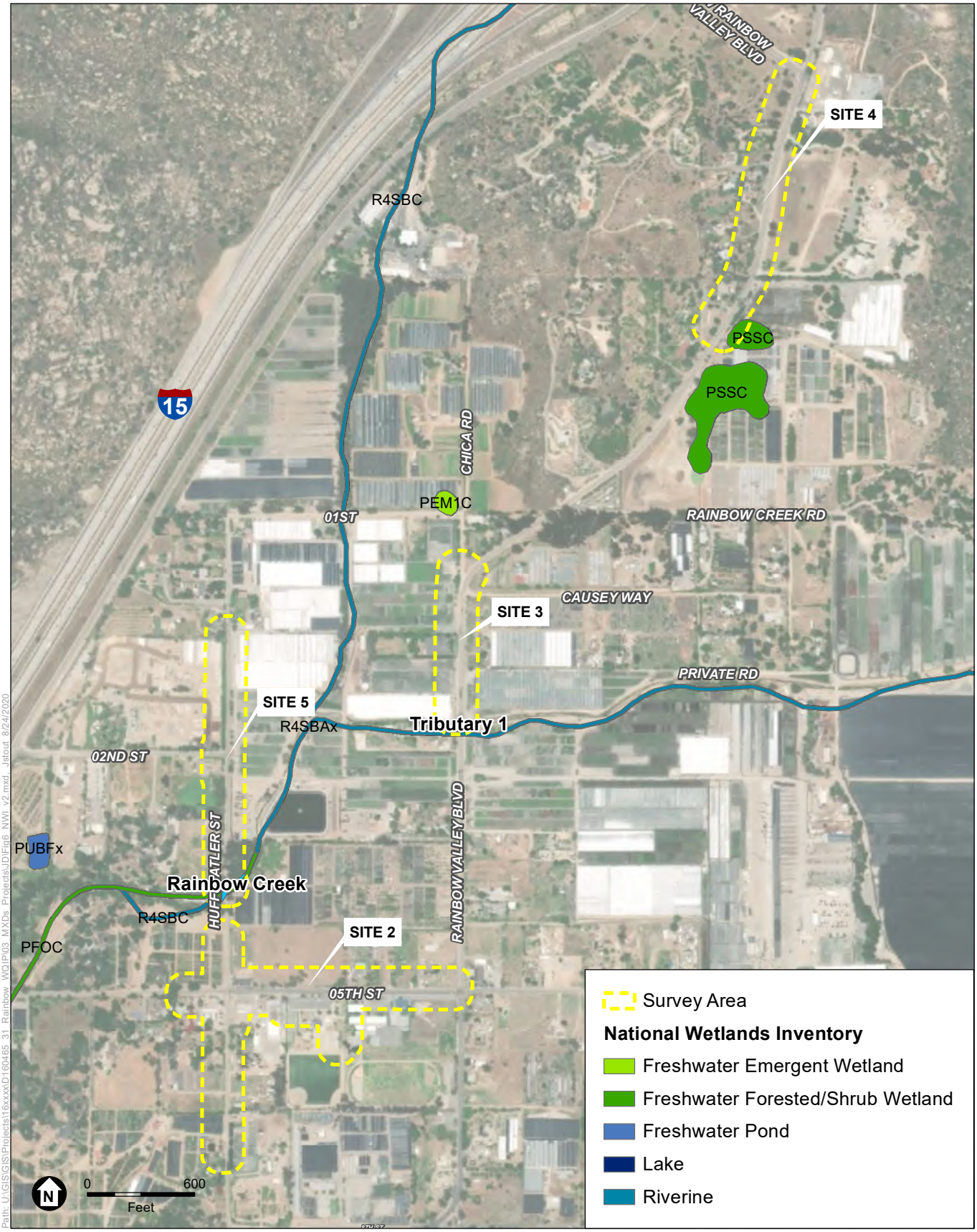
Path: \\SFO-FILE01\esa\GIS\GIS\Projects\16xxxx\D160465.31 Rainbow_WQIP\03_MXDs_Projects\UD\Fig5_Soils.mxd Jstout 8/24/2020

SOURCE: ESRI 2019; USDA 2020.

Rainbow WQIP

Figure 5
Soils

ESA



SOURCE: ESRI, 2019; NWI 2020; NHD 2020

Rainbow WQIP

Figure 6
National Wetlands Inventory

ESA

Path: \\SFO-FILE01\esa\GIS\GIS\Projects\16xxx\D160465.31 Rainbow WQIP\03_MXDs_Projects\JDFig7_WOTUSv2.mxd_Jstout_3/4/2021

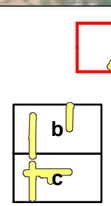
SOURCE: ESRI Imagery, 7/5/2019; ESA, 2020

Coordinate System: US State Plane California Zone VI
Projection: Lambert Conformal Conic
Datum: North American Datum 1983(2011)

National Hydrography Dataset (NHD)
- Ephemeral
- Intermittent

- Survey Area (41.18 acres)
- Map Reference Point

Non-Jurisdictional Waters
- Ditch (0.64 acre)



Rainbow WQIP

Figure 7a
Potential Waters of the U.S.
(1 of 3)

Delineated by: Julie Stout
Mapping by: Jaclyn Anderson
Created on: 8/5/2020

ESA

SOURCE: ESRI Imagery, 7/5/2019; ESA, 2020

Coordinate System: US State Plane California Zone VI
Projection: Lambert Conformal Conic
Datum: North American Datum 1983(2011)

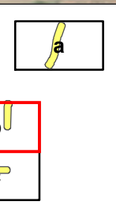
National Hydrography Dataset (NHD)
- Ephemeral
- Intermittent

Survey Area (41.18 acres)
Map Reference Point

Non-Wetland Waters
- Intermittent Stream (0.07 acre)

Wetlands
- Wetlands (0.15 acre)

Non-Jurisdictional Waters
- Ditch (0.64 acre)

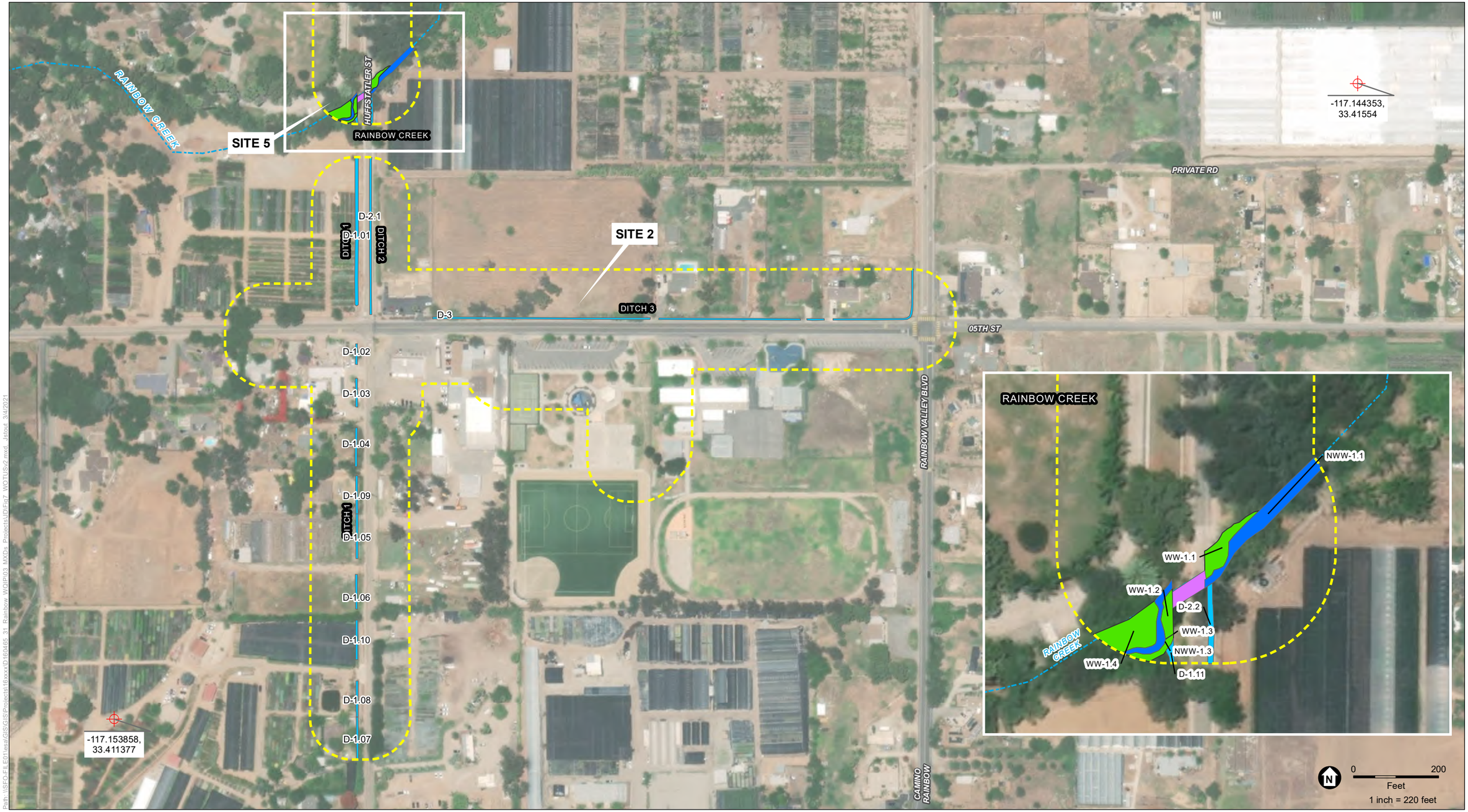


Rainbow WQIP

Figure 7b
Potential Waters of the U.S.
(2 of 3)

Delineated by: Julie Stout
Mapping by: Jaclyn Anderson
Created on: 8/5/2020

ESA



Path: \\SFO-FILE01\esa\GIS\GIS\Projects\16xxxx\D160465 31 Rainbow WQIP\03 MXDs Projects\JD\Fig7 WOTUSv2.mxd, Jstout, 3/4/2021

SOURCE: ESRI Imagery, 7/5/2019; ESA, 2020

Coordinate System: US State Plane California Zone VI
Projection: Lambert Conformal Conic
Datum: North American Datum 1983(2011)

National Hydrography Dataset (NHD)
- Intermittent

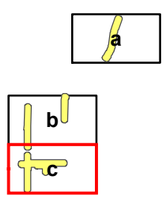
Survey Area (41.18 acres)
Map Reference Point

Non-Wetland Waters
- Intermittent Stream (0.07 acre)

Wetlands
- Wetlands (0.15 acre)

Non-Jurisdictional Waters
- Ditch (0.64 acre)

Waters Not Included
- Culvert



Rainbow WQIP

Figure 7c
Potential Waters of the U.S.
(3 of 3)

Delineated by: Julie Stout
Mapping by: Jaclyn Anderson
Created on: 8/5/2020

ESA

Path: \\SFO-FILE01\esa\GIS\GISProjects\16xxxx\D160465_31 Rainbow WQIP\03 MXDs ProjectsVJD\Fig8_WOTSv2.mxd Jstout 3/3/2021

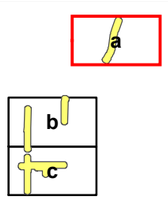
SOURCE: ESRI Imagery, 7/5/2019; ESA, 2020

Coordinate System: US State Plane California Zone VI
Projection: Lambert Conformal Conic
Datum: North American Datum 1983(2011)

National Hydrography Dataset (NHD)
- Ephemeral
- Intermittent

Survey Area (41.18
Map Reference Point

Waters Not Included
- Ditch

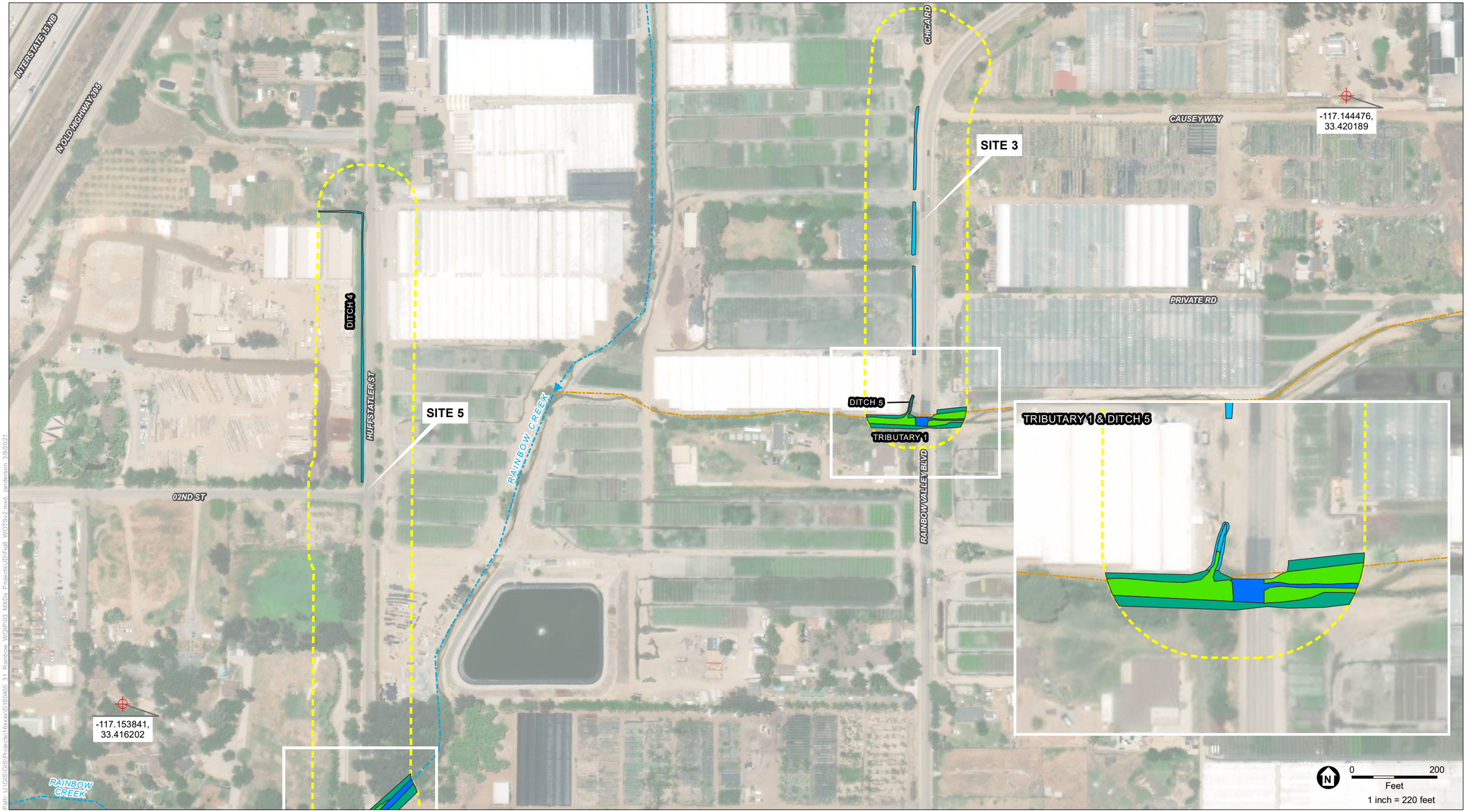


Rainbow WQIP

Figure 8a
Potential Waters of the State
(1 of 3)

Delineated by: Julie Stout
Mapping by: Jaclyn Anderson
Created on: 8/5/2020

ESA



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SOURCE: ESRI Imagery, 7/5/2019; ESA, 2020

Coordinate System: US State Plane California Zone VI
Projection: Lambert Conformal Conic
Datum: North American Datum 1983(2011)

National Hydrography Dataset (NHD)
- Ephemeral
- Intermittent

Survey Area (41.18 acres)
Map Reference Point

Waters of the State and State Wetlands
- Riparian Zone
- Streambed - Intermittent Stream
- Wetlands

Waters Not Included
- Ditch

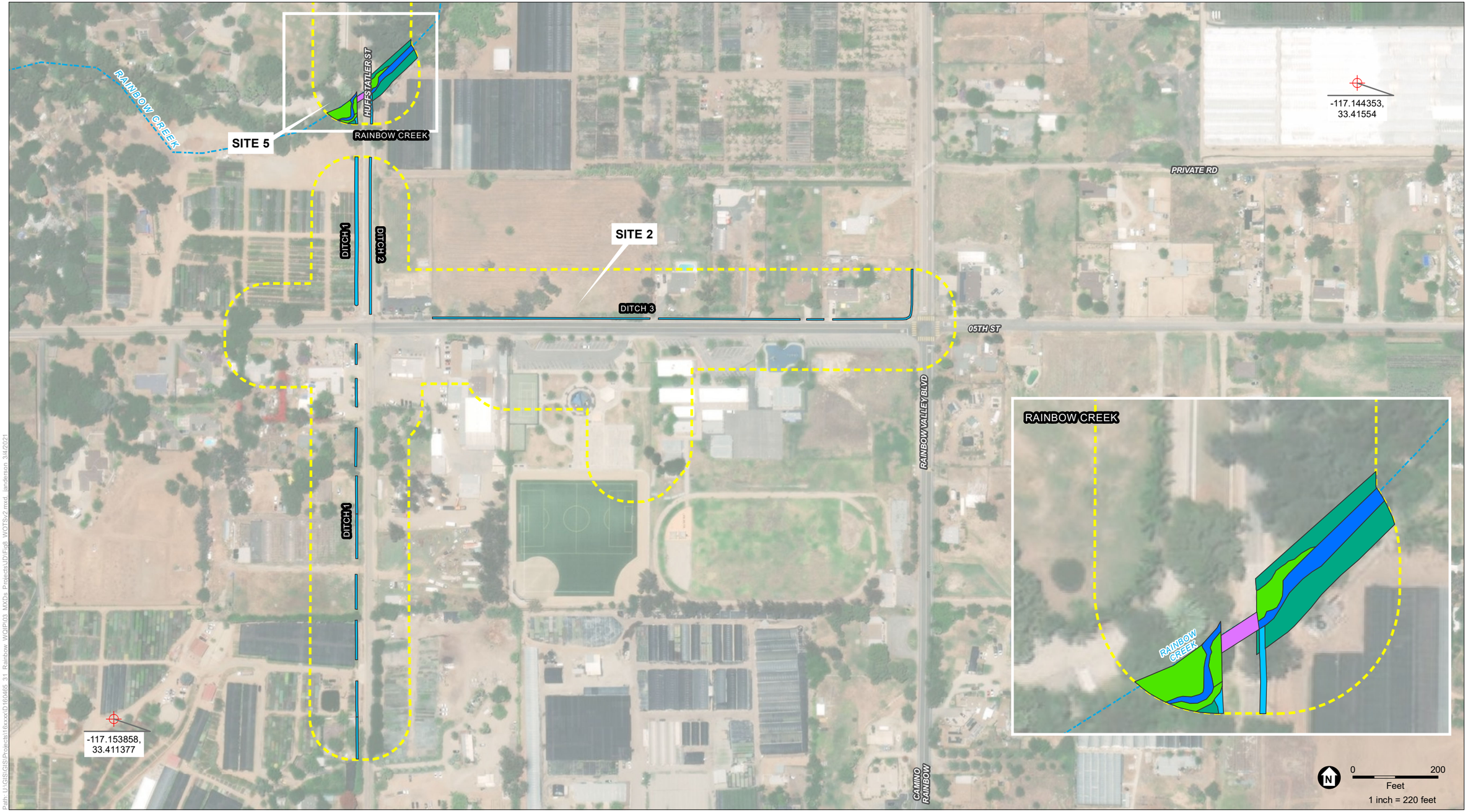
a
b
c

Rainbow WQIP

Figure 8b
Potential Waters of the State
(2 of 3)

Delineated by: Julie Stout
Mapping by: Jaclyn Anderson
Created on: 8/5/2020

ESA



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SOURCE: ESRI Imagery, 7/5/2019; ESA, 2020

Coordinate System: US State Plane California Zone VI
Projection: Lambert Conformal Conic
Datum: North American Datum 1983(2011)

National Hydrography Dataset (NHD)
- Intermittent

- Survey Area (41.18
- Map Reference Point

Waters of the State and State Wetlands
- Riparian Zone
- Streambed - Intermittent Stream
- Wetlands

Waters Not Included
- Culvert Crossing
- Ditch

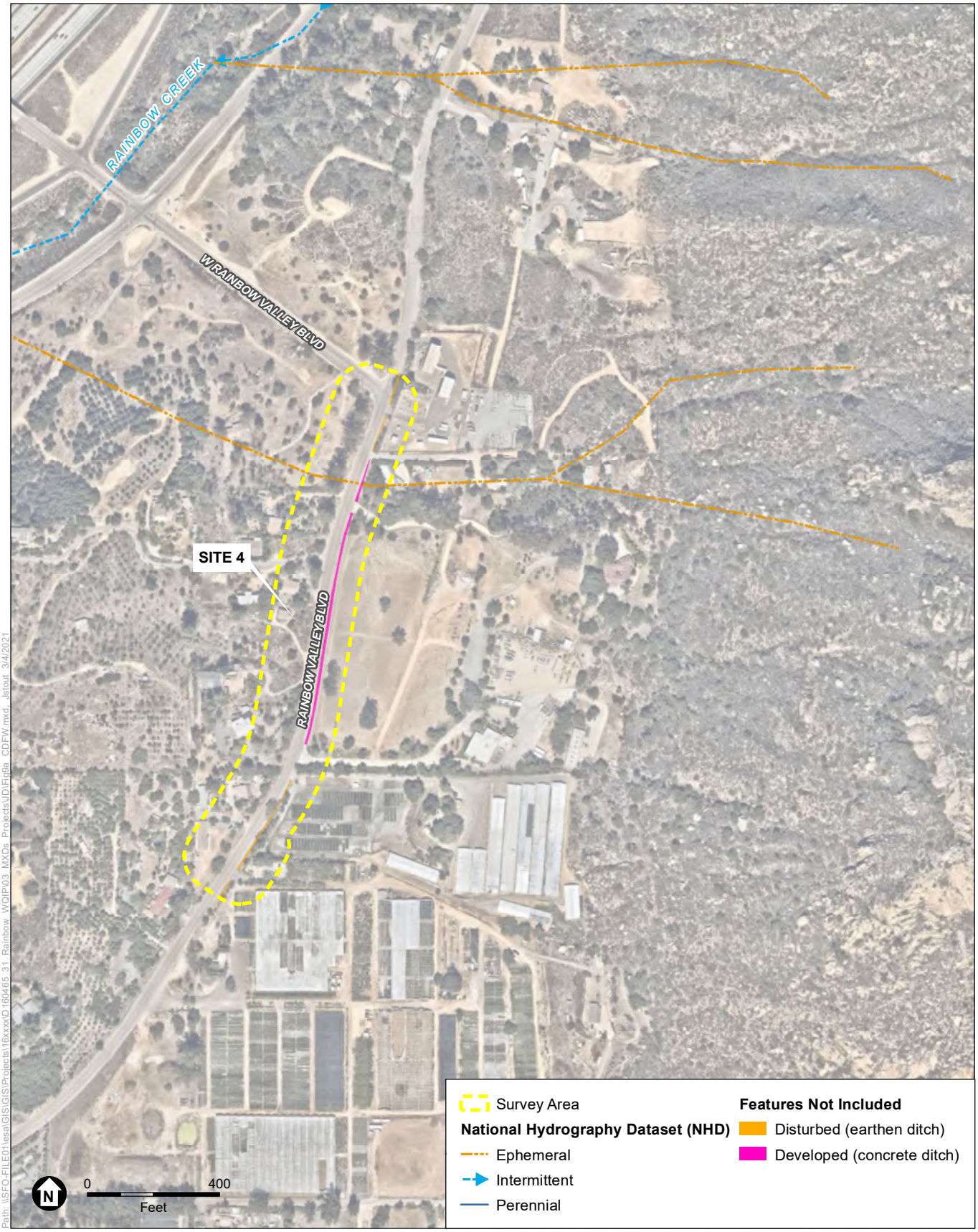
a
b
c

Rainbow WQIP

Figure 8c
Potential Waters of the State
(3 of 3)

Delineated by: Julie Stout
Mapping by: Jaclyn Anderson
Created on: 8/5/2020

ESA

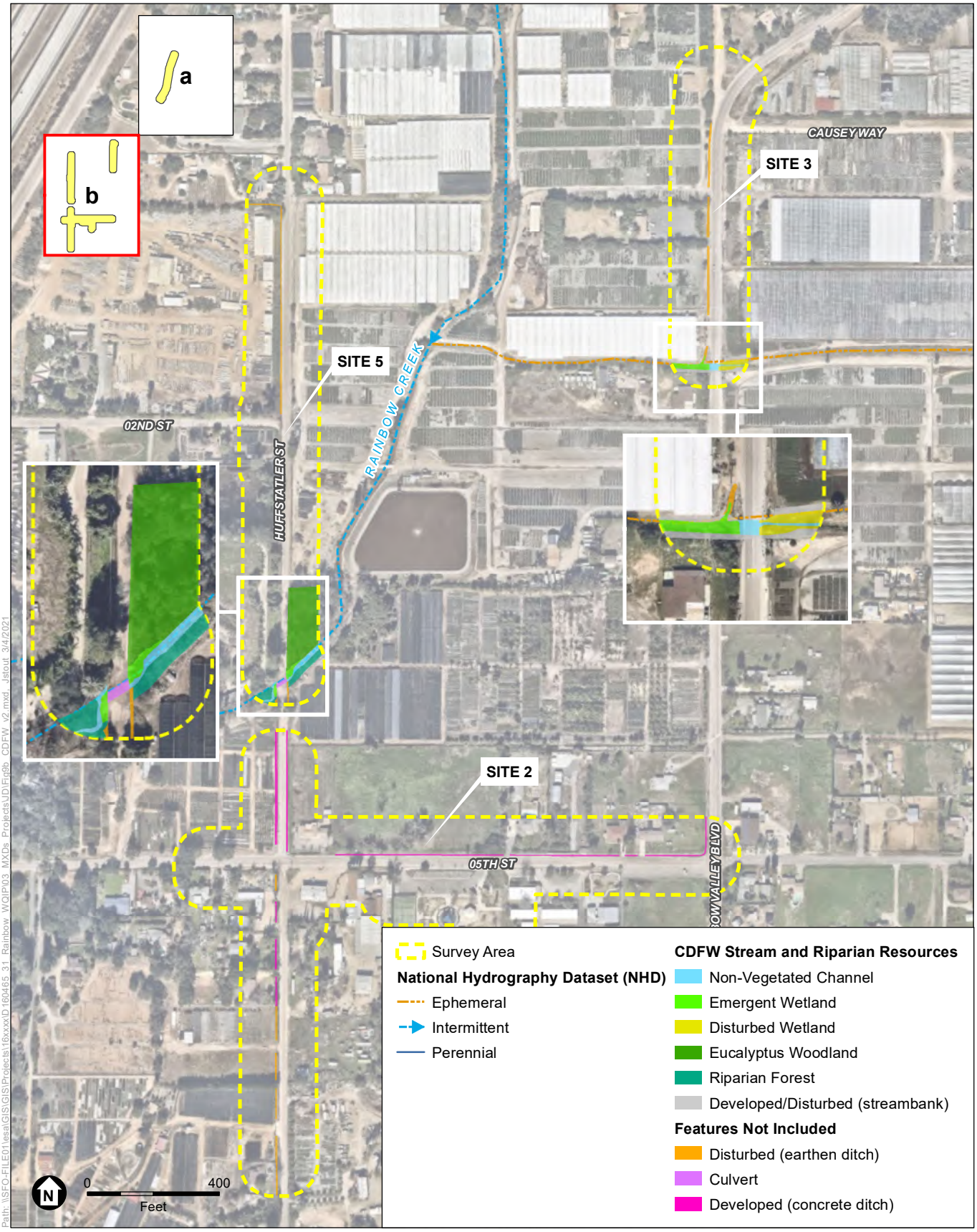


SOURCE: ESRI, 2019

Rainbow WQIP

Figure 9a
CDFW Resources

ESA

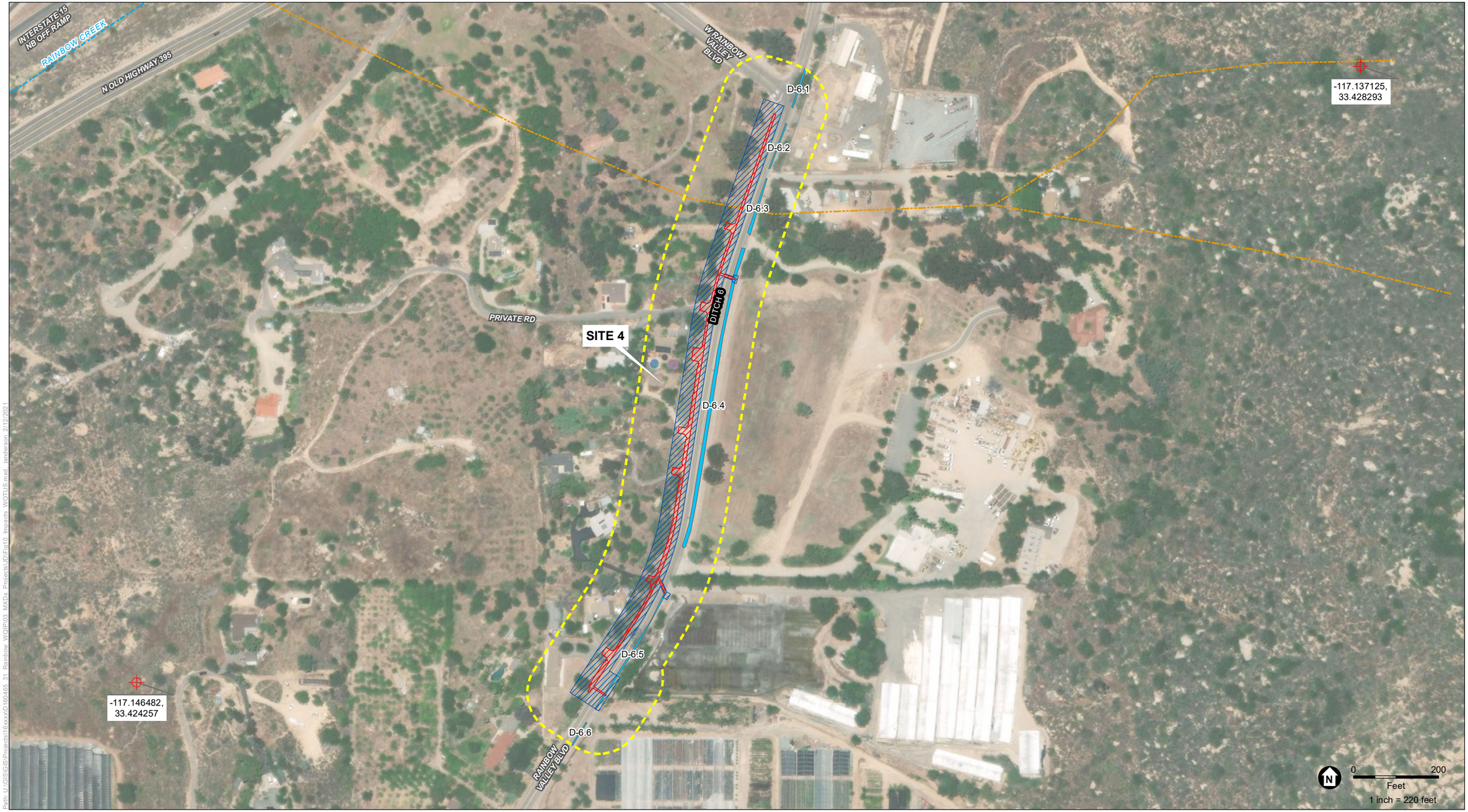


SOURCE: ESRI, 2019

Rainbow WQIP

Figure 9b
CDFW Resources

ESA



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SOURCE: ESRI Imagery, 7/5/2019; ESA, 2020

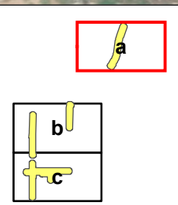
Coordinate System: US State Plane California Zone VI
Projection: Lambert Conformal Conic
Datum: North American Datum 1983(2011)

National Hydrography Dataset (NHD)
- Ephemeral
- Intermittent

Survey Area (41.18 acres)
Map Reference Point

Non-Jurisdictional Waters
- Ditch (0.64 acre)

Impacts
- Permanent Impacts
- Temporary Impacts

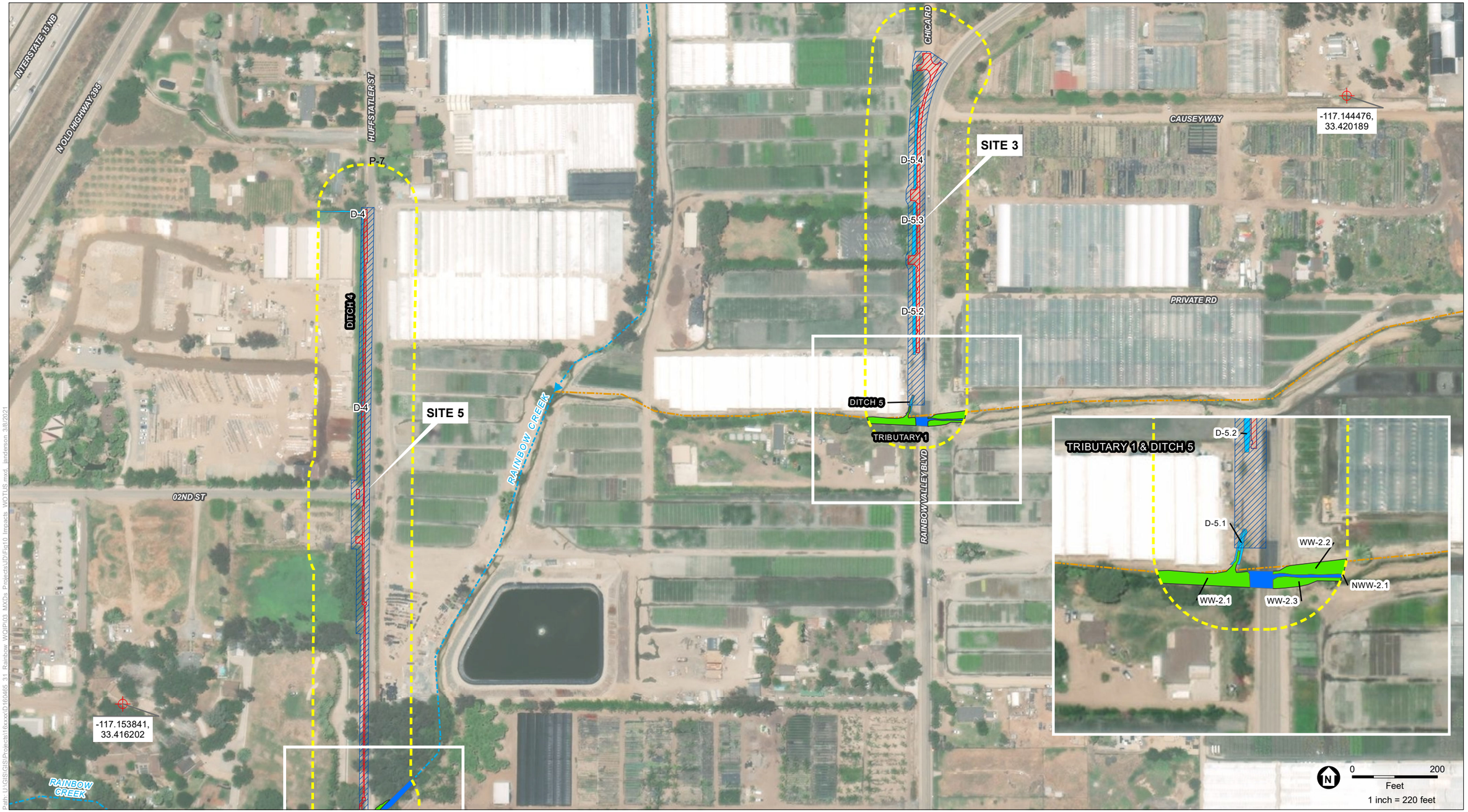


Rainbow WQIP

Figure 10a
Impacts to Potential Waters of the U.S.
(1 of 3)

Delineated by: Julie Stout
Mapping by: Jaclyn Anderson
Created on: 8/5/2020

ESA



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SOURCE: ESRI Imagery, 7/5/2019; ESA, 2020

Coordinate System: US State Plane California Zone VI
Projection: Lambert Conformal Conic
Datum: North American Datum 1983(2011)

National Hydrography Dataset (NHD)
- Ephemeral
- Intermittent

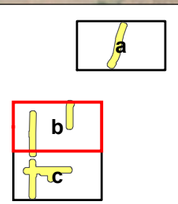
Survey Area (41.18 acres)
Map Reference Point

Non-Wetland Waters
- Intermittent Stream (0.07 acre)

Wetlands
- Wetlands (0.15 acre)

Non-Jurisdictional Waters
- Ditch (0.64 acre)

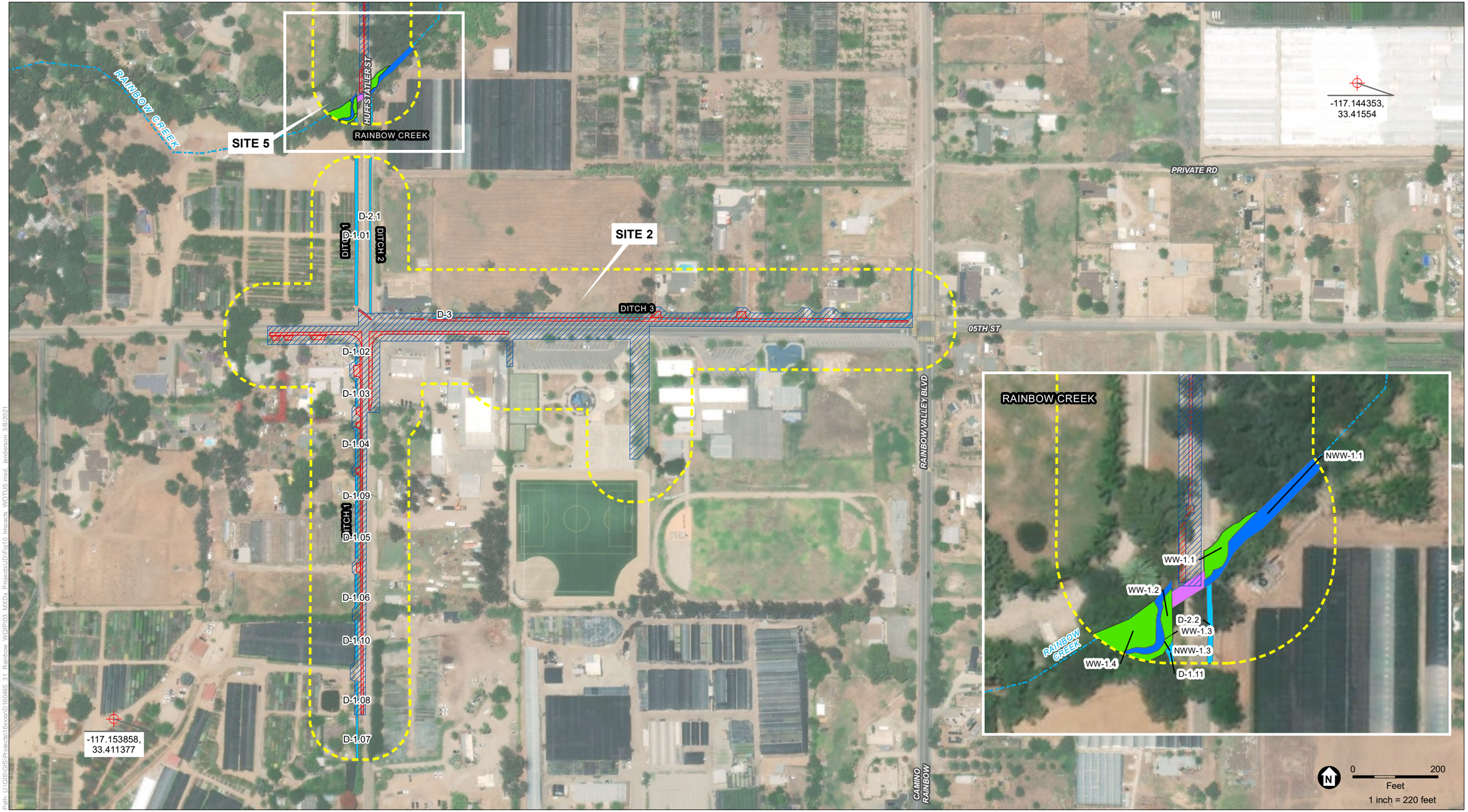
Impacts
- Permanent Impacts
- Temporary Impacts



Rainbow WQIP

Figure 10b
Impacts to Potential Waters of the U.S.
(2 of 3)

Delineated by: Julie Stout
Mapping by: Jaclyn Anderson
Created on: 8/5/2020



Path: U:\GIS\GIS\Projects\16xxxx\D160465_31 Rainbow WQIP\03 MXDs ProjectsUDI\Fig10 Impacts WOTUS.mxd, janderson 3/8/2021

SOURCE: ESRI Imagery, 7/5/2019; ESA, 2020

Coordinate System: US State Plane California Zone VI
Projection: Lambert Conformal Conic
Datum: North American Datum 1983(2011)

National Hydrography Dataset (NHD)
- Intermittent

Survey Area (41.18 acres)
Map Reference Point

Non-Wetland Waters
- Intermittent Stream (0.07 acre)

Wetlands
- Wetlands (0.15 acre)

Non-Jurisdictional Waters
- Ditch (0.64 acre)

Waters Not Included
- Culvert (no impact)

Impacts
- Permanent Impacts
- Temporary Impacts

a
b
c

Rainbow WQIP

Figure 10c
Impacts to Potential Waters of the U.S.
(3 of 3)

Delineated by: Julie Stout
Mapping by: Jaclyn Anderson
Created on: 8/5/2020

ESA

Path: \\SFO-FILE01\esa\GIS\GIS\Projects\16xxxx\D160465_31 Rainbow WQIP\03 MXDs Projects\JD\Fig11_Impacts_WOTS.mxd, JStout, 3/1/2021

SOURCE: ESRI Imagery, 7/5/2019; ESA, 2020

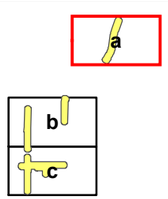
Coordinate System: US State Plane California Zone VI
Projection: Lambert Conformal Conic
Datum: North American Datum 1983(2011)

National Hydrography Dataset (NHD)
- Ephemeral
- Intermittent

- Survey Area (41.18 acres)
- Map Reference Point

Impacts
- Permanent Impacts
- Temporary Impacts

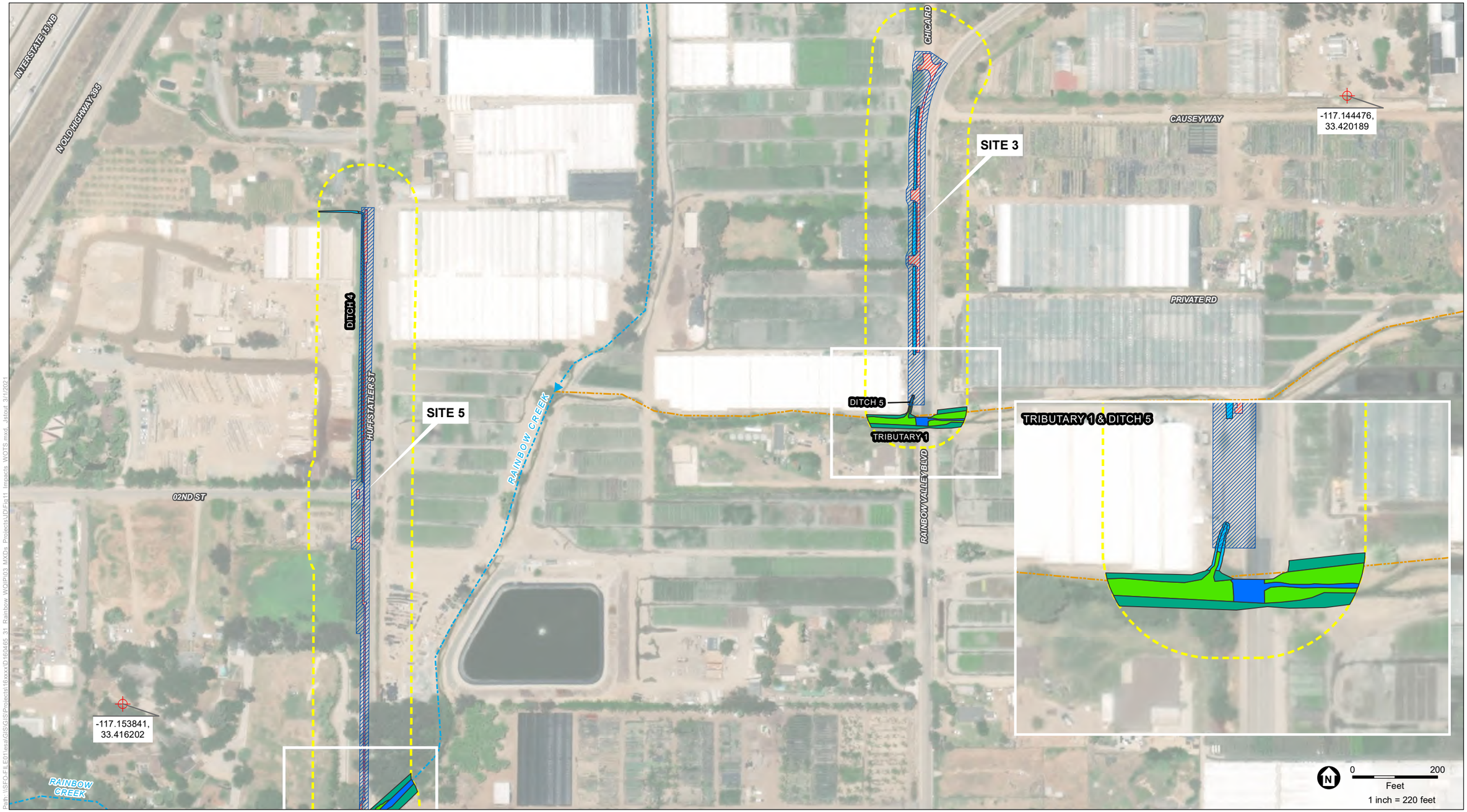
Waters Not Included
- Ditch



Rainbow WQIP

Figure 11a
Impacts to Potential Waters of the State
(1 of 3)

Delineated by: Julie Stout
Mapping by: Jaclyn Anderson
Created on: 8/5/2020



Path: \\SFO-FILE01\esa\GIS\GIS\Projects\16xxxx\D160465.31 Rainbow WQIP\03 MXDs Projects\UD\Fig11 Impacts WOTS.mxd, Jstout, 3/1/2021

SOURCE: ESRI Imagery, 7/5/2019; ESA, 2020

Coordinate System: US State Plane California Zone VI
Projection: Lambert Conformal Conic
Datum: North American Datum 1983(2011)

National Hydrography Dataset (NHD)
- Ephemeral
- Intermittent

Survey Area (41.18 acres)
Map Reference Point

Impacts
- Permanent Impacts
- Temporary Impacts

Waters of the State and State Wetlands
- Riparian Zone
- Streambed - Intermittent Stream
- Wetlands

Waters Not Included
- Ditch

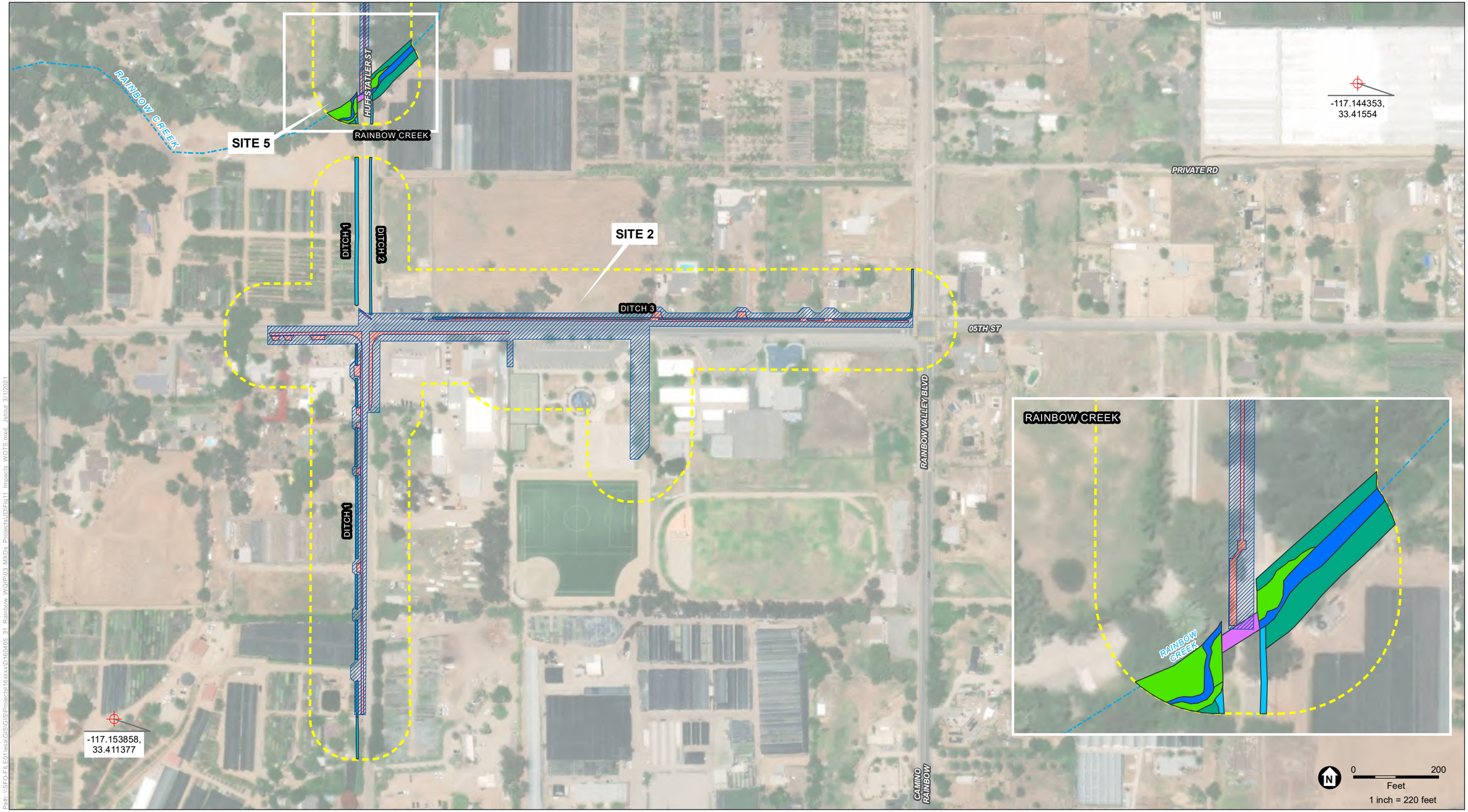
a
b
c

Rainbow WQIP

Figure 11b
Impacts to Potential Waters of the State
(2 of 3)

Delineated by: Julie Stout
Mapping by: Jaclyn Anderson
Created on: 8/5/2020

ESA



Path: \\SFO-FILE01\esa\GIS\GIS\Projects\16xxxx\D160465.31 Rainbow WQIP\03 MXDs Projects\DFig11 Impacts WOTS.mxd Jstout 3/1/2021

SOURCE: ESRI Imagery, 7/5/2019; ESA, 2020

Coordinate System: US State Plane California Zone VI
Projection: Lambert Conformal Conic
Datum: North American Datum 1983(2011)

National Hydrography Dataset (NHD)
- Intermittent

- Survey Area (41.18 acres)
- Map Reference Point

Impacts
- Permanent Impacts
- Temporary Impacts

Waters of the State and State Wetlands
- Riparian Zone
- Streambed - Intermittent Stream
- Wetlands

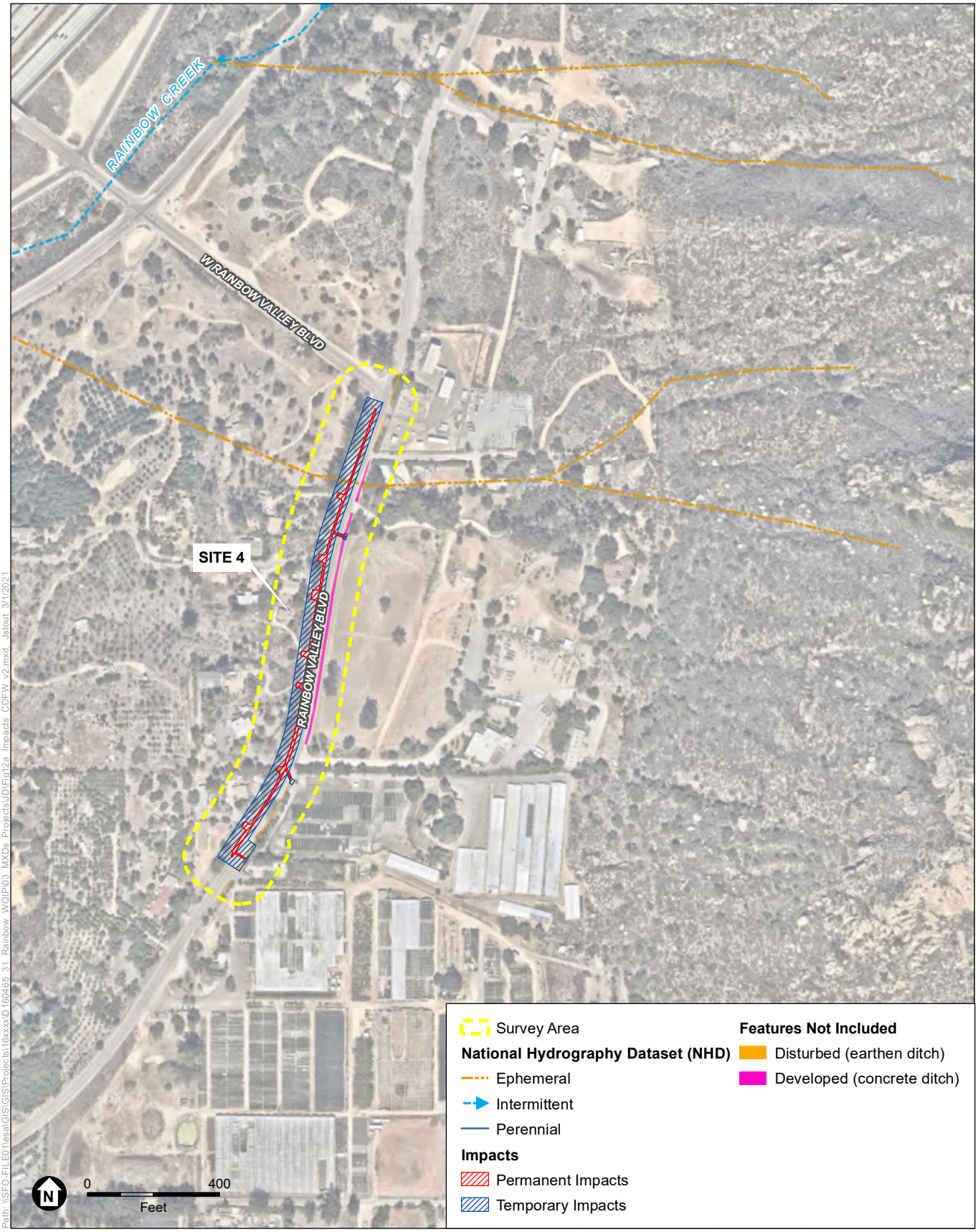
Waters Not Included
- Culvert (no impact)
- Ditch

a
b
c

Rainbow WQIP

Figure 11c
Impacts to Potential Waters of the State
(3 of 3)

Delineated by: Julie Stout
Mapping by: Jaclyn Anderson
Created on: 8/5/2020

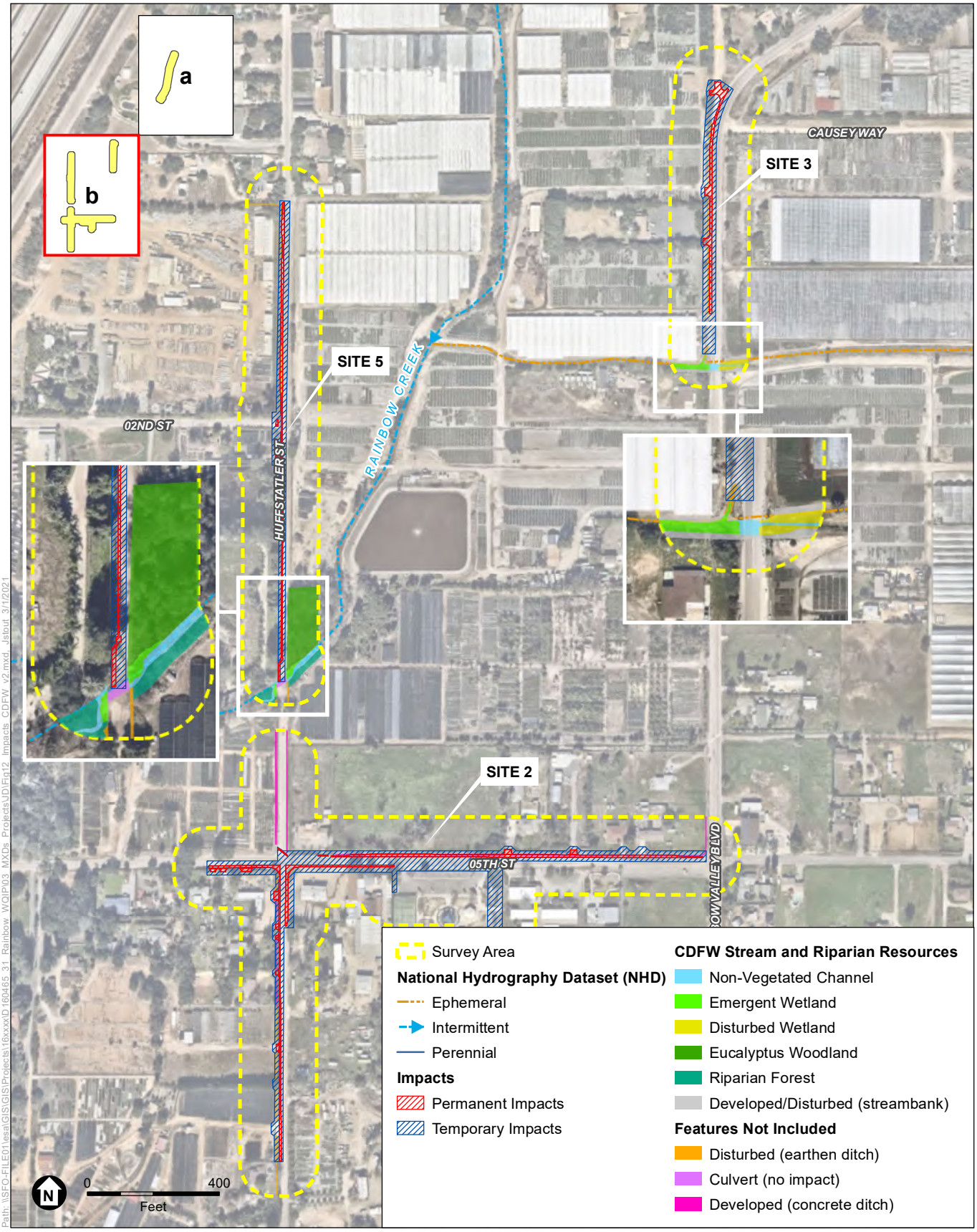


SOURCE: ESRI, 2019

Rainbow WQIP

Figure 12a
Impacts to CDFW Resources

ESA



SOURCE: ESRI, 2019

Rainbow WQIP

Figure 12b
Impacts to CDFW Resources

ESA

Appendix A
Sample Point Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Huffstatler Street and Fifth Street Biofiltration Project | City/County: Fallbrook/San Diego | Sampling Date: 6/13/2019
Applicant/Owner: County of San Diego Department of Public Works | State: CA | Sampling Point: 1
Investigator(s): May Lau, Lily Sam | Section, Township, Range: S12 T9S R3W
Landform (hillslope, terrace, etc.): drainage ditch | Local relief (concave, convex, none): concave | Slope (%): 5
Subregion (LRR): C | Lat: 33.414786 | Long: -117.152027 | Datum: WGS 84
Soil Map Unit Name: Fallbrook sandy loam, 5 to 9 percent slopes | NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)
Are Vegetation ___ Soil X or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes x 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 X	No ___			
Hydric Soil Present?	Yes ___	No x	**Is the Sampled Area**		
Wetland Hydrology Present?	Yes X	No ___	**within a Wetland?**	**Yes** ___	**No** x

Remarks: Soil Pit is located within a roadside ditch (Ditch 1) draining road runoff from Huffstatler St northwards towards Rainbow Creek.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5' x 5')			
1. *Polypogon monspeliensis*	50	Y	FACW
2. *Typha latifolia*	30	Y	OBL
3. *Festuca perrenis*	15	N	UPL
4. *Raphanus sativus*	25	Y	UPL
5. *Erigeron canadensis*	3	N	FACU
6. *Helmenthotheca echiodes*	1	N	UPL
7.			
8.			
9.			
10.			
11.			
	124	= Total Cover	
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1=	30
FACW species	50	x 2=	100
FAC species		x 3=	0
FACU species	3	x 4=	12
UPL species	41	x 5=	205
Column Totals:	124 (A)		347 (B)

Prevalence Index = B/A = 2.798387097

Hydrophytic Vegetation Indicators:

___ 1- Rapid Test For Hydrophytic Vegetation
x 2- Dominance Test is >50%
x 3- Prevalence Index is ≤3.0[1]
___ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5- Wetland Non-Vascular Plants[1]
___ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: Non-native herbaceous vegetation

SOIL Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-6	7.5YR 4/2	100					sandy	
6-8	7.5YR 2.5/1	95	7.5YR 4/6	5	C	PL	sandy loam	

[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 presetn, unless disturbed or problematic

Restrictive Layer (if present):

Type: Asphalt

Depth (inches): 8

Hydric Soil Present? **Yes** ___ **No** x

Remarks: Fallbrook sandy loam not listed as hydric soil in San Diego County; dark organic layer in the first inch but not mucky.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X 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 x	Depth (Inches):		
Water Table Present?	Yes X	No ___	Depth (Inches):	2	
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (Inches):	8	**Wetland Hydrology Present?** **Yes X** **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No surface water, but some seasonal ponding anticipated due to restrictive layer and concave landform.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Rainbow WQIP | City/County: San Diego | Sampling Date: 7/15/2020
Applicant/Owner: County of San Diego Department of Public Works | State: CA | Sampling Point: SP-2
Investigator(s): Julie Stout | Section, Township, Range: 12, 09S, 03W
Landform (hillslope, terrace, etc.): Channel | Local relief (concave, convex, none): none | Slope (%):
Subregion (LRR): C | Lat: 33.415515 | Long: -117.151903 | Datum: NAD 83
Soil Map Unit Name: Visalia Sandy Loam 0 to 2 percent slopes | NWI classification: None (wetland includes PFO)
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)
Are Vegetation ___ Soil ___ or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes x 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 x	No		
Hydric Soil Present?	Yes x	No	**Is the Sampled Area**	
Wetland Hydrology Present?	Yes x	No	**within a Wetland?**	**Yes x** **No**

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' R)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5' R)			
1. *Nasturtium officinale*	60	y	OBL
2. *Cyperus eragrostis*	10	n	FACW
3. *Persicaria lapathifolia*	1	n	FACW
4. *Sonchus asper*	5	n	FAC
5. *Leptochloa fusca*	1	n	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	77 = Total Cover		
Woody Vine Stratum (Plot size: 30' R)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 23

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1=	60
FACW species	12	x 2=	24
FAC species	5	x 3=	15
FACU species		x 4=	0
UPL species		x 5=	0
Column Totals:	77 (A)		99 (B)

Prevalence Index = B/A = 1.29

Hydrophytic Vegetation Indicators:

___ 1- Rapid Test For Hydrophytic Vegetation
x 2- Dominance Test is >50%
x 3- Prevalence Index is ≤3.0[1]
___ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5- Wetland Non-Vascular Plants[1]
___ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes x** **No**

Remarks:

SOIL Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
12+	10YR4/4	100					Sand	coarse

[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)
- x Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be presetn, unless disturbed or problematic

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** x **No** ___

Remarks: Sand appears to be recently deposited and is assumed to have not had time to developed hydric features. Soil meets the description of a vegetated sandbar. Unable to dig below 12" due to backfilling and loose sand.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- x High Water Table (A2)
- x 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 x	Depth (Inches):	___	
Water Table Present?	Yes x	No ___	Depth (Inches):	4	
Saturation Present? (includes capillary fringe)	Yes x	No ___	Depth (Inches):	0	**Wetland Hydrology Present?** **Yes** x **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Rainbow WQIP | City/County: San Diego | Sampling Date: 7/15/2020
Applicant/Owner: County of San Diego Department of Public Works | State: CA | Sampling Point: SP-3
Investigator(s): Julie Stout | Section, Township, Range: 1, 09S, 03W
Landform (hillslope, terrace, etc.): channel bank | Local relief (concave, convex, none): convex | Slope (%):
Subregion (LRR): C | Lat: 33.415573 | Long: -117.151901 | Datum: NAD 83
Soil Map Unit Name: Arlington coarse sandy loam, 2 to 9 percent slopes | NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)
Are Vegetation ___ Soil ___ or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes x 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	x		
Hydric Soil Present?	Yes		No	x	**Is the Sampled Area**	
Wetland Hydrology Present?	Yes		No	x	**within a Wetland?**	**Yes** ___ **No** x

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30' R)			
1. *Ricinus communis*	15	y	FACU
2. *Foeniculum vulgare*	15	y	UPL
3. *Washingtonia robusta*	5	n	FACW
4.			
5.			
	35	= Total Cover	
Herb Stratum (Plot size: 5' R)			
1. *Ehrharta erecta*	5	y	UPL
2. *Phragmites australis*	10	y	FACW
3. *Melilotus albus*	5	y	UPL
4. *Cyperus eragrostis*	5	y	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25	= Total Cover	
Woody Vine Stratum (Plot size: 30' R)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 70

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1=	0
FACW species	20	x 2=	40
FAC species	0	x 3=	0
FACU species	15	x 4=	60
UPL species	25	x 5=	125
Column Totals:	60 (A)		225 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

___ 1- Rapid Test For Hydrophytic Vegetation
___ 2- Dominance Test is >50%
___ 3- Prevalence Index is ≤3.0[1]
___ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5- Wetland Non-Vascular Plants[1]
___ 6- 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** x

Remarks:

SOIL Sampling Point: SP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR4/2	100					Sand	
8-18+	10YR2/1	100					Silty clay	

[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 presetn, unless disturbed or problematic

Restrictive Layer (if present):

Type: ____
Depth (inches): ____

Hydric Soil Present? **Yes** ____ **No** x

Remarks:

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**)
x 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 x Depth (Inches): ____
Water Table Present? Yes ___ No x Depth (Inches): ____
Saturation Present? (includes capillary fringe) Yes ___ No x Depth (Inches): ____

Wetland Hydrology Present? **Yes** ___ **No** x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Estimated at 4' above adjacent stream elevation with saturation visible

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Rainbow WQIP | City/County: San Diego | Sampling Date: 7/15/2020
Applicant/Owner: County of San Diego Department of Public Works | State: CA | Sampling Point: SP-4
Investigator(s): Julie Stout | Section, Township, Range: 12, 09S, 03W
Landform (hillslope, terrace, etc.): ditch | Local relief (concave, convex, none): concave | Slope (%):
Subregion (LRR): C | Lat: 33.4191 | Long: -117.152043 | Datum: NAD 83
Soil Map Unit Name: Visalia Sandy Loam 0 to 2 percent slopes | NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)
Are Vegetation ___ Soil x or Hydrology x significantly disturbed? Are "Normal Circumstances" present? Yes x No ___
Are Vegetation ___ Soil x 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 x		
Hydric Soil Present?	Yes ___	No x	**Is the Sampled Area**	
Wetland Hydrology Present?	Yes ___	No x	**within a Wetland?**	**Yes** ___ **No** x

Remarks: 2' wide ditch - may have been lined previously; hydrology is likely very influenced by nearby agricultural operations.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' R)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5' R)			
1. *Stipa miliacea*	50	y	UPL
2. *Cyperus eragrostis*	10	n	FACW
3. *Digitaria sanguinalis*	25	y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: 30' R)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1=	0
FACW species	10	x 2=	20
FAC species		x 3=	0
FACU species	25	x 4=	100
UPL species	50	x 5=	250
Column Totals:	85 (A)		370 (B)

Prevalence Index = B/A = 4.35

Hydrophytic Vegetation Indicators:

___ 1- Rapid Test For Hydrophytic Vegetation
___ 2- Dominance Test is >50%
___ 3- Prevalence Index is ≤3.0[1]
___ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5- Wetland Non-Vascular Plants[1]
___ 6- 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** x

Remarks:

SOIL Sampling Point: SP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/2	99	10YR4/6	1			Sandy clay loam	

[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 presetn, unless disturbed or problematic

Restrictive Layer (if present):

Type: ____
Depth (inches): ____

Hydric Soil Present? **Yes** ____ **No** x

Remarks: Unable to dig beyond 4" - hitting broken concrete

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 x Depth (Inches): ____
Water Table Present? Yes ___ No x Depth (Inches): ____
Saturation Present? (includes capillary fringe) Yes ___ No x Depth (Inches): ____

Wetland Hydrology Present? **Yes** ___ **No** x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Rainbow WQIP | City/County: San Diego | Sampling Date: 7/15/2020
Applicant/Owner: County of San Diego Department of Public Works | State: CA | Sampling Point: SP-5
Investigator(s): Julie Stout | Section, Township, Range: 1, 09S, 03W
Landform (hillslope, terrace, etc.): ditch | Local relief (concave, convex, none): concave | Slope (%):
Subregion (LRR): C | Lat: 33.418076 | Long: -117.147832 | Datum: NAD 83
Soil Map Unit Name: Vista rocky coarse sandy loam, 15 to 30 percent slopes | NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)
Are Vegetation ___ Soil x or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes x No ___
Are Vegetation ___ Soil x 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 x No ___
Hydric Soil Present? Yes x No ___ **Is the Sampled Area**
Wetland Hydrology Present? Yes x No ___ **within a Wetland? Yes x No ___**

Remarks: Channel appears to be subject high sedimentation and periodic sediment removal/excavation and irregular hydrology due to adjacent agricultural operations

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30' R)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5' R)			
1. *Persicaria lapathifolia*	50	y	FACW
2. *Nasturtium officinale*	15	y	OBL
3. *Leptochloa fusca*	5	n	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70	= Total Cover	
Woody Vine Stratum (Plot size: 30' R)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	15	x	1=	15
FACW species	55	x	2=	110
FAC species	0	x	3=	0
FACU species	0	x	4=	0
UPL species	0	x	5=	0
Column Totals:	70 (A)			125 (B)

Prevalence Index = B/A = 1.79

Hydrophytic Vegetation Indicators:

___ 1- Rapid Test For Hydrophytic Vegetation
x 2- Dominance Test is >50%
x 3- Prevalence Index is ≤3.0[1]
___ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5- Wetland Non-Vascular Plants[1]
___ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes x No ___

Remarks:

SOIL Sampling Point: SP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[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)
- x Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be presetn, unless disturbed or problematic

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** x **No** ___

Remarks: Soil not sampled due to current inundation; soil presume hydric due to strong hydrology and hydrophytic vegetation indicators as well as regular inundation observed on aerial imagery

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- x 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)
- x 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)
- x FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes x	No ___	Depth (Inches):	6"	
Water Table Present?	Yes x	No ___	Depth (Inches):	___	
Saturation Present? (includes capillary fringe)	Yes x	No ___	Depth (Inches):	___	**Wetland Hydrology Present?** **Yes** x **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Rainbow WQIP | City/County: San Diego | Sampling Date: 7/15/2020
Applicant/Owner: County of San Diego Department of Public Works | State: CA | Sampling Point: SP-6
Investigator(s): Julie Stout | Section, Township, Range: 1, 09S, 03W
Landform (hillslope, terrace, etc.): ditch | Local relief (concave, convex, none): concave | Slope (%):
Subregion (LRR): C | Lat: 33.418105 | Long: -117.147803 | Datum: NAD 83
Soil Map Unit Name: Vista rocky coarse sandy loam, 15 to 30 percent slopes | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)
Are Vegetation ___ Soil x or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes x No ___
Are Vegetation ___ Soil x 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 x		
Hydric Soil Present?	Yes ___	No x	**Is the Sampled Area**	
Wetland Hydrology Present?	Yes ___	No x	**within a Wetland?**	**Yes** ___ **No** x

Remarks: Highly disturbed soils/agricultural operations

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' R)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5' R)			
1. *Ricinus communis*	20	y	UPL
2. *Erigeron canadensis*	5	n	FACU
3. *Hirschfeldia incana*	5	n	UPL
4. *Artemisia douglasiana*	5	n	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	35 = Total Cover		
Woody Vine Stratum (Plot size: 30' R)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x	1=	0
FACW species	0	x	2=	0
FAC species	5	x	3=	15
FACU species	5	x	4=	20
UPL species	25	x	5=	125
Column Totals:	35 (A)			160 (B)

Prevalence Index = B/A = 4.57

Hydrophytic Vegetation Indicators:

___ 1- Rapid Test For Hydrophytic Vegetation
___ 2- Dominance Test is >50%
___ 3- Prevalence Index is ≤3.0[1]
___ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5- Wetland Non-Vascular Plants[1]
___ 6- 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** x

Remarks:

SOIL Sampling Point: SP-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/2	100					Sandy clay loam	

[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 presetn, unless disturbed or problematic

Restrictive Layer (if present):

Type: ____
Depth (inches): ____

Hydric Soil Present? **Yes** ____ **No** x

Remarks: Soils highly disturbed/likely infill

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 x	Depth (Inches):	____
Water Table Present?	Yes ___	No x	Depth (Inches):	____
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (Inches):	____

Wetland Hydrology Present? **Yes** ___ **No** x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Rainbow WQIP | City/County: San Diego | Sampling Date: 7/15/2020
Applicant/Owner: County of San Diego Department of Public Works | State: CA | Sampling Point: SP-7
Investigator(s): Julie Stout | Section, Township, Range: 1, 09S, 03W
Landform (hillslope, terrace, etc.): ditch | Local relief (concave, convex, none): concave | Slope (%):
Subregion (LRR): C | Lat: 33.418066 | Long: -117.147632 | Datum: NAD 83
Soil Map Unit Name: Placentia sandy loam, 0 to 2 percent slopes | NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)
Are Vegetation x Soil x or Hydrology x significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X
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 x		
Hydric Soil Present?	Yes x	No	**Is the Sampled Area**	
Wetland Hydrology Present?	Yes	No x	**within a Wetland?**	**Yes x No**

Remarks: Vegetation, soils, and hydrology are disturbed due to adjacent agricultural operations and likely treatment of vegetation with herbicide and/or regrading of channel.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' R)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5' R)			
1.	50	y	UPL
2.	10	n	
3.	25	y	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: 30' R)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1= 0
FACW species	x 2= 0
FAC species	x 3= 0
FACU species	x 4= 0
UPL species	x 5= 0
Column Totals: (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1- Rapid Test For Hydrophytic Vegetation
___ 2- Dominance Test is >50%
___ 3- Prevalence Index is ≤3.0[1]
___ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5- Wetland Non-Vascular Plants[1]
___ 6- 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 x

Remarks: Channel is devoid of vegetation; apparently due to herbicide treatment and/or recent re-grading. If vegetation was present, it is presumed it would be hydrophytic due to the obvious presence of wetland hydrology in Google aerial and streetview images across multiple years and in various seasons.

SOIL Sampling Point: SP-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0	10YR4/2	100					Sandy loam	viewed from surface

[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)
- x Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be presetn, unless disturbed or problematic

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** x **No** ___

Remarks: Soils not sampled due to potential contamination and recent disturbance. Soils appear recently deposited from agriculatural runoff/erosion. Presumed hydric due to the obvious presence of wetland hydrology in Google aerial and streetview images across multiple years and in various seasons.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- x Inundation Visible on Aerial Imagery(B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- x 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**)
- x Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- x Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- x Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (Inches): ___		
Water Table Present?	Yes ___	No x	Depth (Inches): ___		
Saturation Present? (includes capillary fringe)	Yes x	No ___	Depth (Inches): 0	**Wetland Hydrology Present?**	**Yes** ___ **No** x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturation/inundation

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Huffstatler + 5th St. **Date:** 4/13/19 **Time:** 9:39
Project Number: **Town:** Fallbrook **State:**
Stream: Rainbow Creek **Photo begin file#:** **Photo end file#:**
Investigator(s): MayLan, Lily Sam

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details: Rainbow Creek

Projection: **Datum:** [redacted]
Coordinates: 33°24'55.95"N WGS 84 117°09'06.71"W

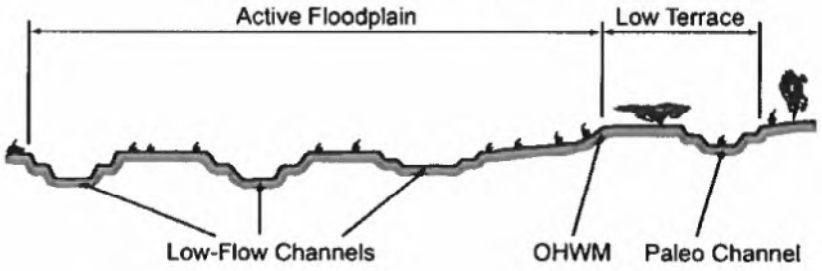
Potential anthropogenic influences on the channel system:
Surrounded by nurseries, residences, and bisected by Huffstatler St. Retaining wall on north bank, west of road.

Brief site description: Rainbow Creek runs NE to SW across northern buffer of study area.

Checklist of resources (if available):

- ☑ Aerial photography
  - Dates: 2018
- ☑ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  - Gage number:
  - Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

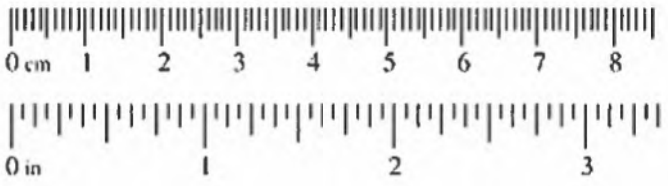


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☑ GPS
   - ☐ Other:

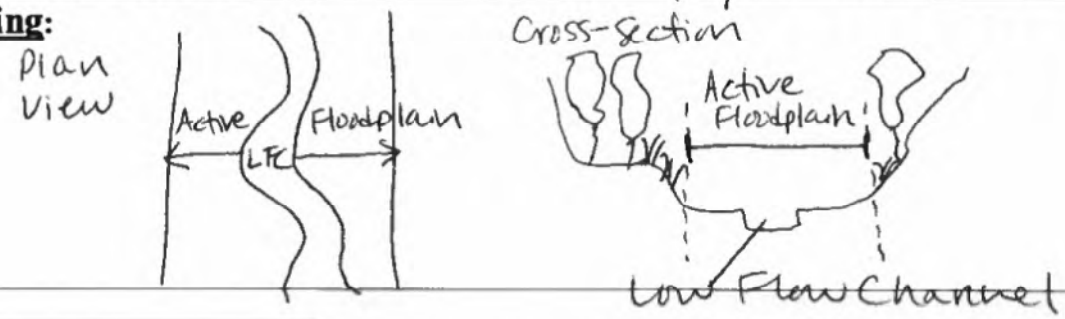
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64		
0.157	4	Pebble	
		Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039		
		Clay	Mud



Project ID: **Cross section ID:** **Date:** 6/13/19 **Time:** 9:39

Cross section drawing:



OHWM

GPS point: 33°24'55.87"N, -117°09'06.73"W

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☑ Other: Shelving
- ☑ Other: Drift

Comments:

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace

GPS point: 33°24"55.81"N, -117°09'06.71"W

Characteristics of the floodplain unit:

Average sediment texture: Sandy

Total veg cover: <1 % Tree: ____ % Shrub: ____ % Herb: <1 %

Community successional stage:

- ☐ NA
- ☑ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments: Floodplain unvegtated

Project ID: **Cross section ID:** **Date:** 6/13/19 **Time:** 9:39

Floodplain unit: ☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: 33°24'55.95"N, -117°09'06.73"W

Characteristics of the floodplain unit:

Average sediment texture: Sandy

Total veg cover: 0 % Tree: 0 % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☑ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: ____
- ☐ Other: ____
- ☐ Other: ____

Comments: Surface water present ~4 ft. wide

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace

GPS point: 32°24'56.08"N, -117°09'06.66"W

Characteristics of the floodplain unit:

Average sediment texture: Sandy

Total veg cover: 100 % Tree: 80 % Shrub: ____ % Herb: 20 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☑ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☑ Surface relief
- ☐ Other: ____
- ☐ Other: ____
- ☐ Other: ____

Comments: Vegetated banks- black willow, sycamore, eucalyptus, giant reed

OHWM Delineation Cover Sheet Page 1 of 2

Project: Rainbow Creek WQIP **Date:** 7/15/2020

Location: Unnamed trib, San Diego County **Investigator(s):** Julie Stout

Project Description:

Describe the river or stream's condition (disturbances, in-stream structures, etc.):

- excavation, veg treatment
- adjacent nursery/ag.

Off-site Information

Remotely sensed image(s) acquired? ☐ **Yes** ☒ **No** [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:

Hydrologic/hydraulic information acquired? ☐ **Yes** ☒ **No** [If yes, attach information to datasheet(s) and describe below.] Description:

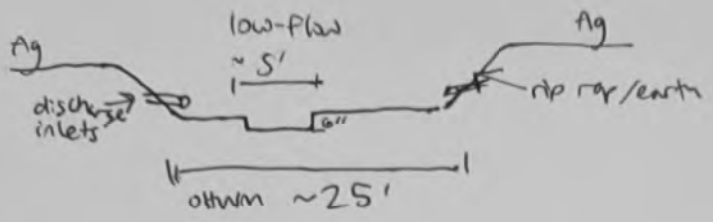
List and describe any other supporting information received/acquired:

current/historical aerial imagery review (Google earth)

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GI coordinates noted on the datasheet.

Datasheet # OHWM-2 **OHWM Delineation Datasheet** Page 2 of 2

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



Break in Slope at OHWM: ☐ Sharp (> 60°) | ☐ Moderate (30–60°) | ☐ Gentle (< 30°) | ☐ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	5	55	20	20		
Below OHWM	5	75	20			

Notes/Description:

appears recently maintained/excavated

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM				100
Below OHWM				100

Notes/Description:

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

- sediment deposits
- bank cut
- aerial imagery

Appendix B

Representative Site Photographs

SP-1 – 2019 upland sample point (Ditch

SP-2 – Wetland sample point in Rainbow Creek

SP-3 – Upland sample point at Rainbow Creek

SP-4a – Upland ditch

SP-4b – Upland ditch sample point.

SP-5 – Wetland channel

SP-6 - Upland road berm/ditch

SP-7 – Wetland channel/disturbed vegetation.

P-1a – Facing north/upslope (Ditch 1)

P-1b – Facing south/downslope (Ditch 1)

P-2a – Facing north/upslope (Ditch 1)

P-2b – Facing north/upslope (Ditch 2)

P-2c – Facing east/downslope (Ditch 3)

P-2d – Facing east/downslope (southeast corner culvert)

P-2e – Facing south/upslope (Ditch 1)

P-2f – Facing west

P-3a – Facing south/upslope (swale)

P-3b – Facing east/upslope (Ditch 3)

P-3c – Facing west/downslope (Ditch 3)

P-4 – Facing north/downslope (swale)

P-4b – Facing south/upslope (swale)

P-5a – Facing north/upslope (left side, Ditch 3)

P-5b – Facing north/upslope (right side, culvert inlet)

P-5c – Facing east

P-5d – Facing south

P-5e – facing west/downslope (right side, Ditch 3))

P-6a – Facing north

P-6b – Facing east/downstream (Rainbow Creek)

P-6c – Facing south/upslope (left side, Ditch 2)

P-6d – Facing south/upslope (right side, Ditch 1))

P-6e – Facing west/downstream (Rainbow Creek)

P-7 – Facing south/downslope (Ditch 4)

P-8a – Facing north/upslope (Ditch 4)

P-8a – Facing south/downslope (Ditch 4)

P-9a – Facing north/across (left side, Tributary 1)

P-9b – Facing north/across (right side, Tributary 1)

P-9c – Facing east/upstream (Tributary 1)

P-9d – Facing west/downstream (Tributary 1)

P-10a – Facing north/upslope

P-10b – Facing northwest

P-10c – Facing south (left side)

P-10d – Facing south/downslope (right side, Ditch 5)

P-11a – Facing northeast (left side)

P-11b – Facing northeast (right side, Ditch 6)

P-11c – Facing west (Ditch 6)

P-11d – Facing southwest/downslope (left side, Ditch 6)

P-12a – Facing southwest (north/left side)

P-12b – Facing southeast

	
P-12c – Facing southwest (south/left side)	P-12d – Facing southwest (right side)

Appendix C

APT Watershed Sampling Summary

Antecedent Precipitation Tool v.1.0 - Watershed Sampling Summary

Generated on 2020-08-13

User Inputs

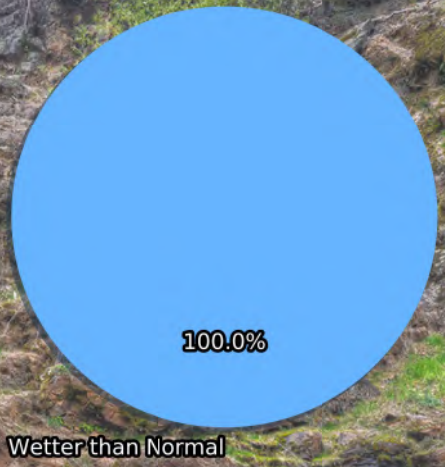
Coordinates	33.417559, -117.151184
Date	2020-07-15
Geographic Scope	HUC12

Intermediate Data

Hydrologic Unit Code	180703020503
Watershed Size	42.96 mi^2
# Random Sampling Points	5

Preliminary Result

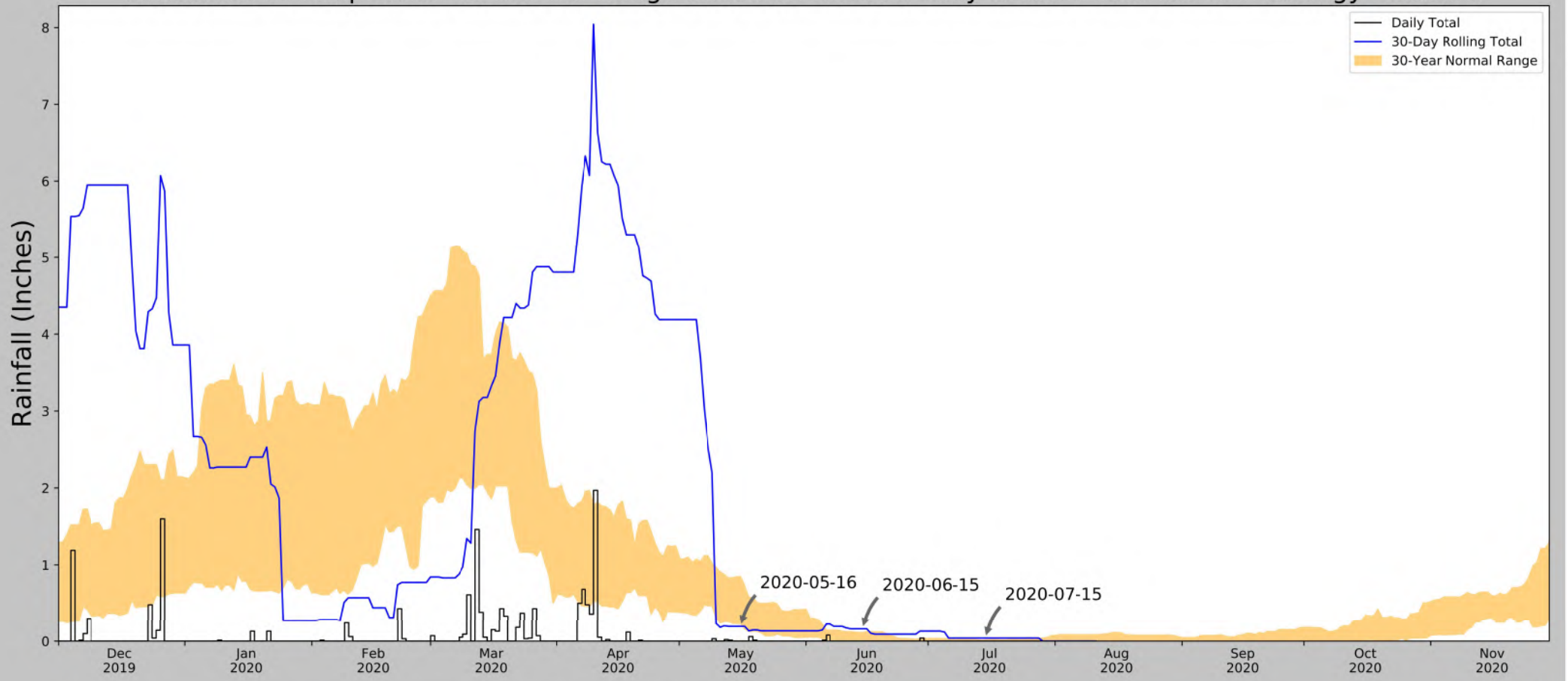
Average Antecedent Precipitation Score	15.6
Preliminary Determination	Wetter than Normal



Sampling Point Breakdown

Antecedent Precipitation Score	Antecedent Precipitation Condition	WebWIMP H_2O Balance	Drought Index (PDSI)	# of Points
16	Wetter than Normal	Dry Season	Mild wetness	3
15	Wetter than Normal	Dry Season	Mild wetness	2

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.417559, -117.151184
Observation Date	2020-07-15
Elevation (ft)	1045.57
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

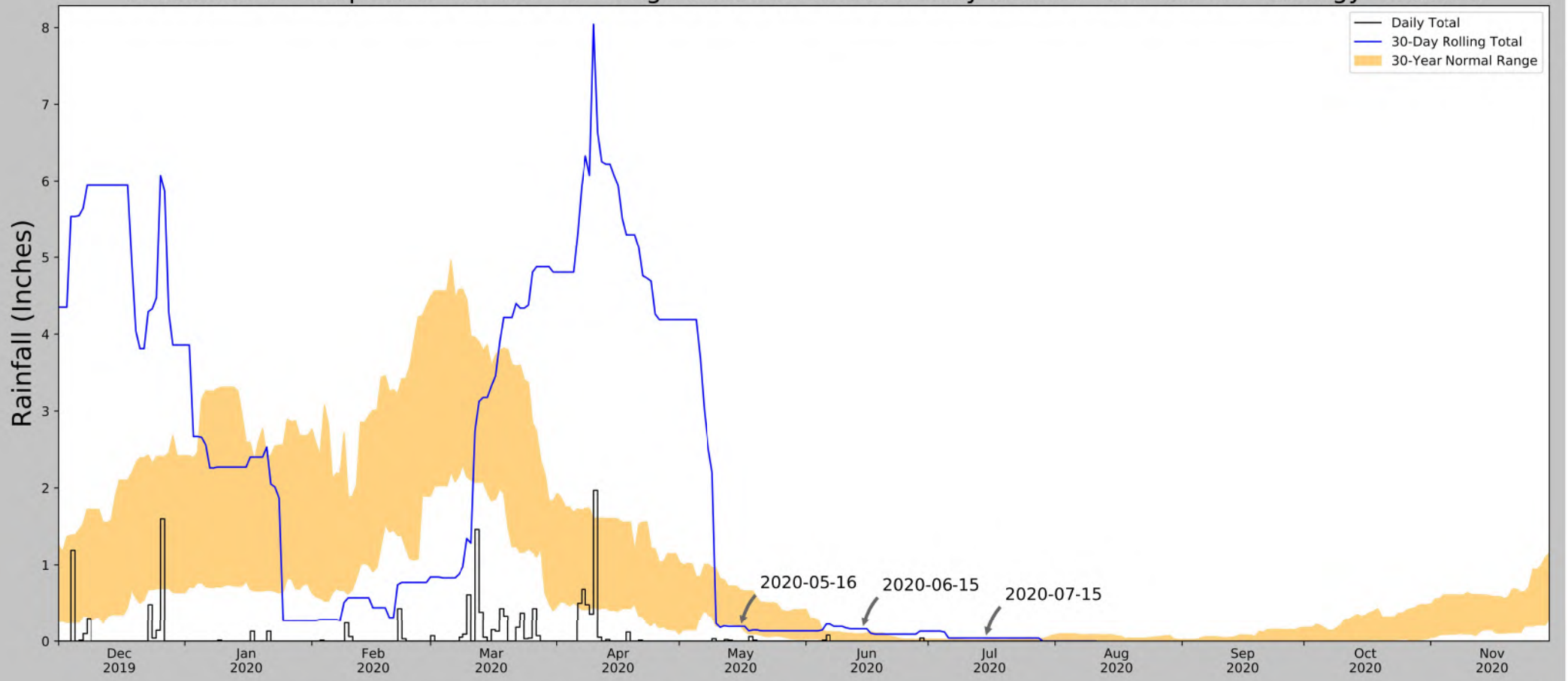
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2020-07-15	0.0	0.014173	0.03937	Wet	3	3	9
2020-06-15	0.011811	0.111417	0.161417	Wet	3	2	6
2020-05-16	0.231102	0.84685	0.192913	Dry	1	1	1
Result							Wetter than Normal - 16

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
RAMONA AP	33.0375, -116.9158	1393.045	29.574	347.475	23.585	7781	90
FALLBROOK 6.5 NE	33.4363, -117.1603	1376.969	1.398	331.399	1.092	15	0
FALLBROOK 5 NE	33.4392, -117.1903	1140.092	2.706	94.522	1.473	1	0
VISTA	33.2353, -117.2322	430.118	13.433	615.452	14.312	3384	0
ELSINORE	33.6861, -117.3458	1268.045	21.676	222.475	14.577	166	0
SUN CITY	33.7156, -117.19	1419.948	20.714	374.378	17.076	5	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.434525, -117.163269
Observation Date	2020-07-15
Elevation (ft)	1045.57
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

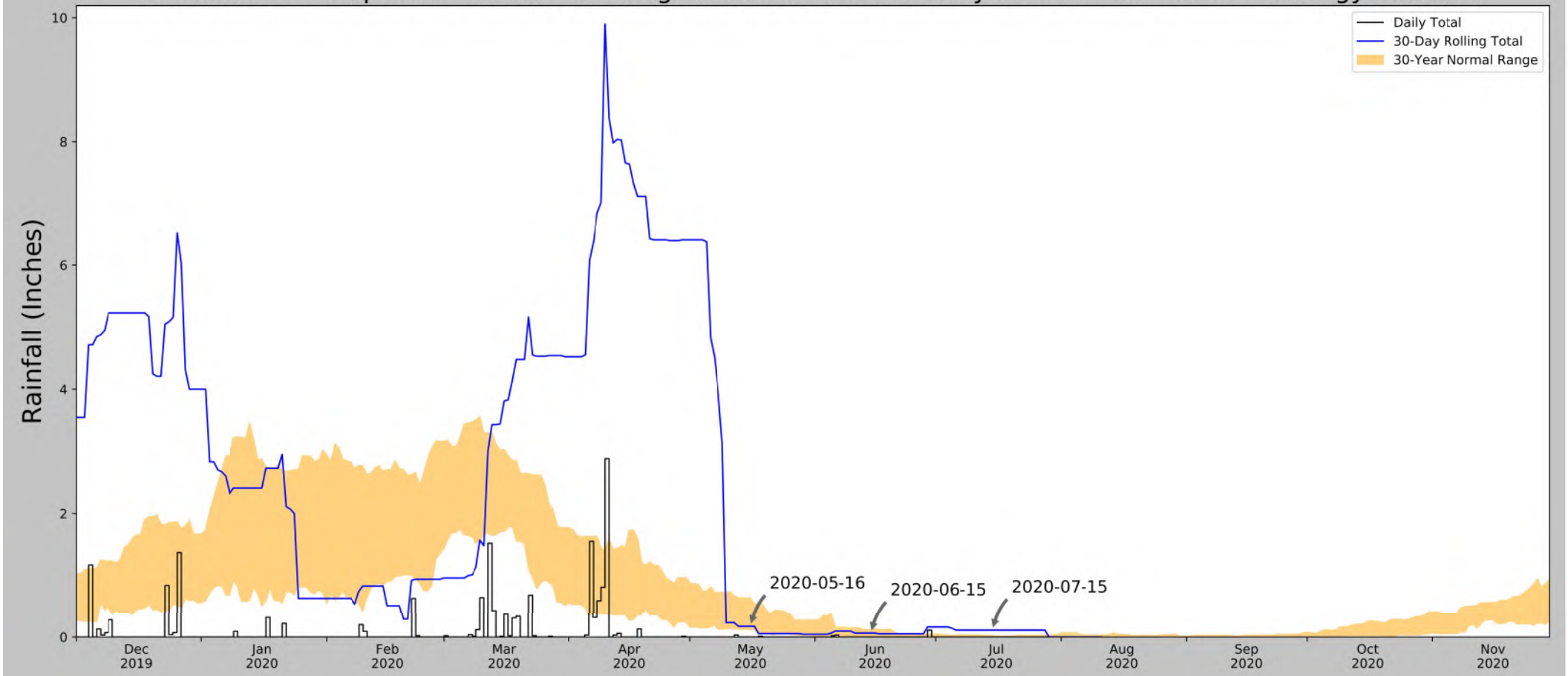
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2020-07-15	0.0	0.014173	0.03937	Wet	3	3	9
2020-06-15	0.0	0.094882	0.161417	Wet	3	2	6
2020-05-16	0.195669	0.672835	0.192913	Dry	1	1	1
Result							Wetter than Normal - 16

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
RAMONA AP	33.0375, -116.9158	1393.045	30.936	347.475	24.671	7781	90
FALLBROOK 6.5 NE	33.4363, -117.1603	1376.969	0.211	331.399	0.165	15	0
FALLBROOK 5 NE	33.4392, -117.1903	1140.092	1.592	94.522	0.867	1	0
ELSINORE	33.6861, -117.3458	1268.045	20.312	222.475	13.659	3523	0
VISTA	33.2353, -117.2322	430.118	14.329	615.452	15.267	27	0
SUN CITY	33.7156, -117.19	1419.948	19.481	374.378	16.06	5	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.394645, -117.240138
Observation Date	2020-07-15
Elevation (ft)	838.22
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

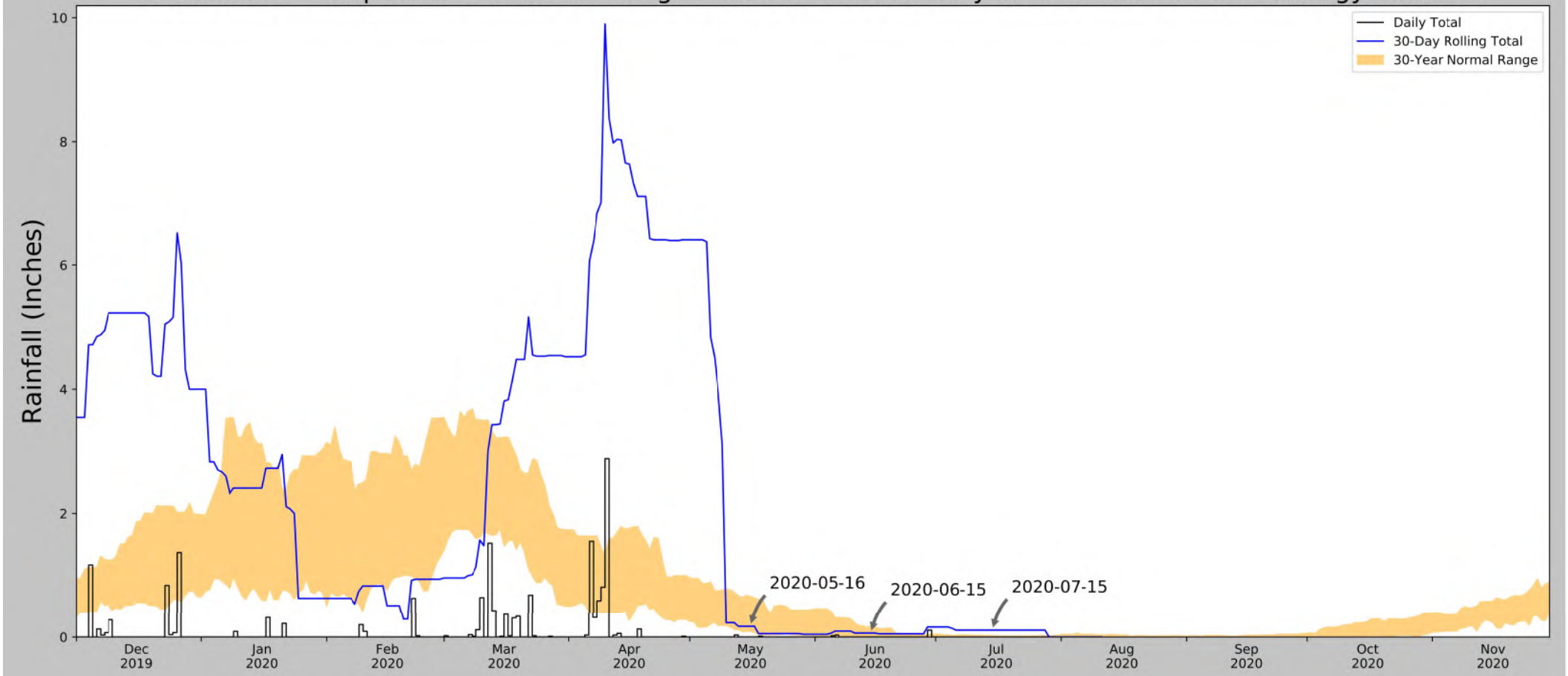
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2020-07-15	0.0	0.020866	0.110236	Wet	3	3	9
2020-06-15	0.017323	0.116142	0.062992	Normal	2	2	4
2020-05-16	0.121654	0.638976	0.173228	Normal	2	1	2
Result							Wetter than Normal - 15

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
CARLSBAD PALOMAR AP	33.1281, -117.2794	328.084	18.556	510.136	17.816	7849	90
FALLBROOK 2.3SE	33.3516, -117.2248	618.11	3.103	220.11	2.079	1	0
FALLBROOK 5 NE	33.4392, -117.1903	1140.092	4.212	301.872	3.167	1	0
VISTA	33.2353, -117.2322	430.118	11.019	408.102	9.455	3345	0
CAMP PENDLETON MCAS	33.3, -117.35	75.131	9.109	763.089	11.05	156	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.372598, -117.304298
Observation Date	2020-07-15
Elevation (ft)	326.77
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

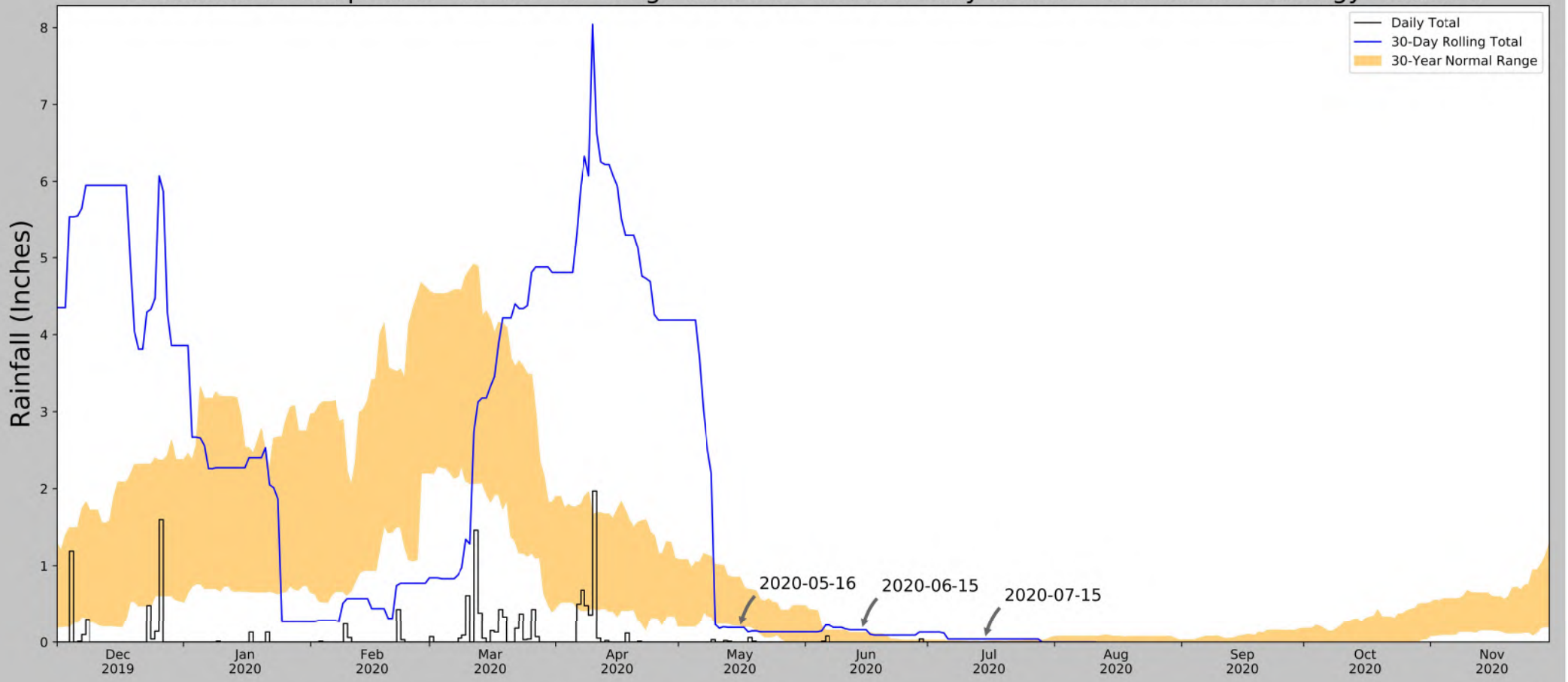
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2020-07-15	0.0	0.019685	0.110236	Wet	3	3	9
2020-06-15	0.019685	0.182283	0.062992	Normal	2	2	4
2020-05-16	0.092913	0.665354	0.173228	Normal	2	1	2
Result							Wetter than Normal - 15

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
CARLSBAD PALOMAR AP	33.1281, -117.2794	328.084	16.954	1.314	7.652	7849	90
FALLBROOK 2.3SE	33.3516, -117.2248	618.11	4.812	291.34	3.567	1	0
OCEANSIDE 8.4NE	33.27, -117.2663	251.969	7.421	74.801	3.895	1	0
CAMP PENDLETON MCAS	33.3, -117.35	75.131	5.667	251.639	3.976	3453	0
VISTA	33.2353, -117.2322	430.118	10.36	103.348	5.733	48	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.488448, -117.173517
Observation Date	2020-07-15
Elevation (ft)	1471.22
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2020-07-15	0.0	0.003543	0.03937	Wet	3	3	9
2020-06-15	0.008268	0.122441	0.161417	Wet	3	2	6
2020-05-16	0.225984	0.848032	0.192913	Dry	1	1	1
Result							Wetter than Normal - 16

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
RAMONA AP	33.0375, -116.9158	1393.045	34.532	78.175	18.239	7781	90
FALLBROOK 6.5 NE	33.4363, -117.1603	1376.969	3.683	94.251	2.004	15	0
FALLBROOK 5 NE	33.4392, -117.1903	1140.092	3.538	331.128	2.764	1	0
SUN CITY	33.7156, -117.19	1419.948	15.723	51.272	7.881	3170	0
ELSINORE	33.6861, -117.3458	1268.045	16.877	203.175	11.024	382	0
SAN JACINTO	33.7964, -116.9753	1524.934	24.14	53.714	12.16	3	0

Antecedent Precipitation Tool v.1.0 - Watershed Sampling Summary

Generated on 2020-08-13

User Inputs

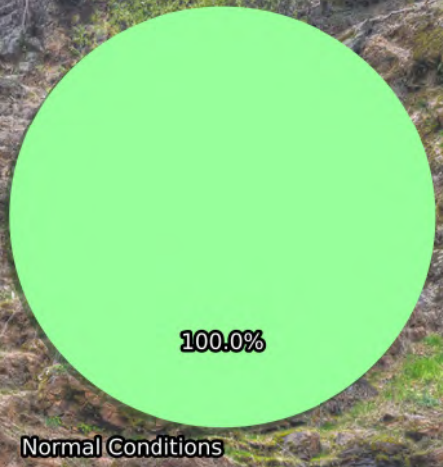
Coordinates	33.417559, -117.151184
Date	2019-06-13
Geographic Scope	HUC12

Intermediate Data

Hydrologic Unit Code	180703020503
Watershed Size	42.96 mi^2
# Random Sampling Points	5

Preliminary Result

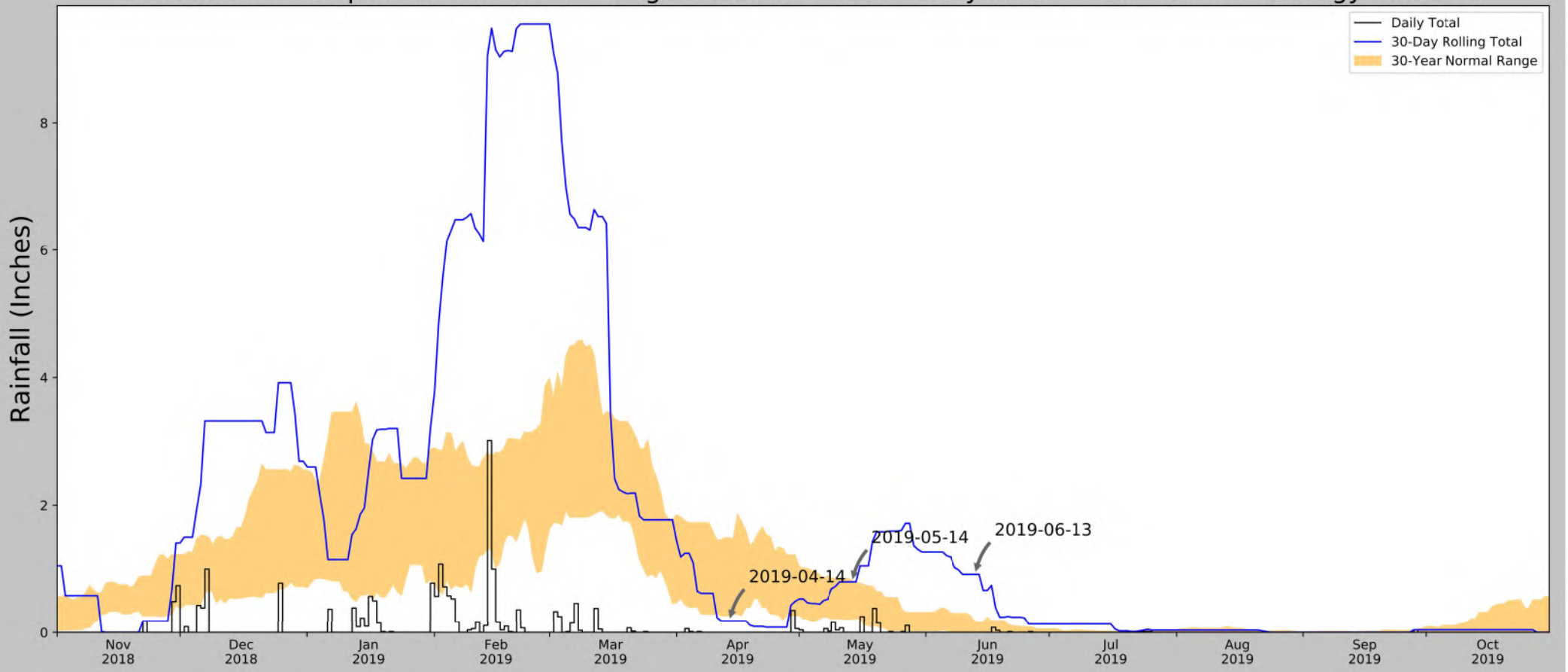
Average Antecedent Precipitation Score	13.8
Preliminary Determination	Normal Conditions



Sampling Point Breakdown

Antecedent Precipitation Score	Antecedent Precipitation Condition	WebWIMP H_2O Balance	Drought Index (PDSI)	# of Points
14	Normal Conditions	Dry Season	Mild wetness	4
13	Normal Conditions	Dry Season	Mild wetness	1

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.417559, -117.151184
Observation Date	2019-06-13
Elevation (ft)	1045.57
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

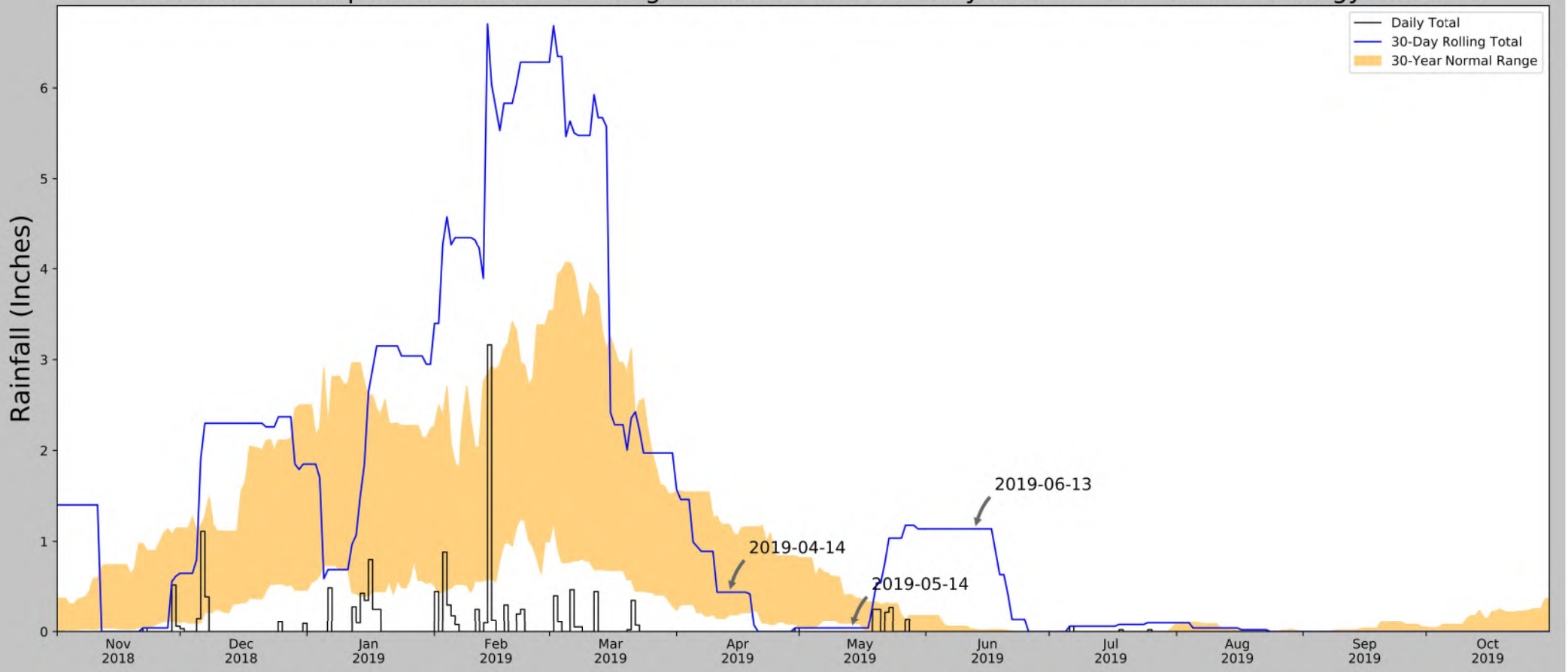
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2019-06-13	0.017323	0.166535	0.917323	Wet	3	3	9
2019-05-14	0.21811	0.823228	0.799213	Normal	2	2	4
2019-04-14	0.26811	1.483071	0.185039	Dry	1	1	1
Result							Normal Conditions - 14

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
VISTA	33.2353, -117.2322	430.118	13.433	615.452	14.312	10934	90
FALLBROOK 6.5 NE	33.4363, -117.1603	1376.969	1.398	331.399	1.092	77	0
FALLBROOK 5 NE	33.4392, -117.1903	1140.092	2.706	94.522	1.473	10	0
ELSINORE	33.6861, -117.3458	1268.045	21.676	222.475	14.577	314	0
SUN CITY	33.7156, -117.19	1419.948	20.714	374.378	17.076	5	0
ESCONDIDO #2	33.1211, -117.09	600.066	20.786	445.504	18.614	5	0
CAMP PENDLETON MCAS	33.3, -117.35	75.131	14.058	970.439	19.969	2	0
RAMONA AP	33.0375, -116.9158	1393.045	29.574	347.475	23.585	6	0

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.466399, -117.183565
Observation Date	2019-06-13
Elevation (ft)	1045.57
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

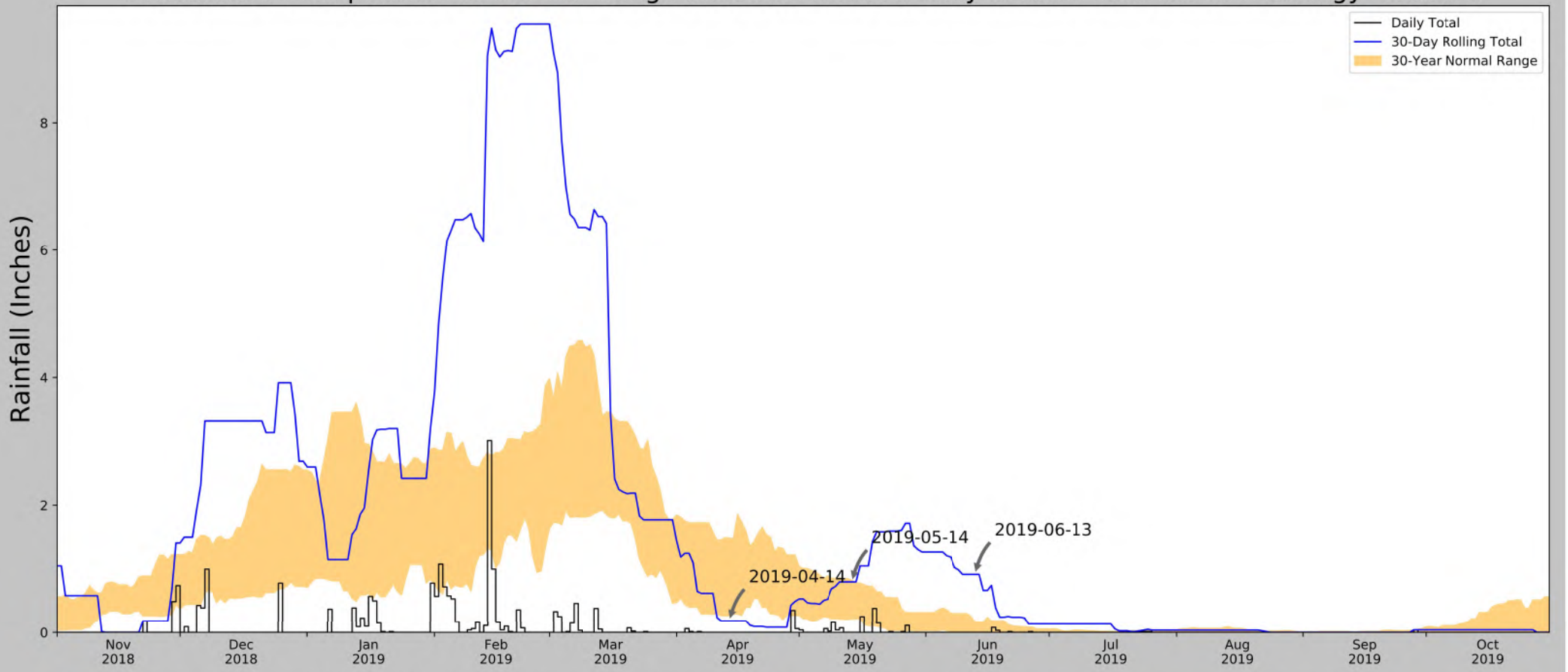
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2019-06-13	0.0	0.025591	1.137795	Wet	3	3	9
2019-05-14	0.093701	0.411417	0.03937	Dry	1	2	2
2019-04-14	0.194882	1.186614	0.440945	Normal	2	1	2
Result							Normal Conditions - 13

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
ELSINORE	33.6861, -117.3458	1268.045	17.823	222.475	11.986	10733	90
FALLBROOK 5 NE	33.4392, -117.1903	1140.092	1.919	94.522	1.045	13	0
SUN CITY	33.7156, -117.19	1419.948	17.222	374.378	14.197	194	0
VISTA	33.2353, -117.2322	430.118	16.212	615.452	17.273	400	0
CAMP PENDLETON MCAS	33.3, -117.35	75.131	14.98	970.439	21.278	6	0
ESCONDIDO #2	33.1211, -117.09	600.066	24.462	445.504	21.906	1	0
SAN JACINTO	33.7964, -116.9753	1524.934	25.757	479.364	23.938	2	0
RAMONA AP	33.0375, -116.9158	1393.045	33.43	347.475	26.66	4	0

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.415445, -117.152277
Observation Date	2019-06-13
Elevation (ft)	1043.11
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

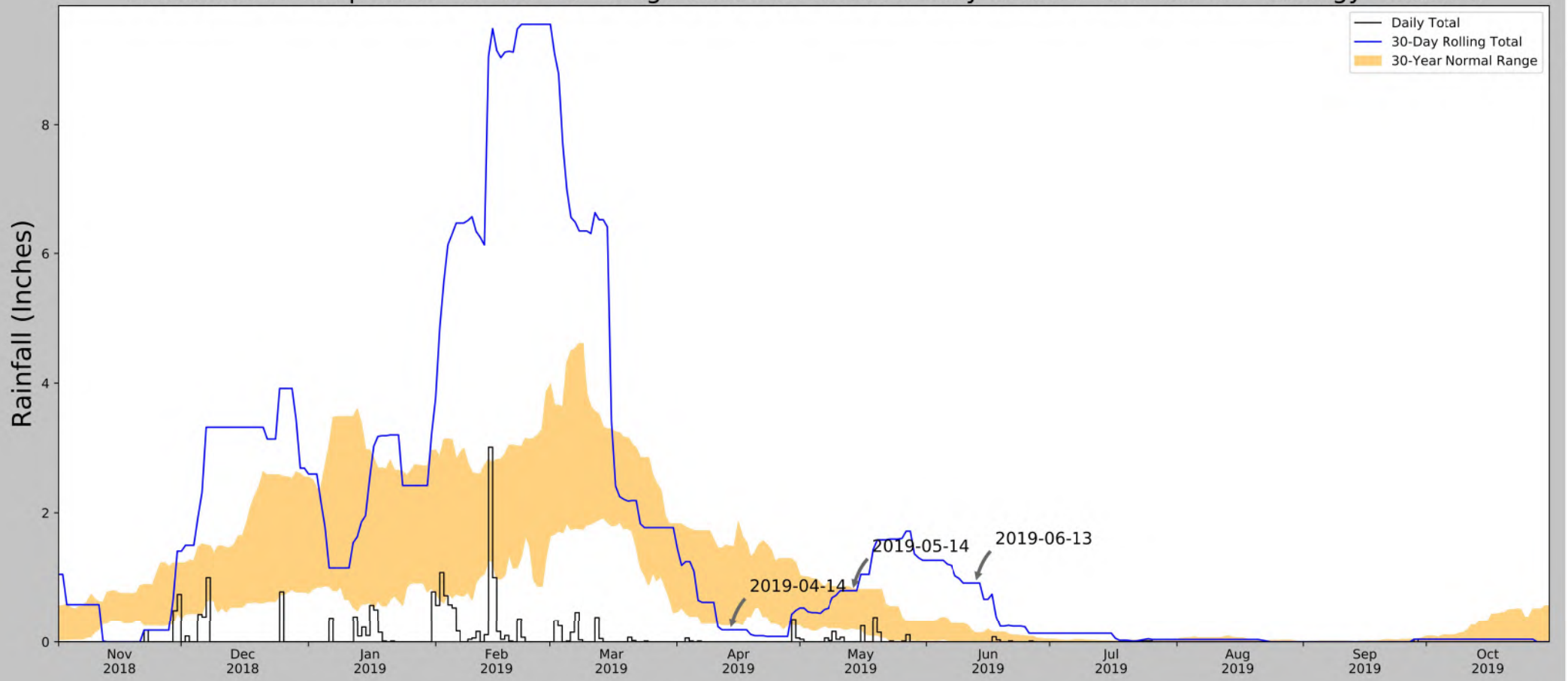
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2019-06-13	0.017323	0.166535	0.917323	Wet	3	3	9
2019-05-14	0.21811	0.823228	0.799213	Normal	2	2	4
2019-04-14	0.26811	1.483071	0.185039	Dry	1	1	1
Result							Normal Conditions - 14

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
VISTA	33.2353, -117.2322	430.118	13.275	612.992	14.111	10934	90
FALLBROOK 6.5 NE	33.4363, -117.1603	1376.969	1.513	333.859	1.186	77	0
FALLBROOK 5 NE	33.4392, -117.1903	1140.092	2.739	96.982	1.498	10	0
ELSINORE	33.6861, -117.3458	1268.045	21.769	224.935	14.693	314	0
SUN CITY	33.7156, -117.19	1419.948	20.852	376.838	17.241	5	0
ESCONDIDO #2	33.1211, -117.09	600.066	20.653	443.044	18.444	5	0
CAMP PENDLETON MCAS	33.3, -117.35	75.131	13.922	967.979	19.741	2	0
RAMONA AP	33.0375, -116.9158	1393.045	29.474	349.935	23.577	6	0

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.422549, -117.227102
Observation Date	2019-06-13
Elevation (ft)	708.49
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2019-06-13	0.017323	0.133071	0.917323	Wet	3	3	9
2019-05-14	0.21811	0.825984	0.799213	Normal	2	2	4
2019-04-14	0.26811	1.483071	0.185039	Dry	1	1	1
Result							Normal Conditions - 14

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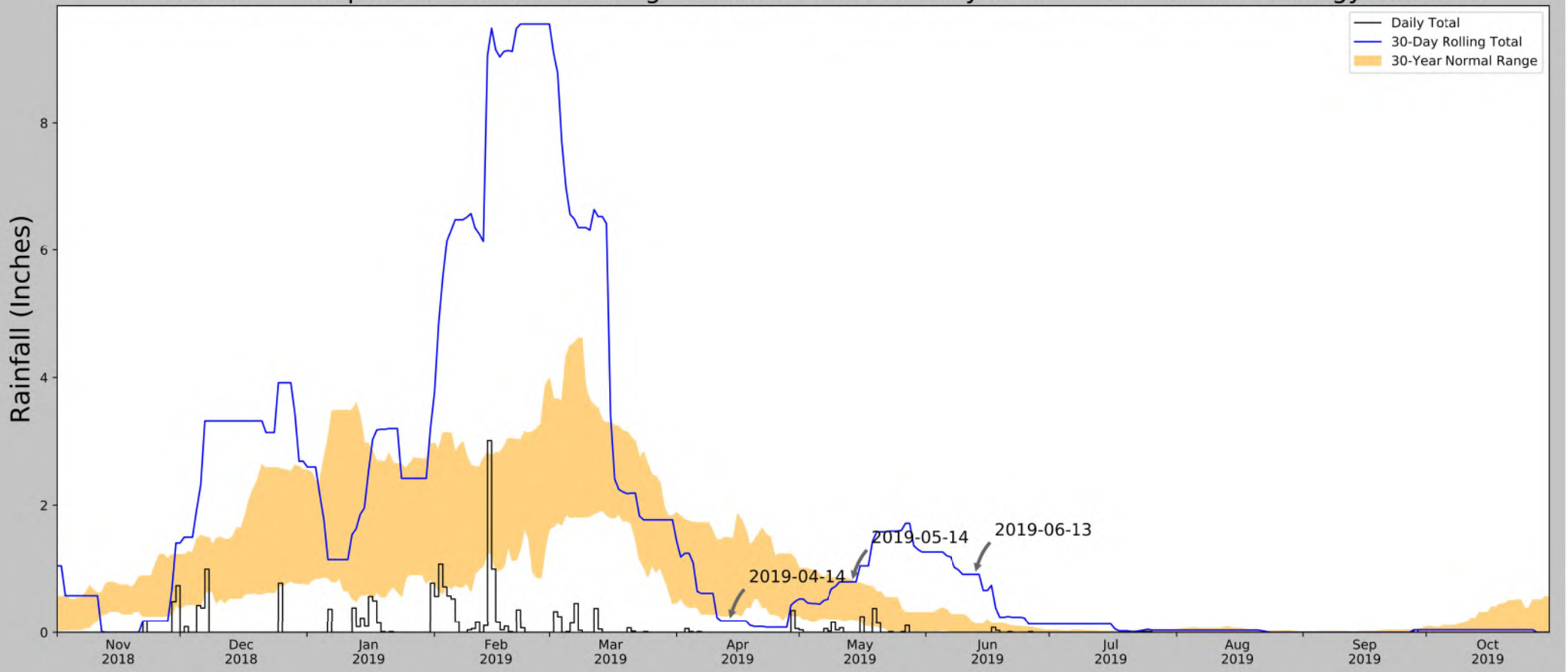
Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
VISTA	33.2353, -117.2322	430.118	12.941	278.372	9.426	10934	90
FALLBROOK 5 NE	33.4392, -117.1903	1140.092	2.414	431.602	2.128	87	0
CAMP PENDLETON MCAS	33.3, -117.35	75.131	11.045	633.359	11.966	280	0
ESCONDIDO #2	33.1211, -117.09	600.066	22.283	108.424	12.443	19	0
POWAY VALLEY	33.0194, -117.0308	647.966	30.077	60.524	15.355	2	0
CARLSBAD PALOMAR AP	33.1281, -117.2794	328.084	20.568	380.406	17.08	31	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.387677, -117.311147
Observation Date	2019-06-13
Elevation (ft)	644.74
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2019-06-13	0.017323	0.130315	0.917323	Wet	3	3	9
2019-05-14	0.21811	0.823228	0.799213	Normal	2	2	4
2019-04-14	0.26811	1.483071	0.185039	Dry	1	1	1
Result							Normal Conditions - 14

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
VISTA	33.2353, -117.2322	430.118	11.473	214.622	7.625	10934	90
FALLBROOK 2.3SE	33.3516, -117.2248	618.11	5.571	26.63	2.655	16	0
CAMP PENDLETON MCAS	33.3, -117.35	75.131	6.46	569.609	6.587	314	0
OCEANSIDE 8.4NE	33.27, -117.2663	251.969	8.533	392.771	7.191	35	0
FALLBROOK 5 NE	33.4392, -117.1903	1140.092	7.826	495.352	7.398	2	0
ESCONDIDO #2	33.1211, -117.09	600.066	22.417	44.674	11.089	19	0
SAN JUAN CANYON	33.5319, -117.5525	375.0	17.113	269.74	12.317	2	0
OCEANSIDE MUNI AP	33.2194, -117.3494	27.887	11.835	616.853	12.626	31	0

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