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PACIFICA COTTONWOOD PROJECT

AQUATIC RESOURCES DELINEATION REPORT

CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA

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EXECUTIVE SUMMARY

Blackhawk Environmental (Blackhawk) conducted a literature review, field reconnaissance survey, biological assessment, focused burrowing owl surveys and an aquatic resources delineation survey of the proposed Pacifica Cottonwood Project site (Project) to assess existing site conditions, as well as assess the potential for special-status species and/or habitats to occur within the Project site and the surrounding area. This report is intended to fulfill requirements for determining Project consistency with the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP; Plan) regarding aquatic resources and potentially jurisdictional waters. The proposed Project calls for the development of 21.484 acres of undeveloped lands in the City of Moreno Valley, Riverside County, California. The Project site is located on Assessor's Parcel Numbers (APN) 478-250-001 (Figure 1), approximately 1 mile south of Interstate 60 and 0.4 miles west of Redlands Boulevard (Figure 1). Current and recent land use is best characterized as open space/vacant land.

A habitat assessment for the Project was performed by Blackhawk biologist Kris Alberts on May 5, 2021. During this assessment, Mr. Alberts noted the presence of MSHCP Riverine Habitat in the form of one ephemeral drainage feature along the western boundary of the Project site. Based on findings during the literature review conducted for the Project and the habitat assessment, an initial aquatic resources delineation survey was performed on August 18, 2021 by Blackhawk wetland specialists Ian Maunsell and Ryan Quilley. After this initial survey, the Project design changed, necessitating a second delineation survey that was conducted on April 1, 2022 by Blackhawk wetland specialists Kris Alberts and Seth Reimers. The delineation surveys followed guidelines set forth by the United States Army Corps of Engineers (USACE) (1987, 2008) and were performed to gather field data at potentially jurisdictional Waters of the United States and Waters of the State that may be subject to USACE, Regional Water Quality Control Board (RWQCB), and/or California Department of Fish and Wildlife (CDFW) jurisdictions within or adjacent to the Project as well as an assessment of riverine/riparian habitats as defined by the Plan. The aquatic resources delineation surveys included the Project site footprint, plus a 100-foot buffer. Methods for delineating the drainage feature followed guidelines set forth by the USACE (USACE 1987), including the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid Supplement; USACE 2008). All figures depicting the Project site and delineation results are shown in Attachment A. Representative photographs are shown in Attachment B. Data forms are included in Attachment C.

The Project site predominantly contains two MSHCP vegetation communities and/or land cover types (Residential/Urban/Exotic – Disturbed Lands and MSHCP Riverine Habitat) composed of non-native grasses and non-native ruderal plant species commonly associated with anthropogenically-altered landscapes, while areas surrounding the Project site contain sparse ornamental shrubs and trees amongst development. Vegetation communities within these land cover types include Disturbed Habitat (20.019 acres), Developed Habitat (0.291 acre), California Buckwheat Scrub (0.460 acre), California Walnut Scrub (0.007 acre), Disturbed Mulefat Scrub (0.145 acre), Mulefat Scrub (0.113 acre), Southern Willow Scrub (0.021 acre), Tamarisk Scrub (0.047 acre) and Unvegetated Channel (0.381 acre). MSHCP Riverine Habitat includes a subset of the acreage of each of the vegetation communities that totals 1.099 acres. The MSHCP Riverine Habitat includes 1.099 acres of likely California Department of Fish and Wildlife (CDFW) jurisdiction and 0.501 acre of likely United States Army Corps of Engineers/Regional Water Quality Control Board (USACE/RWQCB) jurisdiction that would be impacted by Project activities. By analyzing the site plan (Attachment A), It was determined that this feature will be impacted by Project activities, including 0.190 acre of temporary impacts and 0.909 acre of permanent impacts. Additional permitting from the USACE, RWQCB, and CDFW will be required

for Project authorization before impacting the drainage feature. In addition, a MSHCP Determination of Biologically Equivalent or Superior Preservation (DBESP) report will be required per the County of Riverside that will detail the offsite and/or onsite compensatory mitigation strategy.

The aquatic resources delineation surveys identified one ephemeral drainage feature along the western edge of the Project site that supports likely jurisdictional streambed and riparian areas. The drainage is best characterized as an ephemeral drainage feature with an unvegetated primary channel that supports limited riparian vegetation along its banks among a dominance of upland-associated vegetation. Flow within the drainage is ephemeral in nature, and likely consists of low to high velocity flow regimes (depending on rainfall amounts and durations), as evidenced by distinctly cut banks, scouring, definable ordinary high-water marks (OHWM), sparse riparian plant species coverage, and a lack of 3-parameter wetlands throughout the drainage. The primary hydrological input to the drainage is via three 8-foot concrete culverts below Cottonwood Avenue at the northwestern corner of the Project site. These culverts are hydrologically fed from natural and man-altered drainage features that continue northward and upgrade from the Project site. Bank-to-bank and/or riparian canopy widths of the drainage ranged from 16 to 98 feet; these widths equate to MSHCP Riverine Habitat and are considered California Department of Fish & Wildlife (CDFW)-jurisdictional. A strong OHWM was observed within most of the drainage feature, as most of the feature was best characterized as an unvegetated, sandy channel with several observed hydrological indicators, including strongly incised, cut banks. No emergent wetland vegetation was observed within the drainage; however, several scattered riparian-associated trees [i.e., salt cedar (*Tamarix ramosissima*), Goodding's willow (*Salix gooddingii*), mulefat (*Baccharis salicifolia*) and Fremont cottonwood (*Populus fremontii*)] were observed growing within and/or adjacent to the drainage with canopy drip lines extending beyond the channel banks.

Once water flows enter the Project site, the culverts outflow to a concrete-lined spillway and riprap. Modifications via the culvert have resulted in channelization of the drainage at the north end of the Project site, resulting in heavily incised channels/top of bank widths. The drainage characterized by low to high velocity flows, with velocity reducing as flow continues south. The OHWM is defined by flow lines, drift deposits, sediment sorting, scouring and destruction of vegetation, and except for the northernmost portion of the Project site, remains largely undisturbed. Many portions along the top of bank along the sides of the drainage remain in disturbed condition but maintain natural/historic function. Above the top of the banks on the west side, the habitat is primarily disturbed within the floodplain zone before transitioning westward to a developed concrete flood control wall sloped at 45 degrees and fitted with weep holes to drain from the adjacent Quincy Street. The top of bank along the west side is generally the same as the OHWM, characterized by a defined, vertically incised bank to bench ranging from one to seven feet tall at the cut. The eastern top of bank is more diffuse, characterized by a general transition in elevation from the OHWM to a low benched floodplain of native and disturbed habitat types. In many areas, the top of bank is defined by hydrology indicated by erosion of the adjacent upland slope. Where slopes have been modified, the top of bank is inferred by adjacent upstream and downstream reaches. The top of bank on the east side interfaces primarily with a terraced floodplain of California Buckwheat Scrub dominated by California buckwheat (*Eriogonum fasciculatum*) and tarragon (*Artemisia dracunculus*). Generally, the western top of bank equates to the vertically incised, eroded unvegetated channel line, and the eastern top of bank equates to the naturally vegetated bench. Within the top of bank widths, the lowest elevations where primary water flows occur is best characterized as an unvegetated, sandy channel, while the streambed is variously dominated by California buckwheat, tarragon, mulefat, salt cedar, Goodding's willow and Fremont cottonwood within and/or adjacent to the unvegetated channel.

Additional hydrological input into the drainage feature exists at the southwestern end of the Project site where a man-made, concrete stormwater swale feature funnels road runoff and enters the channel from Bay Avenue to the west. The concrete swale is four feet wide, with outflow directly to an erosional gully at the swale's terminus before entering the drainage proper.

The entirety of flow within the drainage is directed offsite to the south, to Canyon Lake (Railroad Canyon Reservoir), which outflows into the San Jacinto River watershed and ultimately terminates at Lake Elsinore. Canyon Lake and Lake Elsinore are both considered a Traditionally Navigable Water (TNW). As such, hydrology of the drainage in the Project site and its associated scattered, riparian vegetation are not isolated from a TNW and have demonstrable connectivity to two TNWs (Canyon Lake and Lake Elsinore) and the San Jacinto River. With demonstrable connectivity to a TNW, but a lack of wetland characteristics and a classification as an ephemeral drainage, the drainage feature meets the jurisdictional criteria for USACE Non-Wetland Waters of the United States and a RWQCB Non-Wetland Waters of the State. The upland vegetation that characterizes most of the drainage, hydrology patterns, and non-hydric soils are consistent with natural ephemeral watercourses of the region. Scattered riparian trees and shrubs do not occur robustly enough to support habitats for riparian-associated native species such as aquatic crustaceans, amphibians, and other fauna that may forage on these species, as the drainage is only expected to hold water for a few days at best. Additionally, the drainage is likely considered a streambed under the jurisdiction of CDFW, with the driplines of several observed riparian trees extending beyond the channel banks that adds CDFW riparian habitat beyond the streambed limits. All the CDFW jurisdiction includes all the MSHCP Riverine Habitat, as the riparian trees and shrubs are not occurring abundantly enough or in proximity to one another to warrant a classification of MSHCP riparian habitat.

Permanent and temporary direct impacts to the drainage feature specifically include the removal of vegetation, grading and development of the drainage to maintain the existing flow regime while facilitating Project development. The existing drainage feature will be partially graded but maintained within its existing gradient from north to south so that the ephemeral water regime can still flow between the Project site and Quincy Street to the west. Indirect impacts to the drainage feature are not anticipated as a result of the Project.

- The Project is expected to directly and permanently impact a total of 0.375 acre (1,280 linear feet) of USACE Non-Wetland Waters of the United States and RWQCB Non-wetland Waters of the State. The Project is also expected to temporarily impact an additional 0.126 acre (562 linear feet) of USACE Non-Wetland Waters of the United States and RWQCB Non-wetland Waters of the State.
- The Project is expected to directly and permanently impact a total of 0.909 acre (1,280 linear feet) of CDFW streambeds, which includes 0.041 acre of CDFW riparian habitat and 0.868 acre of CDFW bank to bank jurisdiction. The Project is also expected to temporarily impact a total of 0.190 acre (562 linear feet) of CDFW streambeds, which includes 0.008 acre of CDFW riparian habitat and 0.182 acre of CDFW bank to bank jurisdiction.

The aquatic resources delineation survey determined that waters under the likely jurisdiction of USACE, RWQCB and CDFW occur on the Project site. Impacts to Non-Wetland Waters of the United States would likely require a Section 404 permit from the USACE under the federal Clean Water Act. Impacts to Non-Wetland Waters of the State would likely require a Waste Discharge Requirement (WDR) or Section 401 permit from the RWQCB under the state Clean Water Act. Impacts to CDFW-jurisdictional

streambeds and riparian areas may be authorized by CDFW through a Section 1602 Streambed Alteration Agreement.

The delineation survey identified 1.099 acres of MSHCP Riverine Habitat within the Project boundary. It was determined that this feature will be impacted by Project activities, including 0.190 acre of temporary impacts and 0.909 acre of permanent impacts. Additional permitting and/or approvals from the USACE, RWQCB, and CDFW will be required for Project authorization before impacting the drainage feature. In addition, a MSHCP Determination of Biologically Equivalent or Superior Preservation (DBESP) report will be required per the County of Riverside that will detail the offsite and/or onsite compensatory mitigation strategy.

1.0 INTRODUCTION

Blackhawk Environmental was contracted by EPD Solutions Inc. to provide biological and aquatic resources surveys and an Aquatic Resources Delineation Report for the proposed Pacifica Cottonwood Project (Project), located on approximately 21.484 acres of previously undeveloped lands in the City of Moreno Valley, Riverside County, California (Attachment A – Figure 1). The Project site is within the MSHCP area; however, the Project is not located within a MSHCP Cell Group or MSHCP Criteria Cell(s).

A habitat assessment for the Project was performed by Blackhawk biologist Kris Alberts on May 5, 2021. During this assessment, Mr. Alberts noted the presence of riverine habitat in the form of one ephemeral drainage feature on the Project site. Based on this finding, and following two Project design changes, aquatic resources delineation surveys were performed on August 18, 2021 and April 1, 2022 to delineate potentially jurisdictional areas and map the extent of MSHCP Riverine Habitat within the Project development footprint. Methods for delineating the drainage feature followed guidelines set forth by the United States Army Corps of Engineers ([USACE] 1987), including the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid Supplement; USACE 2008). The jurisdictional delineation survey effort focused on documenting existing site conditions, such as soils, topography, hydrology, vegetation and potentially jurisdictional aquatic resources, in the areas proposed for Project development, direct, indirect, permanent and/or temporary impacts. All figures depicting the Project site and delineation results are shown in Attachment A. Representative photographs are shown in Attachment B. Data forms are included in Attachment C.

Except for the drainage feature at the west end, the proposed Project is located within previously graded/disked, regularly mowed, vacant land dominated by low-growing non-native and ruderal vegetation. The Project site is surrounded by urban development in addition to several scattered vacant lots. The site is bounded to the west by a concrete-lined and earthen drainage channel running parallel to Quincy Street, to the east by private residential homes, to the north by Cottonwood Avenue and to the south by Bay Avenue and additional vacant lands (Attachment A - Figure 2). The Project site shows signs of recent anthropogenic impacts such as mowing, trash dumping, disking, and off-road vehicle use. The Project site consists of a mostly flat lot; elevations within the Project site range from 1,639 feet above mean sea level (AMSL) in the southeast corner at its lowest point, and up to 1,664 feet AMSL at the northwestern corner at its highest point. Current and recent land use is best characterized as open space/vacant land.

The purpose of the jurisdictional delineation was to identify any changes in existing site conditions and document waters occurring within the Project site that may be considered jurisdictional by the United States Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and/or California Department of Fish and Wildlife (CDFW), and to provide necessary background information for avoidance measures by engineering and for analysis by USACE, CDFW, the RWQCB and Riverside County staff, if permits are required.

No potential vernal pools, seasonal depressions or fairy shrimp habitat were observed during the field surveys. Therefore, no further assessment of vernal pools or fairy shrimp habitat was performed during the aquatic resources delineation surveys.

1.1 Project Description

The Project proposes the complete buildout of 20.708 acres as permanent impacts, plus 0.776 acre of temporary impacts, in the overall 21.484-acre area, in the City of Moreno Valley. Proposed development engineering plans involve the construction of residential homes, paved streets and sidewalks, landscaped areas and all associated infrastructure and would convert the currently vacant land to residential development. The proposed Project also includes a new bridge from Bay Avenue at the southwest end of the Project site, as well as channel improvements to the existing drainage feature. The Project site is within Assessor's Parcel Number (APN) 478-250-001.

2.0 REGULATORY SETTING

2.1 USACE Waters of the U.S.

According to the USACE Wetland Delineation Manual, wetlands are defined 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.”

2.1.1 Regulatory Definition

In accordance with Section 404 of the Clean Water Act (CWA), USACE regulates the discharge of dredged or fill material into Waters of the United States. The term “Waters of the United States” is defined as:

- All traditional navigable waters (TNW) currently used, or used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands;
- 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 foreign commerce including any such waters, (1) which could be used by interstate or foreign travelers for recreational or other purposes; or (2) from which fish or shellfish are, or could be, taken and sold in interstate or foreign commerce; or (3) which are used or could be used for industries in interstate commerce;
- All other impoundments of waters otherwise defined as waters of the United States under the definition;
- Tributaries of waters identified above;
- The territorial seas; and
- Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in the paragraphs above (33 Code of Federal Regulations [CFR] Part 328.3[a]).

Non-navigable tributaries that do not constitute relatively permanent waters (RPW; exhibit at least seasonal flow, typically three months) may be considered Waters of the U.S. based on significant nexus standards, which may include assessment of downstream hydrologic and ecological functions of the tributary, as well as connectivity to receiving waters (RPWs and/or TNWs).

2.1.2 Wetland Parameters

Wetlands are delineated using three parameters: hydrophytic vegetation, wetland hydrology and hydric soils. According to USACE, indicators for all three parameters must normally be present to qualify as a wetland.

2.1.2.1 Hydrophytic Vegetation

Hydrophytic vegetation is defined as “the sum total of macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content” (USACE 1987). Potential wetland areas were surveyed by walking through the Survey Area and making observations of those areas exhibiting characteristics of jurisdictional waters or wetlands. Vegetation

units with potential wetland areas were examined, and data for each vegetation stratum (i.e., tree, shrub, herb and vine) were recorded on the datasheet provided in the Arid West Supplement (USACE 2008). The percent absolute cover of each species present was visually estimated and recorded.

The wetland indicator status of each species recorded was determined by using the National Wetland Plant List (Lichvar, et. al. 2016). An obligate (OBL) indicator status refers to plants that are almost always hydrophytic and rarely in uplands. A facultative wet (FACW) indicator status refers to plants that usually are hydrophytic but are occasionally found in non-wetlands. A facultative (FAC) indicator status refers to plants that commonly occur as either a hydrophyte or non-hydrophyte. Facultative upland (FACU) species occasionally are hydrophytic but usually occur in uplands. Upland (UPL) species almost always occur in uplands and are rarely hydrophytic. A not indicated (NI) status refers to species that have insufficient data available to determine an indicator status at this time for the local region.

Plant species nomenclature follows that contained in *the Jepson Online Interchange* (Jepson Flora Project 2018). Dominant species with an indicator status of NI or not listed in the 2016 National Wetland Plant List were evaluated as either wetland or upland indicator species based on local professional knowledge of where the species are most often observed in habitats characteristic of southern California.

2.1.2.2 Hydric Soils

A hydric soil is a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (USACE 1987). Hydric soil indicators are formed predominantly by the accumulation or loss of iron, manganese, sulfur or carbon compounds (USACE 2008). The hydric soil criterion is considered fulfilled at a location if soils in the area can be inferred to have a high groundwater table, evidence of prolonged soil saturation exists, or any indicators suggesting a long-term reducing environment in the upper 18 inches of the soil profile are present. Additionally, soils mapped by the United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) as hydric were referenced prior to field verification.

A sampling point was selected within a potential wetland area where the apparent boundary between wetland and upland was inferred based on changes in the composition of the vegetation and topography. The soil pit was dug to a depth of at least 10 inches or to a depth necessary to determine soil color, evidence of soil saturation, depth to groundwater, and indicators of a reducing soil environment (e.g., mottling, oxidation, gleying, sulfidic odor).

2.1.2.3 Wetland Hydrology

The presence of wetland hydrology indicators confirm that inundation or saturation has occurred on a site, but may not provide information about the timing, duration, or frequency of the event. Hydrology features are generally the most ephemeral of the three wetland parameters (USACE 2008). Hydrologic information for the site was obtained by reviewing USGS topographic maps, historic and current aerial photographs, and by directly observing hydrology indicators in the field. The wetland hydrology criterion is considered fulfilled at a location if, based upon the conclusions inferred from the field observations, an area has a high probability of being periodically inundated or has soils saturated to the surface at some time during the growing season to develop anaerobic conditions in the surface soil environment, especially the root zone (USACE 1987). If at least one primary indicator or at least two

secondary indicators are found at a sample point, the wetland hydrology criterion is considered fulfilled.

2.1.3 Atypical Situations

Because there are situations in which one or more of the wetland parameters has been removed or altered as a result of recent natural events or human activities, the definition of a wetland includes the phrase “under normal circumstances” (USACE 1987). To describe these conditions, USACE uses definitions for atypical situations and problem areas. They are as follows:

Atypical situation: . . . refers to areas in which one or more parameters (vegetation, soil, and/or hydrology) have been sufficiently altered by recent human activities or natural events to preclude the presence of wetland indicators of the parameter (USACE 1987).

Problem areas: . . . wetland types in which wetland indicators of one or more parameters may be periodically lacking due to normal seasonal or annual variations in environmental conditions that result from causes other than human activities or catastrophic natural events. Representative examples of problem areas include seasonal wetlands, wetlands on drumlins, prairie potholes, and vegetated flats (USACE 1987).

Atypical situations and problem areas may lack one or more of the three criteria, yet still may be considered wetlands. Background information on the previous condition of the area, field observations and/or the identification of undisturbed reference sites adjacent to atypical sites may indicate that the site met the wetland criteria prior to disturbance. Additional delineation procedures would be employed if normal circumstances did not occur on a site.

2.1.4 Vernal Pools

Vernal pools are considered “problem areas” because vegetation or hydric soils may be lacking due to seasonal filling by rainfall and eventual drying. As described in the Arid Supplement, “the species composition of some wetland plant communities in the Arid West can change in response to seasonal weather patterns and long-term climatic fluctuations. Wetland types that are influenced by these shifts include vernal pools, playa edges, seeps and springs. Lack of hydrophytic vegetation during dry periods should not immediately eliminate a site from further consideration as a wetland.” In addition, since they support seasonally ponded soils, when soil investigations are performed within vernal pools, they may lack hydric soil indicators. The USACE includes problem soils as “seasonally ponded, depressional wetlands (that) occur in basins and valleys throughout the Arid West. Most are perched systems, with water ponding above a restrictive soil layer, such as a hardpan or clay layer, that is at or near the surface (e.g., in Vertisols). Some of these wetlands lack hydric soil indicators due to limited saturation depth, saline conditions or other factors.”

2.2 USACE Non-Wetland Waters of the U.S.

The USACE also requires the delineation of non-wetland jurisdictional Waters of the U.S. These waters must have strong hydrology indicators, such as the presence of seasonal flows and an ordinary high watermark (OHWM). An ordinary high watermark is defined as:

. . . that line on the shore established by the fluctuations of water and indicated by physical characteristics such as [a] clear, natural line impressed on the bank, shelving,

changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas (33 CFR Part 328.3).

Areas delineated as non-wetland jurisdictional waters may lack wetland vegetation or hydric soil characteristics. Hydric soil indicators may be missing because topographic position precludes ponding and subsequent development of hydric soils. Absence of wetland vegetation can result from frequent scouring due to rapid water flow. These types of jurisdictional waters are delineated by the lateral and upstream/downstream extent of the OHWM of the particular drainage or depression.

2.3 CDFW Jurisdictional Waters

Under Sections 1600–1607 of the Fish and Game Code, CDFW regulates activities that would divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. CDFW has jurisdiction over riparian habitats (e.g., riparian woodland) associated with watercourses. CDFW jurisdictional waters are delineated by the distances between the outer edges of riparian vegetation or at the tops of the banks of streams or lakes, whichever is wider. Although CDFW does not regulate vernal pools under Section 1602 of the Fish and Game Code, CDFW will assert jurisdiction over isolated riparian features (including vernal pools) if California state threatened and/or endangered species are present via the California Endangered Species Act, or which provide resources directly or indirectly to fish and wildlife of the region. CDFW may also assert jurisdiction over modified or man-made waterways; such jurisdiction is generally based on the value of such features to support riparian or aquatic plant or animal species. For clarification, of features that may be subject to CDFW jurisdiction, the CDFW Legal Advisor has prepared the following opinion (CDFG ESD 1994):

- Natural waterways that have been subsequently modified and which have the potential to contain fish, aquatic insects, and riparian vegetation will be treated like natural waterways.
- Artificial waterways that have acquired the physical attributes of natural stream courses and which have been viewed by the community as natural stream courses should be treated by [CDFW] as natural waterways.
- Artificial waterways without the attributes of natural waterways should generally not be subject to Fish and Game Code provisions.

CDFW jurisdictional limits may also include artificial stock ponds and irrigation ditches constructed within uplands, and outer drip line limits of adjacent riparian habitat supported by a river, stream, or lake regardless of the riparian area's federal wetland status or its location beyond the defined bed, bank or channel.

2.4 RWQCB Jurisdictional Waters

RWQCB is the regional agency responsible for protecting water quality in California. The jurisdiction of this agency includes Waters of the State as mandated by the federal CWA Section 401. When CWA Section 404 jurisdiction is not present for isolated water, the RWQCB may assert jurisdiction via the California Porter-Cologne Water Quality Control Act. Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state". The Porter-Cologne Water Quality Control Act provides a regulatory framework to provide comprehensive protections for surface and groundwater within the State of California. Waters subject to jurisdiction under the Porter-

Cologne Water Quality Control Act require that any discharge that may negatively impact or otherwise affect a Water of the State must coordinate with RWQCB. During coordination, RWQCB may require implementation of mitigation measures or other requirements to protect overall water quality.

The term “Waters of the State” includes “any surface water or groundwater, including saline waters, within the boundaries of the state.” “Waters of the State” includes all “Waters of the United States”. The following wetlands are Waters of the State:

1. Natural wetlands.
2. Wetlands created by modification of a surface Water of the State, and
3. Artificial wetlands that meet the following criteria:
 - a. Approved by an agency as compensatory mitigation for impacts to other Waters of the State, except where the approving agency explicitly identifies the mitigation as being of limited duration;
 - b. Specifically identified in a water quality control plan as a Wetland or other Water of the State;
 - c. Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape; or
 - d. Greater than or equal to one acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (i.e., the following artificial wetlands are not Waters of the State unless they also satisfy the criteria set forth in 2, 3a, or 3b):
 - i. Industrial or municipal wastewater treatment or disposal,
 - ii. Settling of sediment,
 - iii. Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program,
 - iv. Treatment of surface waters,
 - v. Agricultural crop irrigation or stock watering,
 - vi. Fire suppression,
 - vii. Industrial processing or cooling,
 - viii. Active surface mining – even if the site is managed for interim wetlands functions and values,
 - ix. Log storage,
 - x. Treatment, storage, or distribution of recycled water, or
 - xi. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or
 - xii. Fields flooded for rice growing.

All artificial wetlands that are less than an acre in size and do not satisfy the criteria set forth in 2, 3.a, 3.b, or 3.c are not Waters of the State. If an aquatic feature meets the wetland definition, the burden is on the applicant to demonstrate that the wetland is not a Water of the State.

2.5 MSHCP Riparian/Riverine Habitat

The MSHCP defines Riparian/Riverine Habitat as those areas “which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or which

depend upon soil moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year." If riparian/riverine habitat will be impacted by a project, the MSHCP requires that a Determination of Biologically Superior or Equivalent Preservation report (DBESP) be prepared to outline mitigation ratios and strategies for the provision of compensatory mitigation.

3.0 METHODS

A jurisdictional delineation, following the guidelines set forth by USACE (1987, 2008), was performed to gather field data at potentially jurisdictional Waters of the United States and Waters of the State within the proposed Project site. To account for all potential Project impact areas and provide a greater landscape context to sensitive aquatic resources, all areas inside the Project site, plus a 100-foot buffer, were initially assessed for jurisdictional resources, including all areas proposed for Project development and/or impact (Attachment A – Site Plan). Potential wetlands were then delineated within the Project site based on commonality among vegetation community characteristics and three-parameter testing methodology (i.e., soils, vegetation, hydrology). Blackhawk Environmental wetland specialists Ian Maunsell and Ryan Quilley conducted an aquatic resources delineation survey on August 18, 2021. Then, a Project design change after the initial survey necessitated a second aquatic resources delineation survey on April 1, 2022 conducted by Blackhawk Environmental wetland specialists Kris Alberts and Seth Reimers. Both surveys were conducted to delineate potentially jurisdictional areas and map the extent of MSHCP Riverine Habitat within the Project development footprint, using submeter Global Positioning System (GPS) equipment to map jurisdictional limits to within one meter of accuracy.

Prior to conducting the field delineation, the following sources were consulted to identify land use history and provide additional context to potentially atypical and problematic jurisdictional wetlands within the Survey Area, including:

- USGS *Sunnymead, California* quadrangle topographic map (USGS 1967)
- Historical aerial photographs (NETR 1947) (Historic Aerials 2022)
- Current and historical aerial photographs (Google 2022)
- National Wetland Inventory (USFWS 2022)
- National Hydrography Dataset (2022)
- California Natural Diversity Database (CNDDDB) search for sensitive riverine, riparian and/or aquatic species (CDFW 2021)

Once on site, the potential wetland locations were examined to determine the presence of any of the three wetland parameters or drainage channels. Soil type and classification data used in the delineation were provided by the Natural Resource Conservation Service's web soil survey (United States Department of Agriculture [USDA] 2010). Remote sensing was not utilized for this Project.

Potential waters and/or wetland locations observed within the Project site were evaluated using the methodology set forth in the USACE Wetland Delineation Manual (USACE 1987) and the Arid West Supplement (USACE 2008). Wetland hydrology indicators may include evidence of inundation, saturation, watermarks, drainage patterns, soil cracks, drift lines, sediment deposits, presence of aquatic invertebrates and/or other elements. Vegetation was analyzed using dominant species wetland indicator status (USDA 2018). Ordinary high water marks were examined following procedures detailed in the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2010). Suspected non-wetland jurisdictional areas were evaluated for the presence of definable channels, ordinary high-water marks, and connectivity to a TNW or RPW.

4.0 RESULTS

A discussion of the local hydrology in the Project site, description of the major vegetation units observed in delineated areas within the Project site, and soil types encountered are presented below. Copies of the field data forms summarizing information on hydrology, vegetation, and soils observed at each sample site are provided in Attachment C. Ordinary High Water Mark data sheets and Beta Arid West Streamflow Duration Assessment Method data sheets are also included in Attachment C. The NRCS Climate Analysis for Wetlands table, also known as WETS table, is included as Attachment D and details precipitation data across decades prior to this delineation survey of the Project site.

4.1 Hydrology

Elevations within the Project site range from 1,639 feet above mean sea level (AMSL) in the southeast corner at its lowest point, and up to 1,664 feet AMSL at the northwestern corner at its highest point. The Project site drains from the north to the south, with the drainage ultimately terminating at Lake Elsinore. The Project site predominantly contains two MSHCP vegetation communities and/or land cover types (Residential/Urban/Exotic – Disturbed Lands and MSHCP Riverine Habitat) composed of non-native grasses and non-native ruderal plant species commonly associated with anthropogenically-altered landscapes, while areas surrounding the Project site contain sparse ornamental shrubs and trees amongst development. Vegetation communities within these land cover types include Disturbed Habitat (20.019 acres), Developed Habitat (0.291 acre), California Buckwheat Scrub (0.460 acre), California Walnut Scrub (0.007 acre), Disturbed Mulefat Scrub (0.145 acre), Mulefat Scrub (0.113 acre), Southern Willow Scrub (0.021 acre), Tamarisk Scrub (0.047 acre) and Unvegetated Channel (0.381 acre). MSHCP Riverine Habitat includes a subset of the acreage of each of the vegetation communities that totals 1.099 acres.

The aquatic resources delineation surveys identified one ephemeral drainage feature along the western edge of the Project site that supports likely jurisdictional streambed and riparian areas. The drainage is best characterized as an ephemeral drainage feature with an unvegetated primary channel that supports limited riparian vegetation along its banks among a dominance of upland-associated vegetation. Flow within the drainage is ephemeral in nature, and likely consists of low to high velocity flow regimes (depending on rainfall amounts and durations), as evidenced by distinctly cut banks, scouring, definable ordinary high-water marks (OHWM), sparse riparian plant species coverage, and a lack of 3-parameter wetlands throughout the drainage. The primary hydrological input to the drainage is via three 8-foot concrete culverts below Cottonwood Avenue at the northwestern corner of the Project site. These culverts are hydrologically fed from natural and man-altered drainage features that continue northward and upgrade from the Project site. Bank-to-bank and/or riparian canopy widths of the drainage ranged from 16 to 98 feet; these widths equate to MSHCP Riverine Habitat and are considered California Department of Fish & Wildlife (CDFW)-jurisdictional. A strong OHWM was observed within most of the drainage feature, as most of the feature was best characterized as an unvegetated, sandy channel with several observed hydrological indicators, including strongly incised, cut banks. No emergent wetland vegetation was observed within the drainage; however, several scattered riparian-associated trees [i.e., salt cedar (*Tamarix ramosissima*), Goodding's willow (*Salix gooddingii*), mulefat (*Baccharis salicifolia*) and Fremont cottonwood (*Populus fremontii*)] were observed growing within and/or adjacent to the drainage with canopy drip lines extending beyond the channel banks.

Once water flows enter the Project site, the culverts outflow to a concrete-lined spillway and riprap. Modifications via the culvert have resulted in channelization of the drainage at the north end of the Project site, resulting in heavily incised channels/top of bank widths. The drainage characterized by low to high velocity flows, with velocity reducing as flow continues south. The OHWM is defined by flow lines, drift deposits, sediment sorting, scouring and destruction of vegetation, and except for the northernmost portion of the Project site, remains largely undisturbed. Many portions along the top of bank along the sides of the drainage remain in disturbed condition but maintain natural/historic function. Above the top of the banks on the west side, the habitat is primarily disturbed within the floodplain zone before transitioning westward to a developed concrete flood control wall sloped at 45 degrees and fitted with weep holes to drain from the adjacent Quincy Street. The top of bank along the west side is generally the same as the OHWM, characterized by a defined, vertically incised bank to bench ranging from one to seven feet tall at the cut. The eastern top of bank is more diffuse, characterized by a general transition in elevation from the OHWM to a low benched floodplain of native and disturbed habitat types. In many areas, the top of bank is defined by hydrology indicated by erosion of the adjacent upland slope. Where slopes have been modified, the top of bank is inferred by adjacent upstream and downstream reaches. The top of bank on the east side interfaces primarily with a terraced floodplain of California Buckwheat Scrub dominated by California buckwheat (*Eriogonum fasciculatum*) and tarragon (*Artemisia dracunculus*). Generally, the western top of bank equates to the vertically incised, eroded unvegetated channel line, and the eastern top of bank equates to the naturally vegetated bench. Within the top of bank widths, the lowest elevations where primary water flows occur is best characterized as an unvegetated, sandy channel, while the streambed is variously dominated by California buckwheat, tarragon, mulefat, salt cedar, Goodding's willow and Fremont cottonwood within and/or adjacent to the unvegetated channel.

The entirety of flow within the drainage is directed offsite to the south, to Canyon Lake (Railroad Canyon Reservoir), which outflows into the San Jacinto River watershed and ultimately terminates at Lake Elsinore. Canyon Lake and Lake Elsinore are both considered a Traditionally Navigable Water (TNW). As such, hydrology of the drainage in the Project site and its associated scattered, riparian vegetation are not isolated from a TNW and have demonstrable connectivity to two TNWs (Canyon Lake and Lake Elsinore) and the San Jacinto River. With demonstrable connectivity to a TNW, but a lack of wetland characteristics and a classification as an ephemeral drainage, the drainage feature meets the jurisdictional criteria for USACE Non-Wetland Waters of the United States and a RWQCB Non-Wetland Waters of the State. The upland vegetation that characterizes most of the drainage, hydrology patterns, and non-hydric soils are consistent with natural ephemeral watercourses of the region. Scattered riparian trees and shrubs do not occur robustly enough to support habitats for riparian-associated native species such as aquatic crustaceans, amphibians, and other fauna that may forage on these species, as the drainage is only expected to hold water for a few days at best. Additionally, the drainage is likely considered a streambed under the jurisdiction of CDFW, with the driplines of several observed riparian trees extending beyond the channel banks that adds CDFW riparian habitat beyond the streambed limits. All the CDFW jurisdiction includes all the MSHCP Riverine Habitat, as the riparian trees and shrubs are not occurring abundantly enough or in proximity to one another to warrant a classification of MSHCP riparian habitat.

The literature review results broadly reflect the results of the aquatic resources delineation surveys. A review of historic aerials indicate that the upland portions of the Project site were farmed prior to 1985 at least as far back as 1966, and then left fallow to the present day. The drainage feature on the Project site is a USGS blue line drainage feature that has been subjected to adjacent agricultural, disking and/or fuel reduction practices over many decades (Attachment A). The drainage feature on the

Project site is also listed as an ephemeral stream/river of the National Hydrography Dataset (Attachment A) and as an intermittent, seasonally flooded, intermittent streambed (classification code: RS4BC) by the National Wetland Inventory (Attachment A).

4.1.1 Tributaries & Natural Drainages

The Project site supports one natural drainage feature, albeit man-altered, as evidenced by the USGS blue-line drainage that exists along the western portion of the Project site. Though the drainage feature is considered natural, it has been man-altered through repeated agricultural and/or diking activities since at least 1966 (Historic Aerials 2022), as well as being fitted with a concrete flood control wall adjacent to Quincy Street. This has resulted in a drainage feature that now has its observable hydrological indicators and flows confined to the lowest portions of the overall channel between the earthen banks of the eastern side and the disturbed and developed banks of the western side.

4.1.2 Man-made Features

Additional hydrological input into the drainage feature exists at the southwestern end of the Project site where a man-made, concrete stormwater swale feature funnels road runoff and enters the channel from Bay Avenue to the west. The concrete swale is four feet wide, with outflow directly to an erosional gully at the swale's terminus before entering the drainage proper.

4.2 Vegetation

A total of nine vegetation communities and land cover types were identified in the *Pacifica Cottonwood Project Habitat Assessment Report* to occur in the Project area (Blackhawk 2022). Vegetation communities were described according to *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) and/or *Draft Vegetation Communities of San Diego County* (Oberbauer 2008). The Project site predominantly contains two MSHCP vegetation communities and/or land cover types (Residential/Urban/Exotic – Disturbed Lands and MSHCP Riverine Habitat) composed of non-native grasses and non-native ruderal plant species commonly associated with anthropogenically-altered landscapes, while areas surrounding the Project site contain sparse ornamental shrubs and trees amongst development. Vegetation communities within these land cover types include Disturbed Habitat (20.019 acres), Developed Habitat (0.291 acre), California Buckwheat Scrub (0.460 acre), California Walnut Scrub (0.007 acre), Disturbed Mulefat Scrub (0.145 acre), Mulefat Scrub (0.113 acre), Southern Willow Scrub (0.021 acre), Tamarisk Scrub (0.047 acre) and Unvegetated Channel (0.381 acre). Of the nine vegetation communities mapped in the Project site, Disturbed Mulefat Scrub, Mulefat Scrub, Southern Willow Scrub and Tamarisk Scrub support hydrophytic vegetation and/or concentrated riparian vegetation.

MSHCP Riverine Habitat includes a subset of the acreage of each of the vegetation communities that totals 1.099 acres: Disturbed Habitat (0.197 acre), Developed Habitat (0.022 acre), California Buckwheat Scrub (0.166 acre), California Walnut Scrub (0.007 acre), Disturbed Mulefat Scrub (0.145 acre), Mulefat Scrub (0.113 acre), Southern Willow Scrub (0.021 acre), Tamarisk Scrub (0.047 acre) and Unvegetated Channel (0.381 acre).

4.2.1 Areas Lacking Hydrophytic Vegetation or Hydric Soils

Four upland vegetation communities and/or land cover types occur within the Project site: Disturbed Habitat, Developed Habitat, California Buckwheat Scrub and California Walnut Scrub. One additional

lowland land cover type also exhibited little to no hydrophytic plant species coverage and a lack of hydric soils: Unvegetated Channel. These vegetation communities/land cover types are composed of upland plant species or bare ground with no to very sparse hydrophytic vegetative cover and do not meet the hydrophytic vegetation criteria for wetlands. Complete descriptions of these vegetation communities/land cover types are provided in the *Pacifica Cottonwood Project Habitat Assessment Report* (Blackhawk 2022).

4.3 Soils

Mapped soil units within the Project Survey Area include San Emigdio loams with slopes ranging between zero to eight percent. Three distinct soil series are present within the Project area. These soil units are included in Table 1.

Table 1. Soils Occurring Within the Initial Project Site

Map Unit Symbol	Map Unit Name	Acres (Percent) of Project Site
SeA	San Emigdio fine sandy loam, 0 to 2 percent slopes, occasional frost	4.34 (24.1%)
SeC2	San Emigdio fine sandy loam, 2 to 8 percent slopes, eroded	1.42 (7.9%)
SgA	San Emigdio loam, 0 to 2 percent slopes	12.22 (68.0%)

During the August 28, 2021 aquatic resources delineation survey, four soil pits were excavated to determine if conditions for hydric soils existed on site (i.e., Soil Pits 1, 2, 3 and 4). During the April 1, 2022 aquatic resources delineation survey that followed a Project design change, four more soil pits were excavated to determine if conditions for hydric soils existed on the now-expanded Project site (i.e., Soil Pits 5, 6, 7 and 8). Data sheets describing field soils conditions are included in Attachment C.

The soil pits were selected to represent all potential wetland areas across the width of the channel, as well as upland habitats that were hypothesized not to support wetlands. Each pit was dug to at least 18 inches below the soil surface, and all soil horizons were examined for the presence/absence of hydric soil indicators.

Soil Pits (SP) 1 and 2 were dug in stands of Mulefat Scrub toward the southern end of the drainage feature. SP-3 was dug in a stand of Mulefat Scrub with Fremont cottonwood at the southwest edge of the Project site. SP-4 was dug in California Buckwheat Scrub at the northern end of the drainage feature. SP-5 was dug in an upland area of Disturbed Habitat at the west-central portion of the drainage feature. SP-6 was dug in Southern Willow Scrub at the central portion of the drainage feature. SP-7 was dug in Disturbed habitat along the eastern bank above grade from the OHWM in the central portion of the drainage feature. SP-8 was dug in California Buckwheat Scrub along the eastern bank above grade from the OHWM at the northern end of the drainage feature.

No hydric soils were observed anywhere on the Project site.

5.0 JURISDICTIONAL DELINEATION

Figures 3 and 4 identify the locations of likely USACE, CDFW, RWQCB and MSHCP jurisdictional waters within the Project site. Table 2 summarizes the acreages of each jurisdiction.

Table 2. Jurisdictional Waters Within the Survey Area

Jurisdictional Waters	Acres (Linear Feet)
USACE Jurisdiction	
Wetland Waters of the United States	0
Non-Wetland Waters of the United States	0.501 (1,280)
USACE Total Jurisdiction	0.501 (1,280)
RWQCB Jurisdiction	
Wetland Waters of the State	0
Non-Wetland Waters of the State	0.501 (1,280)
RWQCB Total Jurisdiction	0.501 (1,280)
CDFW Jurisdiction	
Wetlands	0
Riparian	0.049 (106)
Bank to Bank	1.050 (1,280)
CDFW Total Jurisdiction	1.099 (1,280)
MSHCP Jurisdiction	
Wetlands	0
Riparian Habitat	0
Riverine Habitat	1.099 (1,280)
MSHCP Total Jurisdiction	1.099 (1,280)

5.1 USACE Jurisdiction

USACE jurisdictional waters were present within the OHWM of the ephemeral drainage feature on the Project site. Potential USACE jurisdiction was measured to submeter accuracy by the widths of the observable OHWMs. The USACE jurisdictional limits include the Unvegetated Channel and peripheral portions of most other mapped vegetation communities within the OHWM. The drainage feature includes 0.501 acre (1,280 linear feet) of USACE-jurisdictional non-RPW. The drainage feature meets the current definition of federal non-wetland areas as an ephemeral drainage feature with a lack of hydrophytic vegetation over most of its extent, an absence of hydric soils, but has hydrological indicators and documentation as a USGS blue-line drainage and NWI/NHD mapped ephemeral feature. The ephemeral feature is natural, albeit man-altered, through historic agricultural and diking activities, and connects to two TNWs (Canyon Lake and Lake Elsinore) in the San Jacinto River watershed. Therefore, the drainage feature functions as part of the tributary system to Canyon Lake, the San Jacinto River and Lake Elsinore as a USACE-jurisdictional ephemeral drainage. Impacts to the drainage feature as a result of the Project are not anticipated to impact interstate commerce but could adversely impact the downstream TNWs. Project-related impacts to the drainage feature are subject to regulation under the federal Clean Water Act. Table 3 is an aquatic resources summary table specific to USACE minimum standards for delineation surveys.

Table 3. USACE Aquatic Resources Summary Table

Aquatic Resource Name	Cowardin Code ¹	Active Channel Width Range (feet)	Observed OHWM Indicators ²	Observed Wetland Parameters ³	Presence of OHWM/Wetland	Dominant Vegetation ⁴	Location (lat, long)	Total Acre(s) ⁵	Total Linear Feet
Drainage Feature	R4SB4	6-38	CAST, CVS, CVC, BBS	HV, WH	Yes/No	Unvegetated Channel, Mulefat Scrub, Disturbed Mulefat Scrub, Tamarisk Scrub, Disturbed, California Walnut Scrub, Southern Willow Scrub, California Buckwheat Scrub	33.922655 -117.16540	0.501	1,280

¹ Dominant Cowardin code utilized to represent each feature based on field observations and available data.

² OHWM Indicators: CAST = Change in average sediment texture; CVS = Change in vegetation species; CVC = Change in vegetation cover; BBS = Break in bank slope; WS = Water staining

³ Wetland Indicators: HV = Hydrophytic vegetation; HS = Hydric soil; WH = Wetland hydrology

⁴ See Figure 2 for all vegetation communities present within each aquatic resource.

⁵ Acreages summed using raw numbers provided during GIS analysis (available upon request) and thus the sum of the total rounded numbers may not directly add up in this table.

5.2 RWQCB Jurisdiction

RWQCB jurisdictional waters within the Project site total 0.501 acre of non-wetland Waters of the State within the drainage feature. The RWQCB jurisdictional limits include the Unvegetated Channel and peripheral portions of most other mapped vegetation communities within the OHWM. The drainage feature includes 0.501 acre (1,280 linear feet) of RWQCB-jurisdictional ephemeral non-RPW. Project-related impacts to the drainage feature are subject to regulation under the Porter Cologne Water Quality Control Act.

5.3 CDFW Jurisdiction

CDFW jurisdictional waters within the Project site total 1.099 acres (1,280 linear feet) of the ephemeral drainage feature and scattered, adjacent riparian vegetation. The drainage feature includes 1.050 acres (1,280 linear feet) of CDFW-jurisdictional streambed with an adjacent total of 0.049 acre (106 linear feet) of riparian canopy dripline habitat. Project-related impacts to the drainage feature and its associated riparian habitat would be subject to the terms and conditions of a CDFW Section 1602 Streambed Alteration Agreement under California Department of Fish and Game (CDFG) Code 1600.

5.4 MSHCP Riverine Habitat Jurisdiction

MSHCP jurisdictional Riverine Habitat is equal to the CDFW jurisdictional area on the Project site. As such, the MSHCP Riverine Habitat includes all USACE and RQWQCB jurisdictional limits, as defined by the OHWM, plus adjacent CDFW bank to bank widths and CDFW riparian drip line extents. Therefore, MSHCP jurisdictional Riverine Habitat includes 1.099 acres (1,280 linear feet) in the drainage feature that includes 0.049 acre (106 linear feet) of CDFW riparian canopy dripline habitat plus 1.050 acres (1,280 linear feet) of CDFW bank-to-bank streambed, within which lies all USACE and RWQCB

jurisdiction. The scattered, riparian trees and shrubs are included in the MSHCP Riverine Habitat classification, as the trees and shrubs are not growing in such proximity or abundance as to warrant a distinct MSHCP Riparian classification.

6.0 PROJECT IMPACTS

The Project would include 20.708 acres of permanent impacts and 0.776 acre of temporary impacts associated with the construction and implementation of the entire 21.484-acre parcel for the proposed residential development project. Included within this overall impacted acreage are 0.501 acre (1,280 linear feet) of USACE/RWQCB jurisdictional Non-Wetland Waters of the U.S./State, 1.099 acres (1,280 linear feet) of CDFW jurisdictional Streambed and Riparian Habitat, and 1.099 acres (1,280 linear feet) of MSHCP Riverine Habitat. The Project area was analyzed for both direct and indirect impacts to potentially jurisdictional wetlands and/or waters that would be associated through the construction and long-term use of the proposed Project. Direct impacts are correlated with the construction footprint, while indirect impacts are correlated with the altered hydrological regimes that the Project would entail for the drainage feature and associated downstream features.

Direct impacts to the drainage feature specifically include the vegetation removal, grading, recontouring and rechanneling of the drainage to maintain the existing ephemeral water regime at the west end of the Project site while also facilitating full residential buildout on the upland portion of the Project to the east. The drainage feature is proposed to be partially graded, recontoured, and redesigned to maintain the current north to south hydrological gradient. Most impacts are considered permanent with lesser amounts of temporary impacts.

Indirect impacts are not anticipated as a result of the Project. As designed, the Project storm water system is not expected to significantly reduce, increase or otherwise modify flow regimes to Canyon Lake, the San Jacinto River or Lake Elsinore as a result of surface water from or through the Project site. Furthermore, during long term operations and maintenance, the drainage feature will likely be periodically maintained to ensure flow patterns remain consistent with the current conditions, and any surface water entering the drainage feature via its existing drainage network to the north would likewise not be altered by the Project. Adverse water quality impacts, such as increased pollutant or increased sediment transport, are not anticipated to result from the Project due to construction of ancillary drainage features from the Project site, which are anticipated to facilitate sediments, pollutants, and ephemeral flows from upstream areas of the Project site through the stormwater conveyance system and allow filtration and/or passage to the drainage feature. In addition, a Storm Water Pollution Prevention Plan (SWPPP) that contains detailed construction Best Management Practices (BMPs), such as sediment and erosion controls, would be implemented during construction and incorporated into the Project design to avoid temporary indirect impacts to water quality of the drainage feature as a result of offsite sediment transport associated with the vegetation removal and grading of the Project.

The proposed Project includes the partial vegetation removal, grading, recontouring and rechanneling of the drainage feature that includes both permanent and temporary impacts. As shown in Table 4, construction of the Project is expected to directly and permanently impact a total of 0.375 acre (1,280 linear feet) of USACE Non-Wetland Waters of the United States while temporarily impacting an additional 0.190 acre (562 linear feet) of USACE Non-Wetland Waters of the United States. Construction of the Project is expected to directly and permanently impact a total of 0.375 acre (1,280 linear feet) of RWQCB Non-Wetland Waters of the United States while temporarily impacting an additional 0.190 acre (562 linear feet) of RWQCB Non-Wetland Waters of the United States. The Project is expected to directly and permanently impact a total of 0.909 acre (1,280 linear feet) of CDFW streambeds, which includes 0.041 acre of CDFW riparian habitat and 0.868 acre of CDFW bank to bank jurisdiction. The Project is also expected to temporarily impact a total of 0.190 acre (562 linear feet) of

CDFW streambeds, which includes 0.008 acre of CDFW riparian habitat and 0.182 acre of CDFW bank to bank jurisdiction. MSHCP Riverine Habitat impacts are identical to the CDFW impacts.

Table 4. Summary of Impacts to Potentially Jurisdictional Waters

Jurisdictional Waters	Permanent (acres)	Temporary (acres)
Proposed Impacts to USACE Jurisdiction		
Open Water	0	0
Wetland Waters of the United States	0	0
Non-Wetland Waters of the United States	0.375	0.126
USACE Total Impacts	0.501 (1,280 linear feet)	
Proposed Impacts to RWQCB Jurisdiction		
Open water	0	0
Wetland Waters of the State	0	0
Non-Wetland Waters of the State	0.375	0.126
RWQCB Total Impacts	0.501 (1,280 linear feet)	
Proposed Impacts to CDFW Jurisdiction		
Open water	0	0
Wetlands	0	0
Riparian	0.041	0.008
Bank to Bank	0.868	0.182
CDFW Total Impacts	1.099 (1,280 linear feet)	
Proposed Impacts to MSHCP Jurisdiction		
MSHCP Riverine Habitat	0.909	0.190
MSHCP Total Impacts	1.099 (1,280 linear feet)	

6.1 Permit Authorization

The Project site contains one likely USACE/RWQCB/CDFW jurisdictional drainage containing MSHCP Riverine Habitat documented on the west side of the Project site. USACE, RWQCB and CDFW jurisdictional waters are regulated by the United States and State of California governments, while MSHCP Riverine Habitat is regulated at the regional level. To avoid permitting requirements of these agencies, all impacts to jurisdictional waters would need to be avoided. However, since this Project as proposed cannot avoid impacting the drainage feature within the Project site, the Project proponent will pursue onsite and/or offsite mitigation to offset Project-related impacts and the requisite USACE, RWQCB, CDFW and MSHCP jurisdictional waterway permits and/or authorizations to facilitate legally permitted construction activities in the jurisdictional drainage feature. Project development will result in significant impacts to this drainage feature and will require coordination, permitting and/or work authorization clearances through the USACE, RWQCB, CDFW and the Western Riverside County Regional Conservation Authority before any Project activities can occur within MSHCP Riverine Habitat.

The aquatic resources delineation survey determined that waters under the likely jurisdiction of USACE, RWQCB and CDFW occur on the Project site. Impacts to Non-Wetland Waters of the United States would likely require a Section 404 permit from the USACE under the federal Clean Water Act. Impacts to Non-Wetland Waters of the State would likely require a Waste Discharge Requirement (WDR) or Section 401 permit from the RWQCB under the state Clean Water Act. Impacts to CDFW-jurisdictional streambeds and riparian areas may be authorized by CDFW through a Section 1602 Streambed Alteration Agreement.

The delineation survey identified 1.099 acres of MSHCP Riverine Habitat within the Project boundary, within which lie all USACE, RWQCB and CDFW jurisdictional areas. It was determined that this feature will be impacted by Project activities, including a total of 0.190 acre of temporary impacts and 0.909 acre of permanent impacts. Additional permitting and/or approvals from the USACE, RWQCB, and CDFW will be required for Project authorization before impacting the drainage feature. In addition, a MSHCP Determination of Biologically Equivalent or Superior Preservation (DBESP) report will be required per the County of Riverside that will detail the offsite and/or onsite compensatory mitigation strategy.

7.0 SURVEYOR CERTIFICATION

This report was prepared for EPD Solutions, Inc. All data, statements, analyses, findings and attachments within this report are accurate and truthful in terms of describing the existing conditions and the Project as proposed to Blackhawk Environmental and are based on best available knowledge at the time of the report. This delineation was conducted in accordance with the 1987 United States Army Corps of Engineers Wetland Delineation Manual and the applicable Arid West regional supplement. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Blackhawk Environmental accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

A handwritten signature in black ink that reads "Kris Alberts".

Kris Alberts
Principal Biologist



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Regional Conservation Authority - Western Riverside County (RCA)

- 2021 Western Riverside County MSHCP Information Application
<https://wrcrca.maps.arcgis.com/apps/webappviewer/index.html?id=a73e69d2a64d41c29ebd3acd67467abd> May 2021

State Water Resources Control Board

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- 1987 *Wetlands Delineation Manual, Technical Report Y-87-1*, U.S. Army Engineer Waterways Experiment Station Vicksburg, MS.
- 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- 2010 *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*.
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<https://plants.usda.gov/wetinfo.html>

United States Environmental Protection Agency (EPA) and the Department of the Army (Army)

- 2020 Final Rule: The Navigable Water Protections Rule. Available URL:
<https://www.federalregister.gov/documents/2020/04/21/2020-02500/the-navigable-waters-protection-rule-definition-of-waters-of-the-united-states>.

United States Fish & Wildlife Service (USFWS)

- 2021 National Wetlands Inventory. <https://www.fws.gov/wetlands/data/mapper.html>. Accessed May 2021.

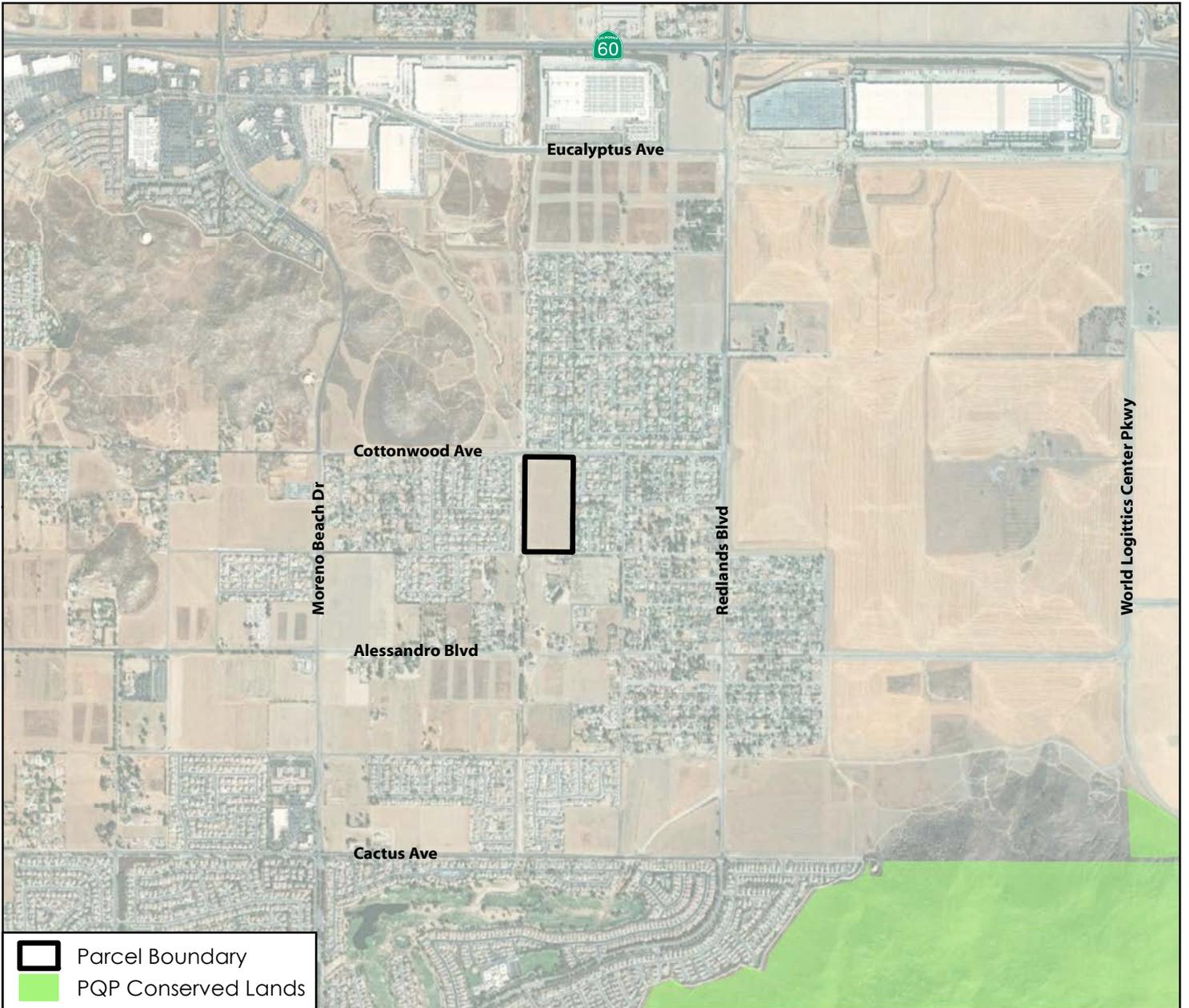
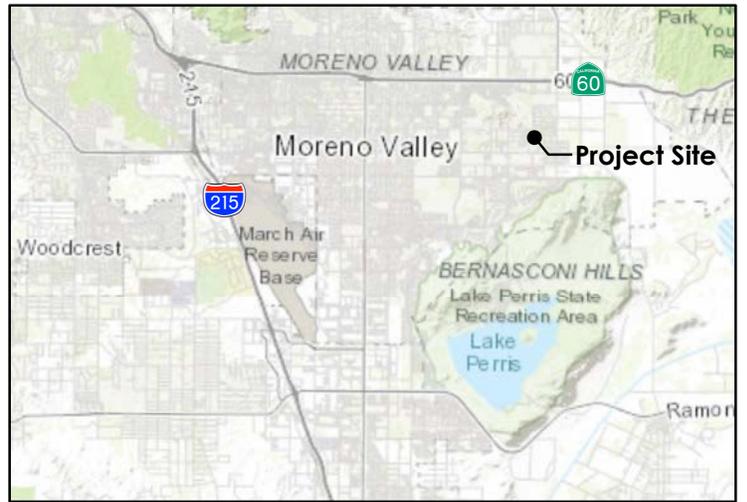
United States Geological Survey (USGS)

- 1967 7.5-minute topographic quadrangle map for *Sunnymead*, California.

ATTACHMENT A

Figures, Exhibits and Site Plan





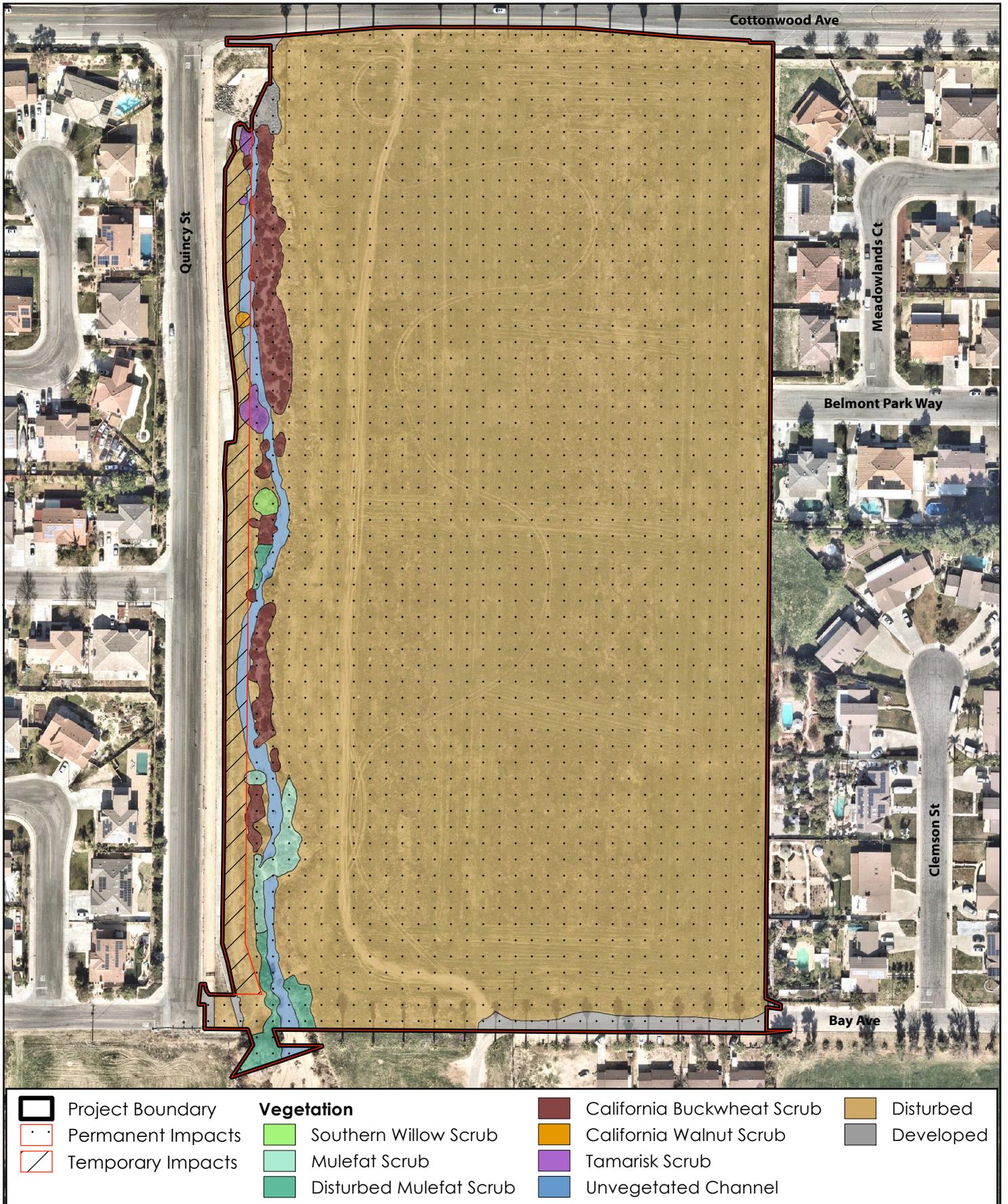
Source: Maxar, Esri 2020

Figure 1



Project Vicinity and Location

Pacifica Cottonwood Project



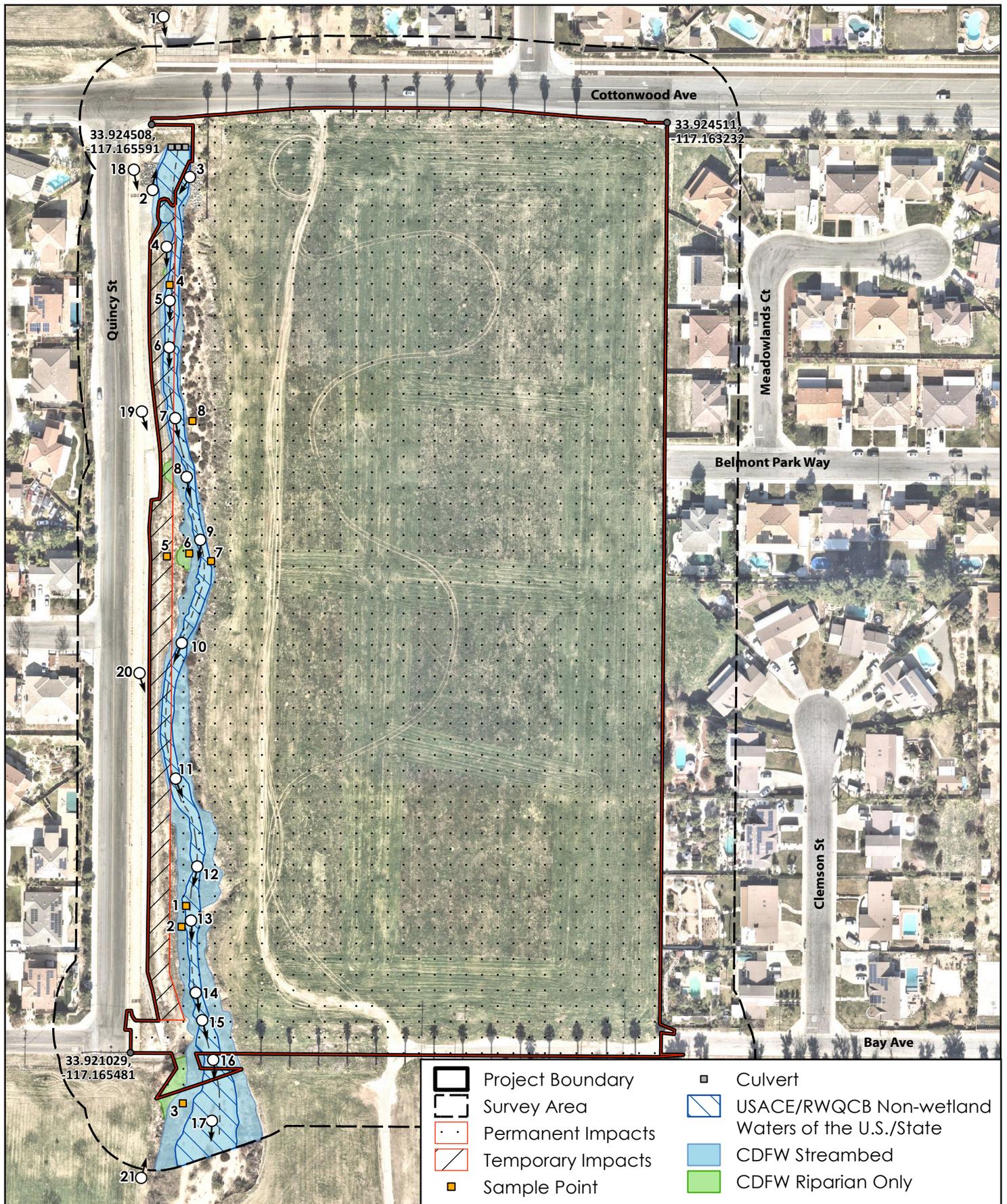
Aerial Photo: Nearmap 2022

Figure 2

Vegetation Map

Pacifica Cottonwood Project





Source: Nearmap 2022

Figure 3

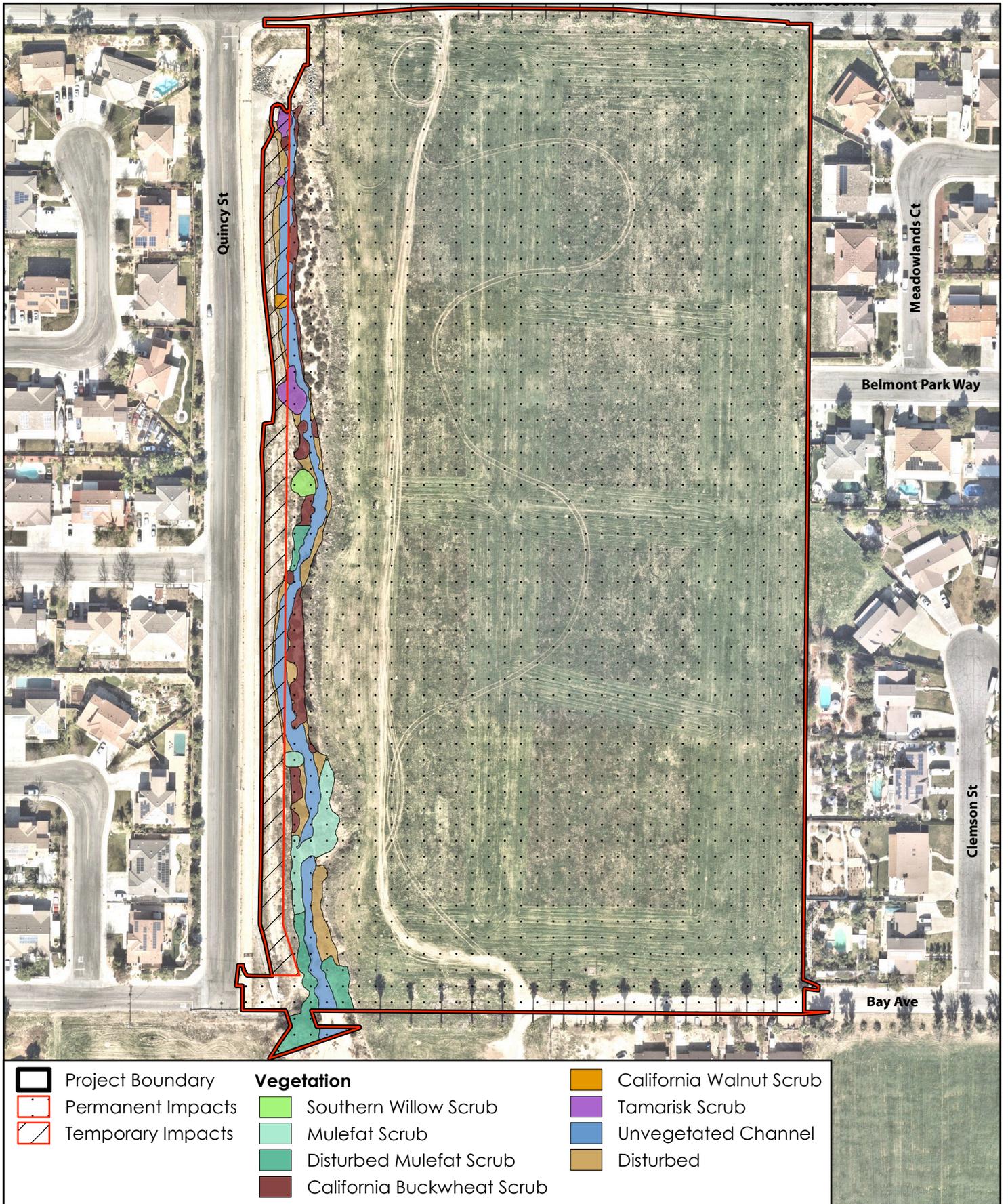
Jurisdictional Delineation

Pacifica Cottonwood Project



BLACKHAWK
Environmental





Aerial Photo: Nearmap 2022

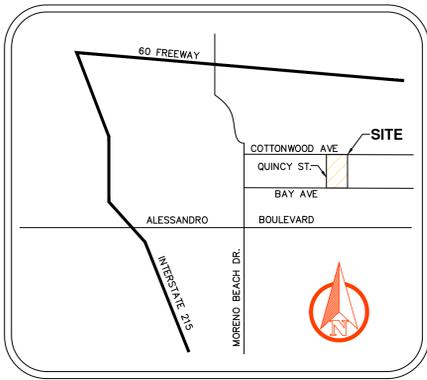
Figure 4

MSHCP Riverine Habitat

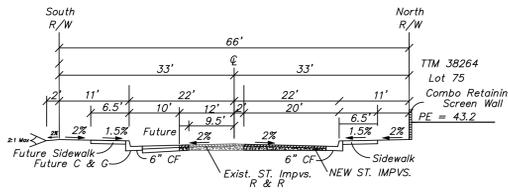
Pacifica Cottonwood Project



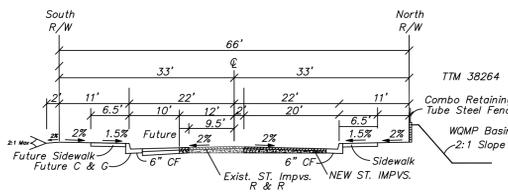
TTM 38264 City of Moreno Valley



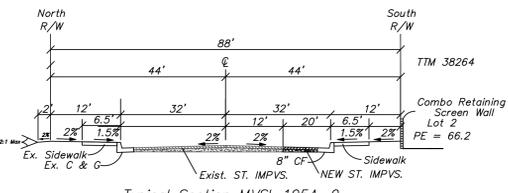
VICINITY MAP
N.T.S.



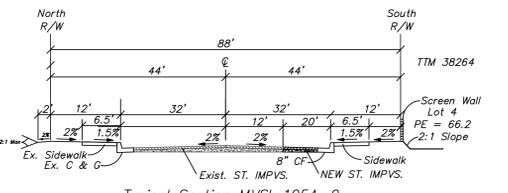
Typical Section MVS1-106B-0
Bay Street
3" AC over 6" AB (PRELIM SECTION)
Section E-E
n.t.s.



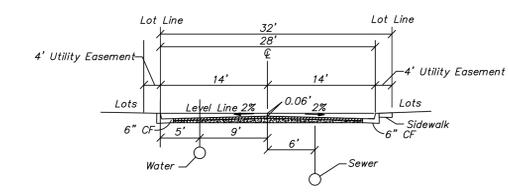
Typical Section MVS1-106B-0
Bay Street
3" AC over 6" AB (PRELIM SECTION)
Section F-F
n.t.s.



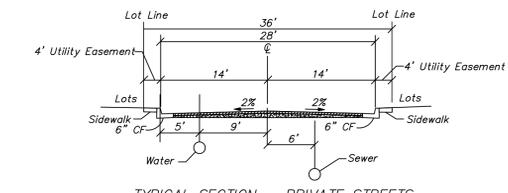
Typical Section MVS1-105A-0
Cottonwood Avenue
4" AC over 6" AB (PRELIM SECTION)
Section J-J
n.t.s.



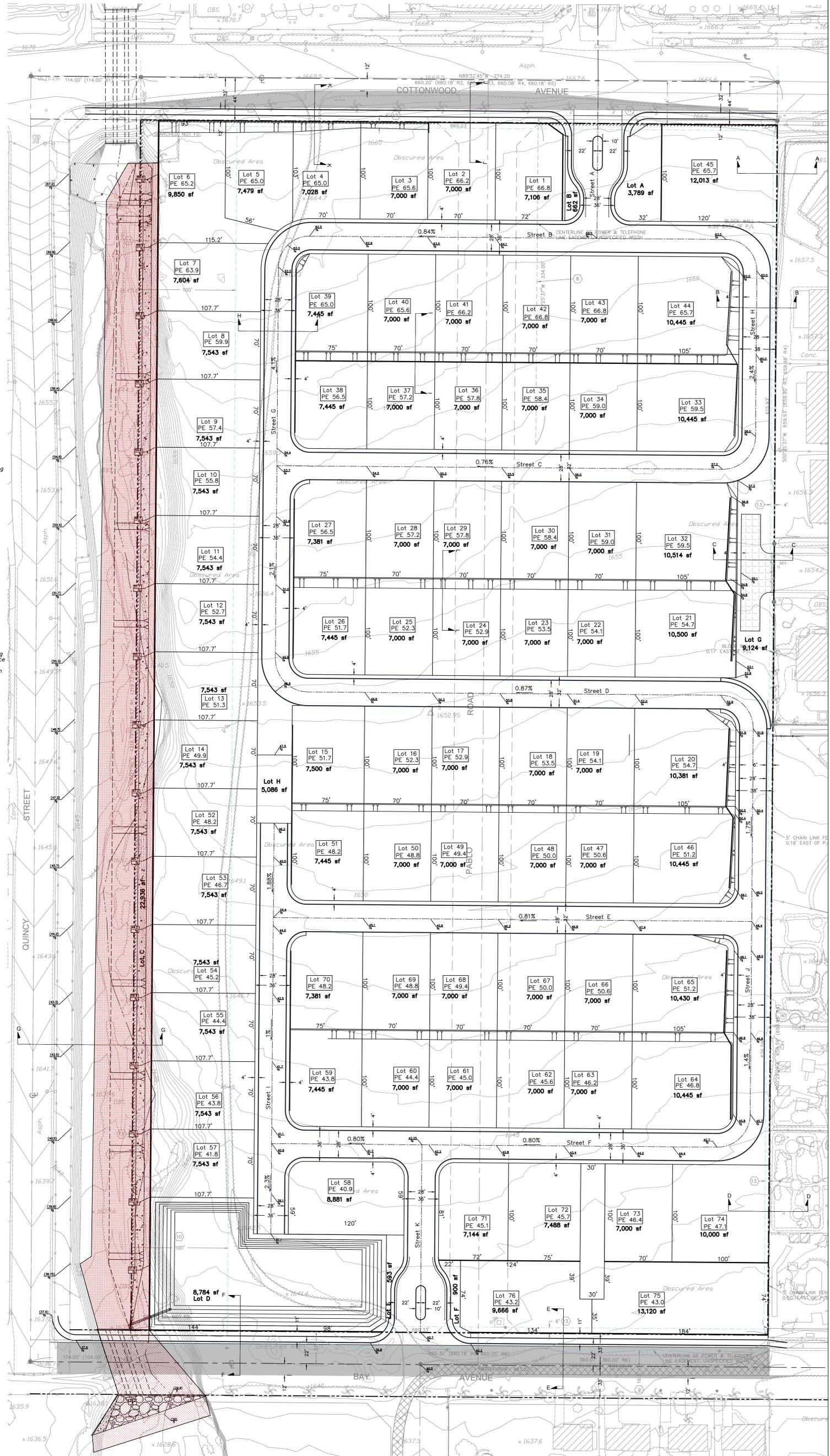
Typical Section MVS1-105A-0
Cottonwood Avenue
4" AC over 6" AB (PRELIM SECTION)
Section K-K
n.t.s.



TYPICAL SECTION - PRIVATE STREETS
3" AC over 6" AB
N.T.S.



TYPICAL SECTION - PRIVATE STREETS
3" AC over 6" AB
N.T.S.



Area of Disturbance

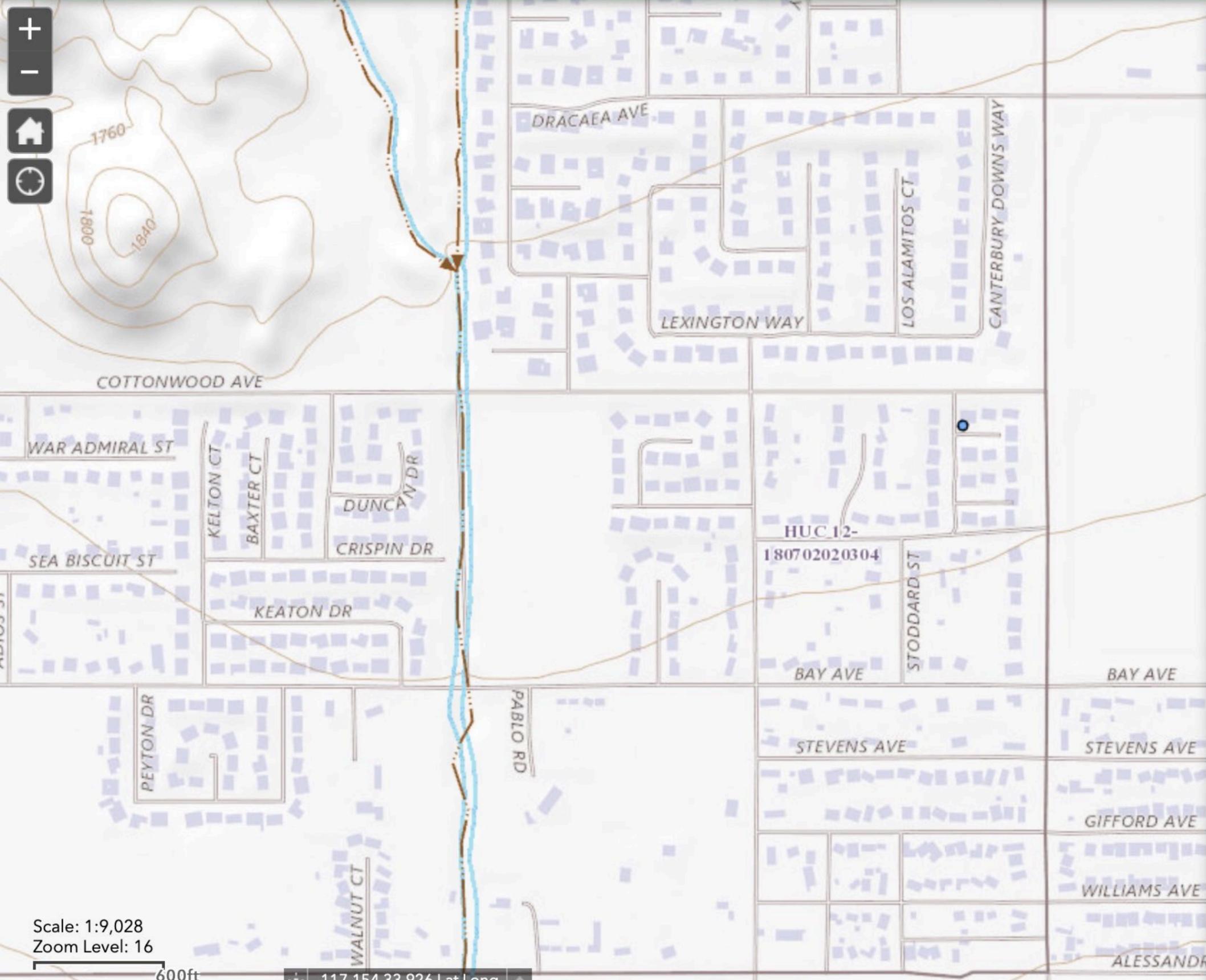


ROBERT BEERS
8175 Limonite Avenue, Suite E
Jurupa Valley, CA 92509
Ph. (951) 317-2041 Fax (909) 360-2070

PREPARED FOR:
Passco Pacifica LLC
333 City Boulevard West
17th Floor
Orange, CA 92866
PHONE: (714) 609-7257

TTM 38264
Preliminary Grading Plan
Cottonwood Collection
City of Moreno Valley
California

DATE Jan. 10, 2022
JOB NO. _____
DRAWN BY R.A.H.
CHECKED BY R.M.B.
SHEET C-3



Legend

National Hydrography Dataset

- Point
 - Dam/Weir
 - Other
- Point Event
 - Dam
 - ▲ Gaging Station
 - ◆ Divergence Structure
 - Other
- Line - Large Scale
 - Tunnel
 - Line
- Flow Direction
 - ▶ Connector
 - ▶ Canal/Ditch
 - ▶ Underground Conduit
 - ▶ Stream/River
 - ▶ Stream/River - Perennial
 - ▶ Stream/River - Intermittent
 - ▶ Stream/River - Ephemeral
 - ▶ Pipeline
 - ▶ Artificial Path
- Flowline - Large Scale
 - Perennial
 - ... Intermittent
 - ... Ephemeral
 - Artificial Path
 - Canal Ditch

Scale: 1:9,028
Zoom Level: 16

600ft

-117.154 33.926 Lat Long



National Wetlands Inventory

surface waters and wetlands

ABOUT

GET DATA

PRINT

FIND LOCATION

BASEMAPS >

MAP LAYERS >

- Wetlands 📍 ?
- Riparian 📍 ?
- Riparian Mapping Areas 📍 ?
- Data Source 📍 ?
 - Source Type
 - Image Scale
 - Image Year
- Areas of Interest ?
- FWS Managed Lands 📍 ?
- Historic Wetland Data 📍 ?



Measure



LEGEND



1:4,514
33.920 | -117.160



ATTACHMENT B

Photo Pages





Photograph 1: South-facing view of Reach 1, from Photo Point 1, where three concrete-encased culverts pass under Cottonwood Avenue.



Photograph 2: North-facing view from Photo Point 2 at the southern boundary of Reach 1.



Photograph 3: South-facing view into Reach 2 from Photo Point 3. Riprap in the photo foreground is at the southern boundary of Reach 1.



Photograph 4: South-facing view of channel in Reach 2 from Photo Point 4.



Photograph 5: South-facing view of channel in Reach 2 from Photo Point 5.



Photograph 6: South-facing view of channel in Reach 2 from Photo Point 6.



Photograph 7: South-facing view of channel in Reach 3 from Photo Point 7.



Photograph 8: South-facing view of channel in Reach 3 from Photo Point 8.



Photograph 9: South-facing view of channel in Reach 3 from Photo Point 9.



Photograph 10: South-facing view of channel at the southern boundary of Reach 3, looking into Reach 4 from Photo Point 10.



Photograph 11: South-facing view of channel in Reach 4 from Photo Point 11.



Photograph 12: South-facing view of channel in Reach 4 from Photo Point 12.



Photograph 13: South-facing view of channel near the southern boundary of Reach 4 from Photo Point 13.



Photograph 14: South-facing view of channel near the northern boundary of Reach 5 from Photo Point 14.



Photograph 15: South-facing view of channel through Reach 5 from Photo Point 15.



Photograph 16: South-facing view of channel in Reach 5 from Photo Point 16.



Photograph 17: South-facing view of channel near the southern boundary of Reach 5 from Photo Point 17.



Photograph 18: Overview of Reach 1 into Reach 2 from Photo Point 18.



Photograph 19: Overview of Reach 3 from Photo Point 19.



Photograph 20: Overview of Reach 4 and Reach 5 from Photo Point 20.



Photograph 21: Overview looking upstream through Reach 5 from Photo Point 21.



Photograph 22: Soil pit at Sample Point 1.



Photograph 23: Soil pit at Sample Point 2.



Photograph 24: Soil pit at Sample Point 3.



Photograph 25: Soil pit at Sample Point 4.



Photograph 26: Soil pit at Sample Point 5.



Photograph 27: Soil pit at Sample Point 6.



Photograph 28: Soil pit at Sample Point 7.



Photograph 29: Soil pit at Sample Point 8.



Photograph 30: East-facing view of concrete swale that runs east-west at the south end of the intersection of Bay Street and Quincy Street, ultimately emptying into Reach 5 of the channel.



Photograph 31: Weep holes at the base of a concrete flood control wall on the west side of the channel.

ATTACHMENT C

Jurisdictional Delineation Data Forms



WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Pacifica Cottonwood Project City/County: Moreno Valley/Riverside Sampling Date: 8/18/2021
 Applicant/Owner: EPD Solutions State: CA Sampling Point: SP-1
 Investigator(s): Ian Maunsell, Ryan Quilley Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): sandy stream channel Local relief (concave, convex, none): none Slope (%): 2
 Subregion (LRR): C - Mediterranean California Lat: 32.92154639 Long: 117.16542788 Datum: NAD83
 Soil Map Unit Name: San Emigdo fine sandy loam NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No	Is the Sampled Area within a Wetland?	Yes	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No			
Remarks: Sample point taken in vegetated island of braided channel within vegetated streambed characterized by mulefat scrub. Hydrology naturally problematic due to sampling in drought year. Vegetation problematic and assumed due to sampling outside growing season and during drought. Soils heavily drained and no hydric soil indicators observed.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. <i>None</i>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)			
2.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Total Number of Dominant Species Across All Strata: <u>2</u> (B)			
3.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50 %</u> (A/B)			
4.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
Total Cover: <u>0 %</u>							
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. <i>Baccharis salicifolia</i>	105	Yes <input checked="" type="checkbox"/>	FAC <input checked="" type="checkbox"/>	Total % Cover of:		Multiply by:	
2. <i>Artemesia dracunculul</i>	3	No <input checked="" type="checkbox"/>	FACU <input checked="" type="checkbox"/>	OBL species	<u>0</u>	x 1 =	<u>0</u>
3.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FACW species	<u>0</u>	x 2 =	<u>0</u>
4.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FAC species	<u>105</u>	x 3 =	<u>315</u>
5.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FACU species	<u>3</u>	x 4 =	<u>12</u>
Total Cover: <u>95 %</u>				UPL species	<u>2</u>	x 5 =	<u>10</u>
				Column Totals:	<u>110</u>	(A)	<u>337</u> (B)
				Prevalence Index = B/A = <u>3.06</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <i>Hirschfeldia incana</i>	2	Yes <input checked="" type="checkbox"/>	UPL <input checked="" type="checkbox"/>	<input type="checkbox"/> Dominance Test is >50%			
2.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹			
3.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)			
5.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
6.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
7.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
8.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
Total Cover: <u>2 %</u>							
Woody Vine Stratum				Hydrophytic Vegetation Present?			
1. <i>None</i>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Yes <input checked="" type="radio"/> No			
2.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
Total Cover: <u>0 %</u>							
% Bare Ground in Herb Stratum <u>98 %</u>		% Cover of Biotic Crust <u>0 %</u>					

Remarks: Vegetation problematic due to drought and sampling occurring outside growing season. Vegetation assumed hydric based on well-developed shrub stratum where associated herbs would be expected during periods of normal precipitation and/or during appropriate times of year. Assumption of hydric vegetation based on skewing of vegetation to indicate non-hydric based on nearly absent herb stratum with a single upland species, creating dominance.

SOIL

Sampling Point: SP-1

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

Depth (inches)	Matrix		Redox Features				Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	7.5YR 4/2	100	NA	NA	▼	▼	Sandy loam	well-drained with occ course gravel
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	Indicators for Problematic Hydric Soils:⁴
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
 Type: None
 Depth (inches): NA

Hydric Soil Present? Yes No

Remarks: Soils typical of seasonal drainage patterns showing signs of periodic scouring and sediment settling with insufficient periods of saturation to form hydric conditions, likely due to rapid draining of surface waters to subsurface flows/water table. Soils do not exhibit sufficient coarse depositions to be considered a vegetated sand bar (problematic).

HYDROLOGY

Wetland Hydrology Indicators:

<u>Primary Indicators (any one indicator is sufficient)</u>		<u>Secondary Indicators (2 or more required)</u>	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input checked="" type="checkbox"/> Sediment Deposits (B2) (Riverine)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input checked="" type="checkbox"/> Drift Deposits (B3) (Riverine)	
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)	
<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present?	Yes	No <input checked="" type="radio"/>	Depth (inches):	<u>NA</u>
Water Table Present?	Yes	No <input checked="" type="radio"/>	Depth (inches):	<u>NA</u>
Saturation Present? (includes capillary fringe)	Yes	No <input checked="" type="radio"/>	Depth (inches):	<u>NA</u>

Wetland Hydrology Present? Yes No

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

Remarks: Riverine indicators observed in downstream reach (Reach 3) of drainage, normally associated with low velocity flows. Occasional isolated areas of soil cracks observed in low lying points of relief in channel margins where fine sediments have settled.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Pacifica Cottonwood Project City/County: Moreno Valley/Riverside Sampling Date: 8/18/2021
 Applicant/Owner: EPD Solutions State: CA Sampling Point: SP-2
 Investigator(s): Ian Maunsell, Ryan Quilley Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): sandy stream channel Local relief (concave, convex, none): none Slope (%): 2
 Subregion (LRR): C - Mediterranean California Lat: 32.92146624 Long: -117.1654472 Datum: NAD83
 Soil Map Unit Name: San Emigdo fine sandy loam NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No	Is the Sampled Area within a Wetland?	Yes	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No			
Remarks: Sample point taken adjacent to OHHW within vegetated streambed characterized by mulefat scrub. Hydrology naturally problematic due to sampling in drought year. Vegetation assumed due to sampling outside growing season and during drought. Soils heavily drained and no hydric soil indicators observed. Same sample area as SP-1.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. <i>None</i>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)			
2.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Total Number of Dominant Species Across All Strata: <u>2</u> (B)			
3.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50 %</u> (A/B)			
4.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
Total Cover: <u>0 %</u>							
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:			
1. <i>Baccharis salicifolia</i>	105	Yes <input checked="" type="checkbox"/>	FAC <input checked="" type="checkbox"/>	Total % Cover of: _____ Multiply by: _____			
2. <i>Artemesia dracunculul</i>	3	No <input checked="" type="checkbox"/>	FACU <input checked="" type="checkbox"/>	OBL species	<u>0</u>	x 1 =	<u>0</u>
3.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FACW species	<u>0</u>	x 2 =	<u>0</u>
4.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FAC species	<u>105</u>	x 3 =	<u>315</u>
5.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FACU species	<u>3</u>	x 4 =	<u>12</u>
Total Cover: <u>108 %</u>				UPL species	<u>2</u>	x 5 =	<u>10</u>
				Column Totals:	<u>110</u>	(A)	<u>337</u> (B)
				Prevalence Index = B/A = <u>3.06</u>			
Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:			
1. <i>Hirschfeldia incana</i>	2	Yes <input checked="" type="checkbox"/>	UPL <input checked="" type="checkbox"/>	<input type="checkbox"/> Dominance Test is >50%			
2.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹			
3.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)			
5.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
6.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
7.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
8.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
Total Cover: <u>2 %</u>							
Woody Vine Stratum	Absolute % Cover	Dominant Species?	Indicator Status				
1. <i>None</i>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
2.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
Total Cover: <u>0 %</u>							
% Bare Ground in Herb Stratum <u>98 %</u>		% Cover of Biotic Crust <u>0 %</u>		Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No			

¹Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes No

Remarks: Vegetation problematic due to drought and sampling occurring outside growing season. Vegetation assumed hydric based on well developed shrub stratum where associated herbs would be expected during periods of normal precipitation and/or during appropriate times of year. Assumption of hydric vegetation based on skewing of vegetation to indicate non-hydric based on nearly absent herb stratum with a single upland species with low prevalence being "dominant."

SOIL

Sampling Point: SP-1

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

Depth (inches)	Matrix		Redox Features				Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-21	7.5YR 4/2	100	NA	NA	▼	▼	Sandy loam	well-drained with occ course gravel
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	Indicators for Problematic Hydric Soils:⁴
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
 Type: None
 Depth (inches): NA

Hydric Soil Present? Yes No

Remarks: Soils typical of seasonal drainage patterns showing signs of periodic scouring and sediment settling with insufficient periods of saturation to form hydric conditions, likely due to rapid draining of surface waters to subsurface flows/water table. Soils do not exhibit sufficient coarse depositions to be considered a vegetated sand bar (problematic).

HYDROLOGY

Wetland Hydrology Indicators:

<u>Primary Indicators (any one indicator is sufficient)</u>		<u>Secondary Indicators (2 or more required)</u>	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)	<input checked="" type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input checked="" type="checkbox"/> Drift Deposits (B3) (Riverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Water-Stained Leaves (B9)			

Field Observations:

Surface Water Present?	Yes	No <input checked="" type="radio"/>	Depth (inches):	<u>NA</u>
Water Table Present?	Yes	No <input checked="" type="radio"/>	Depth (inches):	<u>NA</u>
Saturation Present? (includes capillary fringe)	Yes	No <input checked="" type="radio"/>	Depth (inches):	<u>NA</u>

Wetland Hydrology Present? Yes No

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

Remarks: Riverine indicators observed in downstream reach (Reach 3) of drainage, normally associated with low velocity flows. Occasional isolated areas of soil cracks observed in low lying points of relief in channel margins where fine sediments have settled.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Pacifica Cottonwood Project City/County: Moreno Valley/Riverside Sampling Date: 8/18/2021
 Applicant/Owner: EPD Solutions State: CA Sampling Point: SP-3
 Investigator(s): Ian Maunsell, Ryan Quilley Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): streambed Local relief (concave, convex, none): none Slope (%): 2
 Subregion (LRR): C - Mediterranean California Lat: 32.92079003 Long: -117.16543436 Datum: NAD83
 Soil Map Unit Name: San Emigdo fine sandy loam NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland?		
Hydric Soil Present?	Yes	No <input checked="" type="radio"/>		Yes	No <input checked="" type="radio"/>
Wetland Hydrology Present?	Yes <input checked="" type="radio"/>	No		Yes	No <input checked="" type="radio"/>
Remarks: <u>Sample point taken within vegetated streambed of downstream reach (Reach 3) where riparian scrub (SP-1 and SP-2) transitions to mixed scrub within streambed and channel on fringe of OHWM.</u>					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:		
1. <i>Populus fremontii</i>	45	Yes <input checked="" type="radio"/>	FAC <input checked="" type="radio"/>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)		
2.		<input checked="" type="radio"/>	<input checked="" type="radio"/>	Total Number of Dominant Species Across All Strata: <u>4</u> (B)		
3.		<input checked="" type="radio"/>	<input checked="" type="radio"/>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25 %</u> (A/B)		
4.		<input checked="" type="radio"/>	<input checked="" type="radio"/>			
Total Cover: <u>45 %</u>						
Sapling/Shrub Stratum				Prevalence Index worksheet:		
1. <i>Artemisia dracunculus</i>	25	Yes <input checked="" type="radio"/>	FACU <input checked="" type="radio"/>	Total % Cover of:		Multiply by:
2. <i>Baccharis salicifolia</i>	10	Yes <input checked="" type="radio"/>	FACW <input checked="" type="radio"/>	OBL species	<u>85</u>	x 1 = <u>85</u>
3. <i>Eriogonum fasciculatum</i>	5	No <input checked="" type="radio"/>	UPL <input checked="" type="radio"/>	FACW species	<u>10</u>	x 2 = <u>20</u>
4.		<input checked="" type="radio"/>	<input checked="" type="radio"/>	FAC species	<u>45</u>	x 3 = <u>135</u>
5.		<input checked="" type="radio"/>	<input checked="" type="radio"/>	FACU species	<u>25</u>	x 4 = <u>100</u>
Total Cover: <u>40 %</u>				UPL species	<u>11</u>	x 5 = <u>55</u>
Total Cover: <u>40 %</u>				Column Totals:	<u>85</u> (A)	<u>310</u> (B)
Herb Stratum				Prevalence Index = B/A = <u>3.65</u>		
1. <i>Hirschfeldia incana</i>	5	Yes <input checked="" type="radio"/>	UPL <input checked="" type="radio"/>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)		
2. <i>Avena fatua</i>	1	No <input checked="" type="radio"/>	UPL <input checked="" type="radio"/>			
3.		<input checked="" type="radio"/>	<input checked="" type="radio"/>			
4.		<input checked="" type="radio"/>	<input checked="" type="radio"/>			
5.		<input checked="" type="radio"/>	<input checked="" type="radio"/>			
6.		<input checked="" type="radio"/>	<input checked="" type="radio"/>			
7.		<input checked="" type="radio"/>	<input checked="" type="radio"/>			
8.		<input checked="" type="radio"/>	<input checked="" type="radio"/>			
Total Cover: <u>6 %</u>						
Woody Vine Stratum				¹ Indicators of hydric soil and wetland hydrology must be present.		
1. <i>None</i>		<input checked="" type="radio"/>	<input checked="" type="radio"/>			
2.		<input checked="" type="radio"/>	<input checked="" type="radio"/>			
Total Cover: <u>0 %</u>						
% Bare Ground in Herb Stratum	<u>94 %</u>	% Cover of Biotic Crust	<u>0 %</u>	Hydrophytic Vegetation Present? Yes No <input checked="" type="radio"/>		

Remarks: Vegetation problematic due to drought and sampling occurring outside growing season. Vegetation assumed non-hydric due to well established upland presence within shrub stratum. Tree stratum indicates periods of historic hydrology sufficient to establish, but may not occur at regular intervals (problematic riparian areas within AW).

SOIL

Sampling Point: SP-3

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

Depth (inches)	Matrix		Redox Features				Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	7.5YR 4/2	100	NA	NA	▼	▼	Sandy loam	well-drained with occ coarse gravel
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	Indicators for Problematic Hydric Soils:⁴
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
 Type: None
 Depth (inches): NA

Hydric Soil Present? Yes No

Remarks: Soils typical of seasonal drainage patterns showing signs of periodic flooding and sediment deposits with insufficient periods of saturation to form hydric conditions, likely due to rapid draining of surface waters to subsurface flows/water table. Soils do not exhibit sufficient coarse depositions to be considered a vegetated sand bar (problematic).

HYDROLOGY

Wetland Hydrology Indicators:

<u>Primary Indicators (any one indicator is sufficient)</u>		<u>Secondary Indicators (2 or more required)</u>	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input checked="" type="checkbox"/> Sediment Deposits (B2) (Riverine)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input checked="" type="checkbox"/> Drift Deposits (B3) (Riverine)	
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)	
<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present?	Yes	No <input checked="" type="radio"/>	Depth (inches):	<u>NA</u>
Water Table Present?	Yes	No <input checked="" type="radio"/>	Depth (inches):	<u>NA</u>
Saturation Present? (includes capillary fringe)	Yes	No <input checked="" type="radio"/>	Depth (inches):	<u>NA</u>

Wetland Hydrology Present? Yes No

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

Remarks: Riverine indicators observed in furthest downstream extent of Reach 3. Occasional isolated areas of soil cracks observed in low lying points of relief in channel margins where fine sediments have settled.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Pacifica Cottonwood Project City/County: Moreno Valley/Riverside Sampling Date: 8/18/2021
 Applicant/Owner: EPD Solutions State: CA Sampling Point: SP-4
 Investigator(s): Ian Maunsell, Ryan Quilley Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Streambed Local relief (concave, convex, none): none Slope (%): 2
 Subregion (LRR): C - Mediterranean California Lat: 32.92392325 Long: -117.16543436 Datum: NAD83
 Soil Map Unit Name: San Emigdo fine sandy loam NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland?		
Hydric Soil Present?	Yes	No <input checked="" type="radio"/>		Yes	No <input checked="" type="radio"/>
Wetland Hydrology Present?	Yes <input checked="" type="radio"/>	No		Yes	No <input checked="" type="radio"/>
Remarks: Sample point taken within vegetated streambed of upstream reach (Reach 1) within area of transitional floodplain scrub shrub habitat exhibited higher prevalence of riparian-associated species.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:		
1. <i>Tamarix ramosissima</i>	10	Yes <input checked="" type="checkbox"/>	FAC <input checked="" type="checkbox"/>	Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
2.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Total Number of Dominant Species Across All Strata:	4	(B)
3.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Percent of Dominant Species That Are OBL, FACW, or FAC:	25 %	(A/B)
4.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Total Cover: 10 %						
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:		
1. <i>Eriogonum fasciculatum</i>	60	Yes <input checked="" type="checkbox"/>	UPL <input checked="" type="checkbox"/>	Total % Cover of: _____ Multiply by: _____		
2. <i>Artemisia dracunculus</i>	25	Yes <input checked="" type="checkbox"/>	FACU <input checked="" type="checkbox"/>	OBL species	x 1 =	
3. <i>Baccharis salicifolia</i>	15	No <input checked="" type="checkbox"/>	FAC <input checked="" type="checkbox"/>	FACW species	x 2 =	
4.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FAC species	25 x 3 =	75
5.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FACU species	25 x 4 =	100
Total Cover: 100 %				UPL species	65 x 5 =	330
				Column Totals:	115 (A)	505 (B)
				Prevalence Index = B/A = 4.39		
Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:		
1. <i>Hirschfeldia incana</i>	5	Yes <input checked="" type="checkbox"/>	UPL <input checked="" type="checkbox"/>	<input type="checkbox"/> Dominance Test is >50%		
2.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹		
3.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)		
4.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)		
5.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
6.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
7.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
8.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Total Cover: 5 %						
Woody Vine Stratum	Absolute % Cover	Dominant Species?	Indicator Status			
1. <i>None</i>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
2.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Total Cover: 0 %						
% Bare Ground in Herb Stratum <u>94 %</u>		% Cover of Biotic Crust <u>0 %</u>		Hydrophytic Vegetation Present?		
				Yes	No <input checked="" type="radio"/>	

¹Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes No

Remarks: Vegetation problematic due to drought and sampling occurring outside growing season. Vegetation assumed non-hydric due to well-established upland presence within shrub stratum. Tree stratum indicates periods of historic hydrology sufficient to establish, but may not occur at regular intervals (problematic riparian areas within AW).

SOIL

Sampling Point: SP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7.5	7.5YR 4/2	100	NA	NA	▼	▼	sandy loam	well-drained with occ coarse gravel
7.5-22	10YR 5/8	100	NA	NA	▼	▼	silt loam	uniform horizon of fine textured soil
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		
					▼	▼		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	Indicators for Problematic Hydric Soils⁴: <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)
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⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: <u>None</u> Depth (inches): <u>NA</u>	Hydric Soil Present? Yes No <input checked="" type="radio"/>
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Remarks: Soils typical of seasonal drainage patterns showing signs of periodic flooding and sediment deposits with insufficient periods of saturation to form hydric conditions, likely due to rapid draining of surface waters to subsurface flows/water table. Soils do not exhibit sufficient coarse depositions to be considered a vegetated sand bar (problematic).

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (any one indicator is sufficient) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (2 or more required) <input type="checkbox"/> Water Marks (B1) (Riverine) <input checked="" type="checkbox"/> Sediment Deposits (B2) (Riverine) <input checked="" type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes No <input checked="" type="radio"/> Depth (inches): <u>NA</u> Water Table Present? Yes No <input checked="" type="radio"/> Depth (inches): <u>NA</u> Saturation Present? (includes capillary fringe) Yes No <input checked="" type="radio"/> Depth (inches): <u>NA</u>	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Riverine indicators observed in upstream Reach 1. Occasional isolated areas of soil cracks observed in low-lying points of relief in channel margins where fine sediments have settled. Indicators observed suggest higher velocity flow for short periods with periodic seasonal flooding.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Pacific Cattanwood City/County: Moreno Valley / Riverside Sampling Date: 4.1.22
 Applicant/Owner: EPD Solutions State: CA Sampling Point: 5
 Investigator(s): Kris Alberts, Seth Reimers Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): upper flat terrace Local relief (concave, convex, none): Flat (none) Slope (%): 0
 Subregion (LRR): C Lat: 33.92288 Long: -117.16553 Datum: _____
 Soil Map Unit Name: San Emigdio fine sandy loam NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>Disturbance-specialist plant species are only plants present on the western upper terrace of the stream channel east of the flood control wall, but west of the OHWM.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>10'x10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
4. _____				
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10'x10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
2. _____				Total Number of Dominant Species Across All Strata: _____ (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
4. _____				
5. _____				
<u>0</u> = Total Cover				
Herb Stratum (Plot size: <u>10'x10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>Hirschfeldia incana</u>	<u>60</u>	<u>Yes</u>	<u>NI</u>	Total % Cover of: _____ Multiply by: _____
2. <u>Oncosiphon piluliferum</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	OBL species _____ x 1 = _____
3. <u>Schismus barbatus</u>	<u>5</u>	<u>No</u>	<u>NI</u>	FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species <u>10</u> x 4 = <u>40</u>
6. _____				UPL species <u>65</u> x 5 = <u>325</u>
7. _____				Column Totals: <u>75</u> (A) <u>365</u> (B)
8. _____				Prevalence Index = B/A = <u>4.87</u>
<u>75</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>10'x10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>None</u>				<input type="checkbox"/> Dominance Test is >50%
2. _____				<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
<u>0</u> = Total Cover				<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
<u>0</u> = Total Cover				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
<u>0</u> = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
% Bare Ground in Herb Stratum <u>25%</u> % Cover of Biotic Crust <u>0%</u>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>Upper terrace removed from stream flows, including a lack of flood flows apparently.</u>				

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Pacific Cottonwood City/County: Morano Valley / Riverside Sampling Date: 4-1-22
 Applicant/Owner: EPD Solutions State: CA Sampling Point: 6
 Investigator(s): Kris Alberts, Seth Reimers Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low grade hillslope Local relief (concave, convex, none): CONVEX Slope (%): 2
 Subregion (LRR): C Lat: 33.92289 Long: -117.16542 Datum: _____
 Soil Map Unit Name: San Emigdio fine sandy loam NWI classification: R4SBC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: _____ _____ _____	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>10' x 10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Salix gooddingii</u>	100	Yes	FACW	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33%</u> (A/B)
4. _____				
	100 = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>10' x 10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>Artemisia dracunculoides</u>	15	Yes	FACU	Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species <u>100</u> x 2 = <u>200</u>
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species <u>25</u> x 4 = <u>100</u>
	15 = Total Cover			UPL species <u>105</u> x 5 = <u>420</u>
				Column Totals: <u>230</u> (A) <u>720</u> (B)
				Prevalence Index = B/A = <u>3.13</u>
Herb Stratum (Plot size: <u>10' x 10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Bromus diandrus</u>	90	Yes	NI	<input type="checkbox"/> Dominance Test is >50%
2. <u>Bromus rubens</u>	15	No	NI	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Hordeum murinum</u>	5	No	FACU	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. _____				
6. _____				
7. _____				
8. _____				
	110 = Total Cover			
Woody Vine Stratum (Plot size: <u>10' x 10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Footnote:
1. <u>None</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
	0 = Total Cover			
% Bare Ground in Herb Stratum <u>0%</u> % Cover of Biotic Crust <u>0%</u>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
Remarks: _____ _____ _____				

SOIL

Sampling Point: 6

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-24	7.5YR 6/6	100	None	-	-	-	Sand	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

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

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

Restrictive Layer (if present):
 Type: None
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input checked="" type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

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

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

Remarks: Situated above OHWM.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Pacifico Cottonwood City/County: Maroon Valley/Riverside Sampling Date: 4.1.22
 Applicant/Owner: EPD Solutions State: CA Sampling Point: 7
 Investigator(s): Kris Alburk, Seth Reimers Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 55%
 Subregion (LRR): C Lat: 33.92286 Long: -117.16532 Datum: _____
 Soil Map Unit Name: San Emigdio Fine Sandy loam NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil , or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>On fill slope with construction waste inside.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>10'x10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)	
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)	
4. _____				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species <u>40</u> x 4 = <u>160</u> UPL species <u>55</u> x 5 = <u>275</u> Column Totals: <u>95</u> (A) <u>435</u> (B) Prevalence Index = B/A = <u>4.58</u>	
<u>0</u> = Total Cover					
Sapling/Shrub Stratum (Plot size: <u>10'x10'</u>)					
1. <u>None</u>				Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. _____					
3. _____					
4. _____					
5. _____					
<u>0</u> = Total Cover					
Herb Stratum (Plot size: <u>10'x10'</u>)					
1. <u>Amsinckia menziesii</u>	<u>15</u>	<u>No</u>	<u>NI</u>		
2. <u>Hordeum murinum</u>	<u>40</u>	<u>Yes</u>	<u>FACU</u>		
3. <u>Bromus diandrus</u>	<u>40</u>	<u>Yes</u>	<u>NI</u>		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
<u>95</u> = Total Cover					
Woody Vine Stratum (Plot size: <u>10'x10'</u>)					
1. <u>None</u>					
2. _____					
<u>0</u> = Total Cover					
% Bare Ground in Herb Stratum <u>10%</u>		% Cover of Biotic Crust <u>0%</u>			
Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>					
Remarks: <u>Ground squirrel burrows numerous across length of fill slope through project.</u>					

SOIL

Sampling Point: 7

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-24	7.5 YR 6/6	100	None	—	—	—	Sand	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

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

Restrictive Layer (if present):
 Type: None
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks: Broken tiles, glass, concrete, asphalt throughout slope and sample point.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____

Water Table Present? Yes _____ No Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No Depth (inches): _____

Wetland Hydrology Present? Yes _____ No

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

Remarks: Above incised shelving where OHWM is, below.

SOIL

Sampling Point: 8

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-24	7.5YR 4/3	100	None	—	—	—	Sand	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: None
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks: No indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	Secondary Indicators (2 or more required) <input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations:

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

Wetland Hydrology Present? Yes _____ No

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

Remarks: No indicators on lower terrace. Not subject to flows, except possibly in rare, high-volume flooding events. No evidence of that recently though.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Pacific Cottonwood City/County: Marina Valley / Riverside Sampling Date: 4.1.22
 Applicant/Owner: EPD Solutions State: CA Sampling Point: 8
 Investigator(s): Kris Alberts Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): None Slope (%): 1
 Subregion (LRR): C Lat: 33.92340 Long: -117.16541 Datum: _____
 Soil Map Unit Name: San Emigdio fine sandy loam NWI classification: R4SBC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

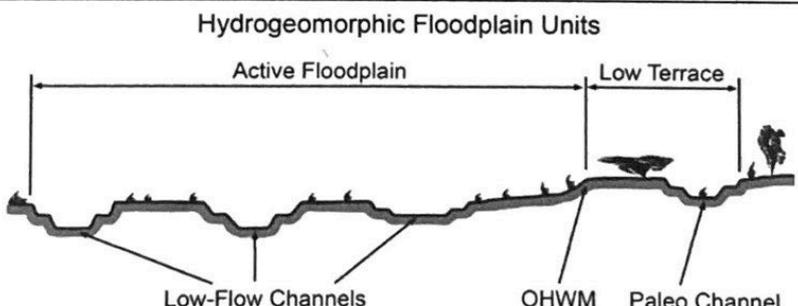
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>This vegetation community is above grade of the streambed and is not riverine habitat. This deviates from NWI classification.</u>	

VEGETATION – Use scientific names of plants.

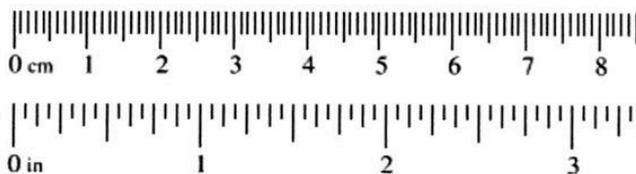
Tree Stratum (Plot size: <u>10'x10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
4. _____				
	<u>0</u> = Total Cover			Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: <u>10'x10'</u>)				Total % Cover of: _____ Multiply by: _____
1. <u>Eriogonum fasciculatum</u>	<u>60</u>	<u>Yes</u>	<u>NI</u>	OBL species _____ x 1 = _____
2. <u>Arctostaphylos dracunculifolia</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	FACW species _____ x 2 = _____
3. _____				FAC species _____ x 3 = _____
4. _____				FACU species <u>5</u> x 4 = <u>20</u>
5. _____				UPL species <u>66</u> x 5 = <u>330</u>
	<u>65</u> = Total Cover			Column Totals: <u>71</u> (A) <u>350</u> (B)
Herb Stratum (Plot size: <u>10'x10'</u>)				Prevalence Index = B/A = <u>4.93</u>
1. <u>Heterotheca grandiflora</u>	<u>5</u>	<u>Yes</u>	<u>NI</u>	Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Premna rubens</u>	<u>1</u>	<u>No</u>	<u>NI</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>6</u> = Total Cover			Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
Woody Vine Stratum (Plot size: <u>10'x10'</u>)				
1. <u>None</u>				
2. _____				
	<u>0</u> = Total Cover			
% Bare Ground in Herb Stratum <u>30%</u>		% Cover of Biotic Crust <u>0%</u>		
Remarks: <u>Typical California backwash habitat example.</u>				

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Pacific Cottonwood Project Number: 272 Stream: Investigator(s): Kris Alberts, Seth Reimers	Date: 4.1.22 Town: Moreno Valley Photo begin file#: IMG_4164	Time: 1040 State: CA Photo end file#: IMG_4166				
Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Do normal circumstances exist on the site? Y <input type="checkbox"/> / N <input checked="" type="checkbox"/> Is the site significantly disturbed?	Location Details: Culvert underpass of Cottonwood Avenue (Reach 1) Projection: Datum: Coordinates: 33.92482 -117.16551					
Potential anthropogenic influences on the channel system: Channelized flows through linear earthen channel, historically man-modified, with flows directed through 3 large circular culvert openings.						
Brief site description: Culvert underpass with sandy unvegetated streambed up and down stream. Concrete throughout underpass						
Checklist of resources (if available): <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input checked="" type="checkbox"/> Aerial photography Dates: <input checked="" type="checkbox"/> Topographic maps <input type="checkbox"/> Geologic maps <input checked="" type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input type="checkbox"/> Existing delineation(s) for site <input checked="" type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event </td> </tr> </table>			<input checked="" type="checkbox"/> Aerial photography Dates: <input checked="" type="checkbox"/> Topographic maps <input type="checkbox"/> Geologic maps <input checked="" type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input type="checkbox"/> Existing delineation(s) for site <input checked="" type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies	<input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event		
<input checked="" type="checkbox"/> Aerial photography Dates: <input checked="" type="checkbox"/> Topographic maps <input type="checkbox"/> Geologic maps <input checked="" type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input type="checkbox"/> Existing delineation(s) for site <input checked="" type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies	<input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> 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: <ol style="list-style-type: none"> 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. <ol style="list-style-type: none"> 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: <table style="width: 100%; border: none; margin-top: 5px;"> <tr> <td><input checked="" type="checkbox"/> Mapping on aerial photograph</td> <td><input checked="" type="checkbox"/> GPS</td> </tr> <tr> <td><input checked="" type="checkbox"/> Digitized on computer</td> <td><input type="checkbox"/> Other:</td> </tr> </table> 			<input checked="" type="checkbox"/> Mapping on aerial photograph	<input checked="" type="checkbox"/> GPS	<input checked="" type="checkbox"/> Digitized on computer	<input type="checkbox"/> Other:
<input checked="" type="checkbox"/> Mapping on aerial photograph	<input checked="" type="checkbox"/> GPS					
<input checked="" type="checkbox"/> Digitized on computer	<input type="checkbox"/> Other:					

Wentworth Size Classes

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

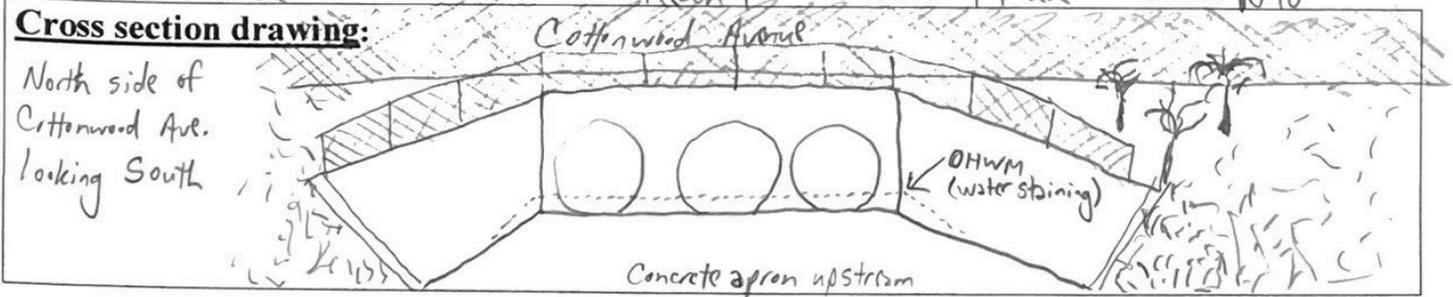


Project ID: 272

Cross section ID: Reach 1

Date: 4.1.22

Time: 1040



OHWM

GPS point: 33.92482 -117.16551

Indicators:

- | | |
|---|--|
| <input type="checkbox"/> Change in average sediment texture | <input type="checkbox"/> Break in bank slope |
| <input type="checkbox"/> Change in vegetation species | <input checked="" type="checkbox"/> Other: <u>water staining at base of culvert openings</u> |
| <input type="checkbox"/> Change in vegetation cover | <input checked="" type="checkbox"/> Other: <u>debris deposits below water staining</u> |

Comments: High-velocity output on South side of culverts extends to rip rap bases.

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: 33.92482 -117.16551

Characteristics of the floodplain unit:

Average sediment texture: N/A (concrete)
 Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %
 Community successional stage:

- | | |
|---|--|
| <input checked="" type="checkbox"/> NA | <input type="checkbox"/> Mid (herbaceous, shrubs, saplings) |
| <input type="checkbox"/> Early (herbaceous & seedlings) | <input type="checkbox"/> Late (herbaceous, shrubs, mature trees) |

Indicators:

- | | |
|--|--|
| <input type="checkbox"/> Mudcracks | <input type="checkbox"/> Soil development |
| <input type="checkbox"/> Ripples | <input type="checkbox"/> Surface relief |
| <input checked="" type="checkbox"/> Drift and/or debris | <input checked="" type="checkbox"/> Other: <u>water staining on concrete</u> |
| <input checked="" type="checkbox"/> Presence of bed and bank | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Benches | <input type="checkbox"/> Other: _____ |

Comments:

Project ID: 272 Cross section ID: Reach 1 Date: 4.1.22 Time: 1040

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- | | |
|---|--|
| <input type="checkbox"/> NA | <input type="checkbox"/> Mid (herbaceous, shrubs, saplings) |
| <input type="checkbox"/> Early (herbaceous & seedlings) | <input type="checkbox"/> Late (herbaceous, shrubs, mature trees) |

Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Mudcracks | <input type="checkbox"/> Soil development |
| <input type="checkbox"/> Ripples | <input type="checkbox"/> Surface relief |
| <input type="checkbox"/> Drift and/or debris | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Presence of bed and bank | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Benches | <input type="checkbox"/> Other: _____ |

Comments:

Only low-flow and active floodplain within culvert zone.

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- | | |
|---|--|
| <input type="checkbox"/> NA | <input type="checkbox"/> Mid (herbaceous, shrubs, saplings) |
| <input type="checkbox"/> Early (herbaceous & seedlings) | <input type="checkbox"/> Late (herbaceous, shrubs, mature trees) |

Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Mudcracks | <input type="checkbox"/> Soil development |
| <input type="checkbox"/> Ripples | <input type="checkbox"/> Surface relief |
| <input type="checkbox"/> Drift and/or debris | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Presence of bed and bank | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Benches | <input type="checkbox"/> Other: _____ |

Comments:

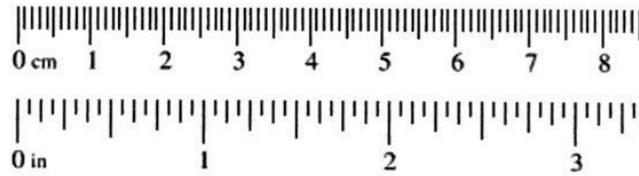
See above comment.

Arid West Ephemeral and Intermittent Streams OHW M Datasheet

Project: Pacific Cottonwood Project Number: 272 Stream: N/A Investigator(s): Kris Alberts, Seth Reimers	Date: 4.1.22 Town: Moreno Valley Photo begin file#: IMG-4167	Time: 1220 State: CA Photo end file#: IMG-4170				
Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Do normal circumstances exist on the site? Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Is the site significantly disturbed?	Location Details: Reach 2, first ~110 m downstream of Reach 1 Projection: Datum: Coordinates: 33.92386 -117.16551					
Potential anthropogenic influences on the channel system: Concrete flood control wall on west side and fill slope on east side has reduced previous free-flowing drainage into linear channel.						
Brief site description: Sandy, unvegetated channel with low terraces of brackish scrub on east side, bordered by fill slope edge to uplands east. West side with incised low terrace of upland-disturbance specialist plants, bordered by concrete flood control wall to street level.						
Checklist of resources (if available): <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input checked="" type="checkbox"/> Aerial photography Dates: <input checked="" type="checkbox"/> Topographic maps <input type="checkbox"/> Geologic maps <input checked="" type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input type="checkbox"/> Existing delineation(s) for site <input checked="" type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event </td> </tr> </table>			<input checked="" type="checkbox"/> Aerial photography Dates: <input checked="" type="checkbox"/> Topographic maps <input type="checkbox"/> Geologic maps <input checked="" type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input type="checkbox"/> Existing delineation(s) for site <input checked="" type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies	<input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event		
<input checked="" type="checkbox"/> Aerial photography Dates: <input checked="" type="checkbox"/> Topographic maps <input type="checkbox"/> Geologic maps <input checked="" type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input type="checkbox"/> Existing delineation(s) for site <input checked="" type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies	<input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> 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: <ol style="list-style-type: none"> 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. <ol style="list-style-type: none"> 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: <table style="width: 100%; border: none; margin-top: 5px;"> <tr> <td><input checked="" type="checkbox"/> Mapping on aerial photograph</td> <td><input checked="" type="checkbox"/> GPS</td> </tr> <tr> <td><input checked="" type="checkbox"/> Digitized on computer</td> <td><input type="checkbox"/> Other:</td> </tr> </table> 			<input checked="" type="checkbox"/> Mapping on aerial photograph	<input checked="" type="checkbox"/> GPS	<input checked="" type="checkbox"/> Digitized on computer	<input type="checkbox"/> Other:
<input checked="" type="checkbox"/> Mapping on aerial photograph	<input checked="" type="checkbox"/> GPS					
<input checked="" type="checkbox"/> Digitized on computer	<input type="checkbox"/> Other:					

Wentworth Size Classes

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



Project ID: 272

Cross section ID: Reach 2

Date: 4.1.22

Time: 1220

Cross section drawing:



OHWM

GPS point: 33.92386 -117.16551

Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Change in average sediment texture | <input checked="" type="checkbox"/> Break in bank slope |
| <input checked="" type="checkbox"/> Change in vegetation species | <input type="checkbox"/> Other: _____ |
| <input checked="" type="checkbox"/> Change in vegetation cover | <input type="checkbox"/> Other: _____ |

Comments: OHWM confined to unvegetated channel.

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: 33.92386 -117.16551

Characteristics of the floodplain unit:

Average sediment texture: 0.020
 Total veg cover: 0 % Tree: 2 % Shrub: % Herb: 1 %
 Community successional stage:

- | | |
|---|--|
| <input checked="" type="checkbox"/> NA | <input type="checkbox"/> Mid (herbaceous, shrubs, saplings) |
| <input type="checkbox"/> Early (herbaceous & seedlings) | <input type="checkbox"/> Late (herbaceous, shrubs, mature trees) |

Indicators:

- | | |
|--|--|
| <input type="checkbox"/> Mudcracks | <input type="checkbox"/> Soil development |
| <input checked="" type="checkbox"/> Ripples | <input checked="" type="checkbox"/> Surface relief |
| <input checked="" type="checkbox"/> Drift and/or debris | <input type="checkbox"/> Other: _____ |
| <input checked="" type="checkbox"/> Presence of bed and bank | <input type="checkbox"/> Other: _____ |
| <input checked="" type="checkbox"/> Benches | <input type="checkbox"/> Other: _____ |

Comments:

Almost no vegetation at all in unvegetated channel. One salt cedar, one CA walnut, one mustard, one horchound.

Project ID: 272 Cross section ID: Reach 2 Date: 4.1.22 Time: 1220

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: 33.92386 -117.16551

Characteristics of the floodplain unit:

Average sediment texture: 0.020

Total veg cover: 60 % Tree: ___ % Shrub: 50 % Herb: 10 %

Community successional stage:

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

Indicators:

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

Comments: Mature California Buckwheat Scrub to 4' tall.

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ___ % Tree: ___ % Shrub: ___ % Herb: ___ %

Community successional stage:

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

Indicators:

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

Comments:

N/A. Upper terrace to west is higher than California buckwheat lower terrace to east.
Upper terrace has mustard, grasses and stinknet.

Arid West Ephemeral and Intermittent Streams OHW M Datasheet

Project: Pacific Cottonwood Project Number: 272 Stream: N/A Investigator(s): Kris Alberts, Seth Reimers	Date: 4.1.22 Town: Moreno Valley Photo begin file#: IMG-4171	Time: 1250 State: CA Photo end file#: IMG-4174
Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Do normal circumstances exist on the site? Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Is the site significantly disturbed?	Location Details: Reach 3 Projection: Datum: Coordinates: 33.92289 -117.16535	

Potential anthropogenic influences on the channel system:

Same as that for Reach 2.

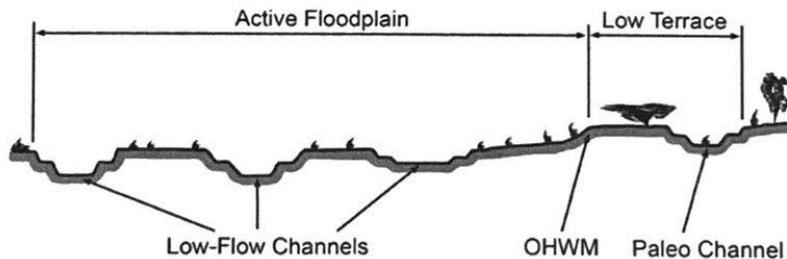
Brief site description:

Generally the same as Reach 2, though the low terrace of California Buckwheat Scrub occurs mostly on the northern portion, becoming more constricted on the east side further downstream, and then reappears on South side.

Checklist of resources (if available):

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

Hydrogeomorphic Floodplain Units



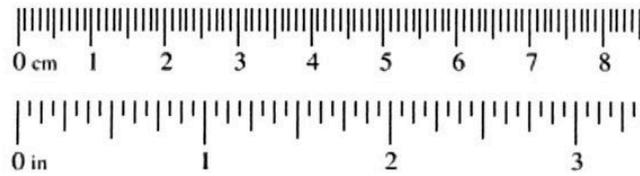
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

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:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Mapping on aerial photograph | <input checked="" type="checkbox"/> GPS |
| <input checked="" type="checkbox"/> Digitized on computer | <input type="checkbox"/> Other: |

Wentworth Size Classes

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



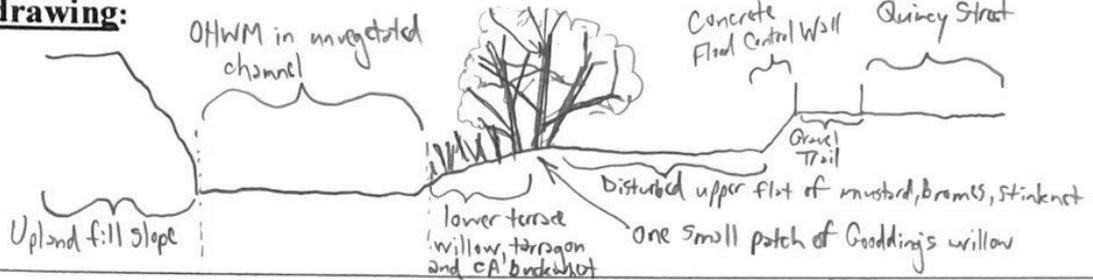
Project ID: 272

Cross section ID: Resch 3

Date: 4.1.22

Time: 1250

Cross section drawing:



OHWM

GPS point: 33.92289 -117.16535

Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Change in average sediment texture | <input checked="" type="checkbox"/> Break in bank slope |
| <input checked="" type="checkbox"/> Change in vegetation species | <input type="checkbox"/> Other: _____ |
| <input checked="" type="checkbox"/> Change in vegetation cover | <input type="checkbox"/> Other: _____ |

Comments: OHWM confined to unvegetated channel within incised shelving, for the most parts but does extend into lowermost portions of low terraces at times.

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: 33.92289 -117.16535

Characteristics of the floodplain unit:

Average sediment texture: 0.025
 Total veg cover: _____% Tree: _____% Shrub: _____% Herb: 1%
 Community successional stage:

- | | |
|---|--|
| <input checked="" type="checkbox"/> NA | <input type="checkbox"/> Mid (herbaceous, shrubs, saplings) |
| <input type="checkbox"/> Early (herbaceous & seedlings) | <input type="checkbox"/> Late (herbaceous, shrubs, mature trees) |

Indicators:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Mudcracks | <input type="checkbox"/> Soil development |
| <input checked="" type="checkbox"/> Ripples | <input type="checkbox"/> Surface relief |
| <input checked="" type="checkbox"/> Drift and/or debris | <input type="checkbox"/> Other: _____ |
| <input checked="" type="checkbox"/> Presence of bed and bank | <input type="checkbox"/> Other: _____ |
| <input checked="" type="checkbox"/> Benches | <input type="checkbox"/> Other: _____ |

Comments:

Almost no vegetation in low-flow channel / active floodplain.

Project ID: 272

Cross section ID: Reach 3

Date: 4.1.22

Time: 12

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: 33.92289 -117.16535

Characteristics of the floodplain unit:

Average sediment texture: 0.025

Total veg cover: 100% Tree: 10% Shrub: 35% Herb: 70%

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:

One small patch of Goodding's willow in Reach 3. Other lower terraces with tarracon, CA Anokwhet.

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

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

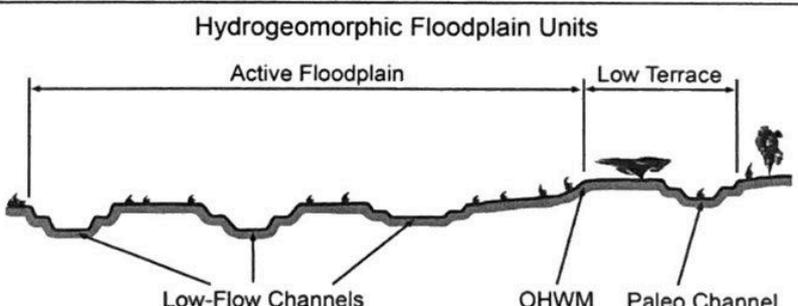
Indicators:

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

Comments:

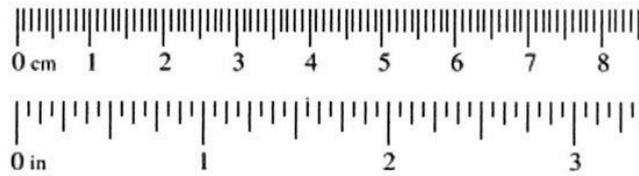
N/A

Arid West Ephemeral and Intermittent Streams OHW M Datasheet

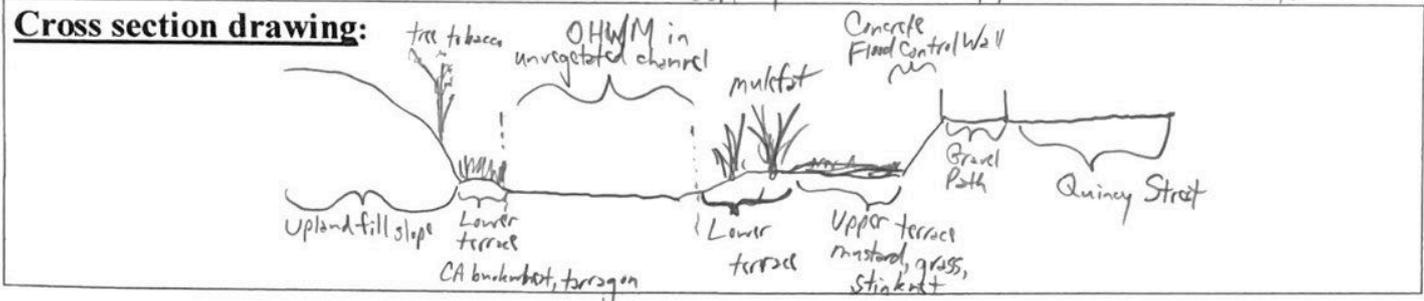
Project: <i>Pacific Cottonwood</i> Project Number: <i>272</i> Stream: <i>N/A</i> Investigator(s): <i>Kris Alberts, Seth Reimers</i>	Date: <i>4.1.22</i> Town: <i>Morone Valley</i> Photo begin file#: <i>IMG_4175</i>	Time: <i>1315</i> State: <i>CA</i> Photo end file#: <i>IMG_4177</i>				
Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Do normal circumstances exist on the site? Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Is the site significantly disturbed?	Location Details: <i>Reach 4</i> Projection: Coordinates: <i>33.92189</i> Datum: <i>-117.16541</i>					
Potential anthropogenic influences on the channel system: <i>Same as that for Reach 3.</i>						
Brief site description: <i>Generally the same as Reach 3, except more Mulefat Scrub toward south end.</i>						
Checklist of resources (if available): <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <input checked="" type="checkbox"/> Aerial photography Dates: <input checked="" type="checkbox"/> Topographic maps <input type="checkbox"/> Geologic maps <input checked="" type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input type="checkbox"/> Existing delineation(s) for site <input checked="" type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies </td> <td style="width: 50%; border: none;"> <input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event </td> </tr> </table>			<input checked="" type="checkbox"/> Aerial photography Dates: <input checked="" type="checkbox"/> Topographic maps <input type="checkbox"/> Geologic maps <input checked="" type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input type="checkbox"/> Existing delineation(s) for site <input checked="" type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies	<input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event		
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Hydrogeomorphic Floodplain Units 						
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM: <ol style="list-style-type: none"> 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. <ol style="list-style-type: none"> 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: <table style="width: 100%; border: none; margin-top: 5px;"> <tr> <td style="width: 50%;"><input checked="" type="checkbox"/> Mapping on aerial photograph</td> <td style="width: 50%;"><input checked="" type="checkbox"/> GPS</td> </tr> <tr> <td><input checked="" type="checkbox"/> Digitized on computer</td> <td><input type="checkbox"/> Other:</td> </tr> </table> 			<input checked="" type="checkbox"/> Mapping on aerial photograph	<input checked="" type="checkbox"/> GPS	<input checked="" type="checkbox"/> Digitized on computer	<input type="checkbox"/> Other:
<input checked="" type="checkbox"/> Mapping on aerial photograph	<input checked="" type="checkbox"/> GPS					
<input checked="" type="checkbox"/> Digitized on computer	<input type="checkbox"/> Other:					

Wentworth Size Classes

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



Project ID: 272 Cross section ID: Reach 4 Date: 4.1.22 Time: 1315



OHWM

GPS point: 33.92189 -117.16541

Indicators:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Change in average sediment texture | <input checked="" type="checkbox"/> Break in bank slope |
| <input checked="" type="checkbox"/> Change in vegetation species | <input type="checkbox"/> Other: _____ |
| <input checked="" type="checkbox"/> Change in vegetation cover | <input type="checkbox"/> Other: _____ |

Comments: OHWM confined to unvegetated channel and lowest portions of lower terrace in a few instances.

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: 33.92189 -117.16541

Characteristics of the floodplain unit:

Average sediment texture: 0.020
Total veg cover: _____ % Tree: 3 % Shrub: 3 % Herb: 2 %

Community successional stage:

- | | |
|---|--|
| <input checked="" type="checkbox"/> NA | <input type="checkbox"/> Mid (herbaceous, shrubs, saplings) |
| <input type="checkbox"/> Early (herbaceous & seedlings) | <input type="checkbox"/> Late (herbaceous, shrubs, mature trees) |

Indicators:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Mudcracks | <input type="checkbox"/> Soil development |
| <input checked="" type="checkbox"/> Ripples | <input type="checkbox"/> Surface relief |
| <input checked="" type="checkbox"/> Drift and/or debris | <input type="checkbox"/> Other: _____ |
| <input checked="" type="checkbox"/> Presence of bed and bank | <input type="checkbox"/> Other: _____ |
| <input checked="" type="checkbox"/> Benches | <input type="checkbox"/> Other: _____ |

Comments:

Almost no vegetation. Very sparse mulefat, CA buckwheat, grass in OHWM.

Project ID: 272 Cross section ID: Reach 4 Date: 4.1.22 Time: 1315

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: 33.92189 -117.16541

Characteristics of the floodplain unit:

Average sediment texture: 0.025

Total veg cover: 80 % Tree: ___ % Shrub: 30 % Herb: 50 %

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 unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ___ % Tree: ___ % 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:

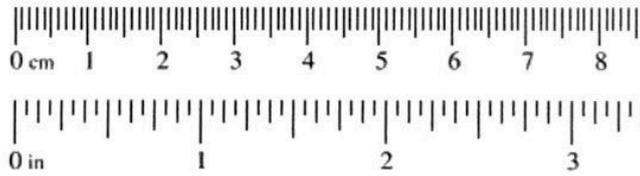
N/A

Arid West Ephemeral and Intermittent Streams OHW M Datasheet

Project: Pacific Cottonwood Project Number: 272 Stream: N/A Investigator(s): Kris Alberts, Seth Reiners	Date: 4.1.22 Town: Moreno Valley Photo begin file#: IMG-4178	Time: 1335 State: CA Photo end file#: IMG-4181				
Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Do normal circumstances exist on the site? Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Is the site significantly disturbed?	Location Details: Reach 5 Projection: Datum: Coordinates: 33.92071 -117.16531					
Potential anthropogenic influences on the channel system: Same as that for Reach 4, with additional road runoff input through concrete swale that empties into erosional gully + connects into channel.						
Brief site description: Generally the same as Reach 4, but with a greater percentage of Mulefat Scrub and one mature cottonwood.						
Checklist of resources (if available): <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input checked="" type="checkbox"/> Aerial photography Dates: <input checked="" type="checkbox"/> Topographic maps <input type="checkbox"/> Geologic maps <input checked="" type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input type="checkbox"/> Existing delineation(s) for site <input checked="" type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event </td> </tr> </table>			<input checked="" type="checkbox"/> Aerial photography Dates: <input checked="" type="checkbox"/> Topographic maps <input type="checkbox"/> Geologic maps <input checked="" type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input type="checkbox"/> Existing delineation(s) for site <input checked="" type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies	<input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event		
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Hydrogeomorphic Floodplain Units 						
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHW M: <ol style="list-style-type: none"> 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. <ol style="list-style-type: none"> 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 OHW M and record the indicators. Record the OHW M position via: <table style="width: 100%; border: none; margin-top: 5px;"> <tr> <td style="width: 50%;"><input checked="" type="checkbox"/> Mapping on aerial photograph</td> <td style="width: 50%;"><input checked="" type="checkbox"/> GPS</td> </tr> <tr> <td><input checked="" type="checkbox"/> Digitized on computer</td> <td><input type="checkbox"/> Other:</td> </tr> </table> 			<input checked="" type="checkbox"/> Mapping on aerial photograph	<input checked="" type="checkbox"/> GPS	<input checked="" type="checkbox"/> Digitized on computer	<input type="checkbox"/> Other:
<input checked="" type="checkbox"/> Mapping on aerial photograph	<input checked="" type="checkbox"/> GPS					
<input checked="" type="checkbox"/> Digitized on computer	<input type="checkbox"/> Other:					

Wentworth Size Classes

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



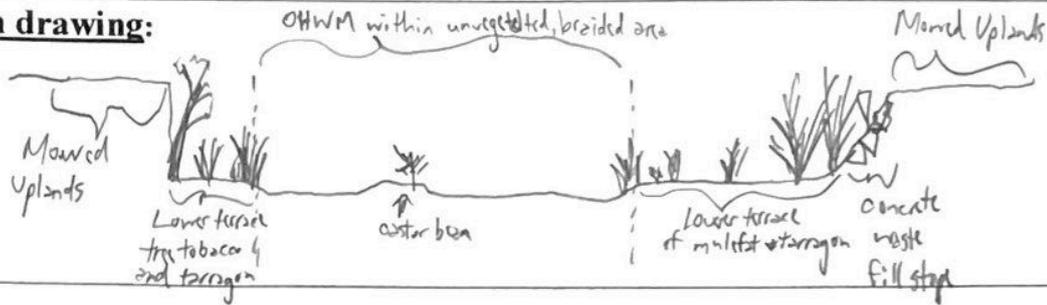
Project ID: 272

Cross section ID: Reach 5

Date: 4.1.22

Time: 1335

Cross section drawing:



OHWM

GPS point: 33.92071 -117.16531

Indicators:

- Change in average sediment texture
- Change in vegetation species
- Change in vegetation cover
- Break in bank slope
- Other: _____
- Other: _____

Comments: OHWM largely confined to unvegetated channel and lowest parts of low terraces in some cases.

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: 33. -117.

Characteristics of the floodplain unit:

Average sediment texture: 0.025

Total veg cover: _____% Tree: _____% Shrub: 3% Herb: 2%

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:

Almost no vegetation in OHWM; very sparse tarragon, mullet, CA buckwheat, castor bean.

Project ID: 272

Cross section ID: Resch 5

Date: 4.1.22

Time: 1335

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: 33.92071 -117.16531

Characteristics of the floodplain unit:

Average sediment texture: 0.025

Total veg cover: 85 % Tree: % Shrub: 60 % Herb: 25 %

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:

Low terraces with taragon, milkfat, tree tobacco and castor bean.

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % 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:

N/A

Beta Arid West Streamflow Duration Assessment Method

General site information

Project name or number: <u>Pacific Cottonwood</u>		
Site code or identifier: <u>272</u>	Assessor(s): <u>Kris Alberts, Seth Reindas</u>	
Waterway name: <u>N/A (Drainage east of Quincy St., south of Cottonwood Av.)</u>	Visit date: <u>4/1/22</u>	
Current weather conditions (check one) <input type="checkbox"/> Storm/heavy rain <input type="checkbox"/> Steady rain <input type="checkbox"/> Intermittent rain <input type="checkbox"/> Snowing <input type="checkbox"/> Cloudy (<u> </u> % cover) <input checked="" type="checkbox"/> Clear/Sunny	Notes on current or recent weather conditions (e.g., precipitation in previous week): <u>Last rained on Monday 3/28/22.</u>	Coordinates at downstream end (decimal degrees): Lat (N): <u>33.92059</u> Long (W): <u>-117.16527</u> Datum:
Surrounding land-use within 100 m (check one or two): <input checked="" type="checkbox"/> Urban/industrial/residential <input type="checkbox"/> Agricultural (farmland, crops, vineyards, pasture) <input checked="" type="checkbox"/> Developed open-space (e.g., golf course) <input type="checkbox"/> Forested <input checked="" type="checkbox"/> Other natural <input checked="" type="checkbox"/> Other: <u>Disturbed, open fields</u>	Describe reach boundaries: <u>From sandy bottom creek south of Cottonwood Avenue bridge to south end buffer of project to GPS location above.</u>	
Mean channel width (m): <u>6</u>	Reach length (m): 40x width; min 40 m; max 200 m. <u>440</u>	Enter photo ID, or check if completed Top down: <u>IMG 4167</u> Mid down: <u>See photos between</u> Mid up: <u>See photos between</u> Bottom: <u>IMG 4181</u> down
Disturbed or difficult conditions (check all that apply): <input checked="" type="checkbox"/> Recent flood or debris flow <input checked="" type="checkbox"/> Stream modifications (e.g., channelization) <input type="checkbox"/> Diversions <input type="checkbox"/> Discharges <input checked="" type="checkbox"/> Drought <input type="checkbox"/> Vegetation removal/limitations <input type="checkbox"/> Other (explain in notes) <input type="checkbox"/> None	Notes on disturbances or difficult site conditions: <u>Channelized channel with concrete flood control wall above upper terrace of west bank. Fill slope disturbed habitat on east bank.</u>	
Observed hydrology: <u>0</u> % of reach with surface flow <u>0</u> % of reach with sub-surface or surface flow <u>0</u> # of isolated pools	Comments on observed hydrology: <u>Some areas still with moist soil in channel, but no water currently flowing or present. Fresh drainage pattern lies in defined OHWM.</u>	

Site sketch:

Four OHWM datasheets were prepared with site sketches within this SDAM reach.

1. Hydrophytic plant species

Record up to 5 hydrophytic plant species (FACW or OBL in the Arid West regional wetland plant list) within the assessment area: **within the channel or up to one half-channel width**. Explain in notes if species has an odd distribution (e.g., covers less than 2% of assessment area, long-lived species solely represented by seedlings, or long-lived species solely represented by specimens in decline), or if there is uncertainty about the identification. Enter photo ID, or check if photo is taken.

Check if applicable: No vegetation in assessment area No hydrophytes in assessment area

Species	Odd distribution?	Notes	Photo ID
Baccharis salicifolia (FACW)	Yes	Less than 1% of channel	See photo log
Tamarix ramosissima (FAC?)	Yes	" " " " " "	" " " "

Notes on hydrophytic vegetation:

2 and 3. Aquatic invertebrates

<p>2. How many aquatic invertebrates are quantified in a 15-minute search?</p> <p>Number of individuals quantified:</p> <p><input checked="" type="checkbox"/> None <input type="checkbox"/> 1 to 19 <input type="checkbox"/> 20 +</p> <p>(Do not count mosquitos)</p> <p>Photo ID: <u>N/A</u></p>	<p>3. Is there evidence of aquatic stages of EPT (Ephemeroptera, Plecoptera and Trichoptera)?</p> <p style="text-align: center;">Yes / <input checked="" type="radio"/> No</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  Ephemeroptera larva <small>Image credit: Dieter Tracey</small> </div> <div style="text-align: center;">  Plecoptera larva <small>Tracey Saxby</small> </div> <div style="text-align: center;">  Trichoptera larva <small>Tracey Saxby</small> </div> </div>
---	---

Notes on aquatic invertebrates:

4. Algal Cover

<p>Are algae found on the streambed?</p> <p><input type="checkbox"/> Check if <i>all</i> observed algae appear to be deposited from an upstream source.</p>	<p><input checked="" type="checkbox"/> Not detected <input type="checkbox"/> Yes, < 10% cover <input type="checkbox"/> Yes, ≥ 10% (check Yes in single indicator below)</p>	<p>Notes on algae cover:</p> <p style="text-align: center;"><u>None</u></p>	<p>Photo ID:</p> <p style="text-align: center;"><u>N/A</u></p>
--	--	---	--

5. Are single indicators observed?

Indicator	Present	Notes	Photo ID
Fish	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No, no fish		
Algae cover ≥ 10%	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		N/A N/A

Supplemental information E.g., aquatic or semi-aquatic amphibians, snakes, or turtles; iron-oxidizing bacteria and fungi; etc.

None observed.

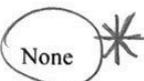
Photo log

Indicate if any other photos taken during the assessment

Photo ID	Description
	Complete channel photographed from above, along west side, and from within stream channel for OTHM datasets as 5 reaches.

Additional notes about the assessment:

Classification: Ephemeral

1. Hydrophytic plant species	2. Aquatic invertebrates	3. EPT taxa	4. Algae	5. Single indicators • fish present • algae cover $\geq 10\%$	Classification
None 	None	Absent	Absent	Absent	Ephemeral
			Present	Present	At least intermittent
		Absent	Absent	Absent	Need more information
			Present	Present	At least intermittent
	Few (1-19)	Absent	Absent	Absent	Need more information
			Present	Present	At least intermittent
		Present	Absent	Absent	Need more information
			Present	Present	At least intermittent
	Many (20+)	Absent	Absent	Absent	Need more information
			Present	Present	At least intermittent
		Present	Absent	Absent	Need more information
			Present	Present	At least intermittent
Few (1-2)	None	Absent	Absent	Absent	Need more information
			Present	Present	At least intermittent
		Absent	Absent	Absent	Intermittent
			Present	Present	At least intermittent
	Few (1-19)	Absent	Absent	Absent	Intermittent
			Present	Present	At least intermittent
		Present	Absent	Absent	Intermittent
			Present	Present	At least intermittent
	Many (20+)	Absent	Absent	Absent	Intermittent
			Present	Present	At least intermittent
		Present	Absent	Absent	Intermittent
			Present	Present	At least intermittent
Many (3+)	None	Absent	Absent	Absent	Need more information
			Present	Present	At least intermittent
		Absent	Absent	Absent	At least intermittent
			Present	Present	Perennial
	Few (1-19)	Absent	Absent	Absent	At least intermittent
			Present	Present	Perennial
		Present	Absent	Absent	At least intermittent
			Present	Present	Perennial

Shading provided to enhance readability by increasing the contrast between neighboring cells; empty cells indicate the classification will not change with additional information however it is recommended that all five indicators be measured and recorded during every assessment.

* Channel is 98% bare ground, with 1 FACW hydrophytic plant species below 2% cover. Though present, clearly not dominant, nor characteristic of the channel. Channel was almost exclusively bare ground, sand.

ATTACHMENT D

WETS Table



1931													
1932													
1933													
1934													
1935													
1936													
1937													
1938													
1939													
1940													
1941													
1942							0.00	0.14	0.00	0.26	0.25	0.97	1.62
1943	6.44	2.30	2.65	1.13	0.00	0.00	0.00	0.00	0.00	1.05	0.00	4.52	18.09
1944	0.46	4.74	0.72	1.29	0.00	0.06		M0.00	M0.00	0.00	4.77	0.68	12.72
1945	0.15	3.12	3.58	0.21	0.00	0.01	0.00	1.76	0.52	0.23	0.15	2.14	11.87
1946	0.18	0.21	0.79	1.70	0.13	0.00	0.81	0.02	0.04	1.88	3.65	1.76	11.17
1947	0.24	0.59	1.46	0.24	M0.19	0.00	0.00	0.24	0.00	0.21	0.03	2.31	5.51
1948	0.06	1.71	1.05	0.32	0.00	0.51	M0.00	0.00	0.00	1.16	0.00	M2.26	7.07
1949	3.29	1.18	0.59	0.00	0.48	0.00	M0.00	0.00	0.00	M0.37	1.11	0.83	7.85
1950	1.68	1.09	1.17	0.70	0.12	0.00	0.04	0.00	0.18	0.00	1.27	0.00	6.25
1951	1.42	0.59	0.56	1.99	0.33	0.00	0.35	0.34	0.14	0.57	0.62	M3.92	10.83
1952	4.59	0.45	4.93	1.40	M0.00	0.00	0.14	0.00	1.03	0.00	M2.56	M2.20	17.30
1953	0.87	0.66	1.00	0.90	0.05	0.00	M0.00	M0.23	0.00	0.60	0.91	0.14	5.36
1954	3.25	1.19	3.58	0.12	0.00	0.00	0.16	0.00	0.00	0.00	1.66	1.02	10.98
1955	4.15	1.62	0.15	0.30	0.82	0.00	0.00	0.00	0.00	0.00	0.63	0.39	8.06
1956	2.98	0.32	0.00	1.64	0.17	0.00	0.00	0.00	0.00	0.02	0.00	0.00	5.13
1957	4.62	0.10	2.14	1.18	1.35	0.04	0.00	0.00	0.00	2.82	0.90	1.50	14.65
1958	0.98	3.84	5.05	3.96	0.05	0.00	0.22	0.18	1.69	0.00	0.15	0.00	16.12
1959	0.98	3.94	0.00	0.15	0.00	0.00	0.00	0.00	0.10	0.25	1.05	2.37	8.84
1960	2.16	1.65	0.37	0.59	0.02	0.00	0.00	0.00	0.28	0.47	1.55	0.03	7.12
1961	0.70	0.23	0.61	0.03	0.00	0.00	0.00	1.18	0.00	0.11	0.71	1.55	5.12
1962	1.86	3.76	1.42	0.00	0.68	0.02	0.00	0.00	0.00	0.11	0.00	0.12	7.97
1963	0.15	3.07	1.63	1.57	0.00	0.05	0.00	0.10	3.44	0.84	2.00	0.00	12.85
1964	1.44	0.40	1.83	1.73		0.00	0.00	0.00	0.03	0.02	1.61	0.72	7.78
1965	0.46	0.40	1.70	4.14	0.11	0.01	0.37	0.30	0.49	0.00	6.09	3.30	17.37
1966	0.63	1.15	0.49	0.14	0.00	0.00	0.00	0.00	T	0.55	0.79	5.61	9.36
1967	2.20	T	0.95	3.09	0.14	0.06	0.15	0.93	2.35	0.00	1.65	2.40	13.92
1968	0.63	0.39	0.91	0.89	0.11	0.00	0.65	0.00	0.00	0.23		1.00	4.81
1969	6.15	6.61	0.83	0.30	0.52	0.00	T	0.00	0.00	0.00	0.91	0.00	15.00

										12	00	05	49
1970	1.07	1.08	4.80	0.30	0.00	0.00	0.00	0.34	0.00	0.00	2.10	2.73	12.47
1971	0.73	0.26	0.13	0.35	0.86	0.04	0.00	0.00	0.00	1.20	0.04	4.10	7.71
1972	0.00	0.45	0.00	0.12	0.08	1.09	0.00	0.28	0.12	0.60	2.00	1.14	5.88
1973	1.99	3.75	3.86	0.05	0.00	0.00	0.00	0.00	0.00	0.04	1.63	0.15	11.47
1974	5.18	0.05	1.91	0.22	0.00	0.00	1.05	0.00	0.00	0.76	0.00	1.51	10.68
1975	0.14	1.38	3.40	2.30	0.11	0.00	0.00	0.00	0.00	0.10	1.19	0.41	9.03
1976	0.00	3.98	1.32	1.36	0.55	0.14	0.14	0.00	4.65	1.77	0.65	0.77	15.33
1977	1.96	0.61	1.38	0.14	2.97	0.19	0.00	2.08	0.00	T	0.00	3.15	12.48
1978	7.93	4.32	6.53	1.38	0.02	0.00	0.00	0.01	0.68	0.19	2.82	2.72	26.60
1979	5.43	2.81	3.44	0.00	0.06		0.29	0.03	0.00	0.78	0.30	0.33	13.47
1980	6.37	8.25	2.99	0.80	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.35	18.86
1981	2.03	2.03	2.59	0.43	0.02	0.00	0.00	0.00	0.09	0.05	0.71	0.34	8.29
1982	4.01	1.13	4.43	1.11	0.09	0.00	0.00	1.15	1.20	0.27	2.29	1.22	16.90
1983	2.54	3.17	5.73	2.63	0.83	0.00	0.00	1.24	0.29	0.58	1.68	2.34	21.03
1984	0.04	0.00	0.00	0.57	0.00	0.06	1.48	0.08	1.58	0.23	0.62	4.12	8.78
1985	0.89	1.40	0.54	0.00	0.00	0.00	0.42	0.00	0.90	0.12	3.00	0.54	7.81
1986	1.03	2.68	3.98	0.36	0.00	0.00	0.24	0.00	0.26	0.40	0.92	0.74	10.61
1987	1.57	1.63	1.44	0.05	0.03	0.00	0.01	0.03	0.05	2.59	1.69	1.67	10.76
1988	1.70	0.84	0.31	2.45	0.05	0.00	0.03	1.04	0.00	0.00	0.73	1.53	8.68
1989	1.09	0.70	1.07	0.00	0.19	0.00	0.00	0.00	0.51	0.33	0.04	0.19	4.12
1990	3.31	1.33	0.35	1.42	0.78	0.60	0.34	0.72	0.00	0.00	0.49	0.08	9.42
1991	1.10	2.45	8.35	0.00	0.00	0.00	0.14	0.00	0.43	0.35	0.03	1.82	14.67
1992	2.28	4.37	2.86	0.11	1.93	0.00	0.14		0.00	0.71	0.00	2.90	15.30
1993	13.40	5.45	1.28	0.00	0.12	0.71	0.00	0.00	0.00	0.38	0.62	0.33	22.29
1994	1.02	3.70	1.80	0.92	0.10	0.00	0.00	0.40	0.00	0.52	0.63	0.80	9.89
1995	7.44	1.68	4.64	1.03	0.80	0.23	0.14	0.00	0.77	0.00	0.00	0.18	16.91
1996	1.21	4.24	1.17	0.30	0.00	0.00	0.00	0.00	0.00	1.00		1.54	9.46
1997	3.46	0.28	0.00	0.08	0.00	T	T	0.00	3.03	0.02	1.21	1.62	9.70
1998	2.49	10.24	1.36	1.37	4.29	0.04	0.00	2.19	0.14	0.30	0.73	0.48	23.63
1999	0.94	0.88	0.07	2.41	0.00	0.23	0.80	0.00	0.22	0.00	0.01	0.00	5.56
2000	0.62	3.57	1.59	0.60	0.09	0.00	0.00	0.13	0.32	1.10	0.12	0.00	8.14
2001	2.02	3.25	0.87	0.64	0.08	0.00	0.11	0.00	0.00	0.00	0.68	0.87	8.52
2002	0.50	0.01	0.42	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.24	3.33	4.88
2003	0.05	3.64	3.40	2.14	0.27	0.00	0.21	0.00	0.00	0.00	2.51	0.00	12.00

									00	00		63	85
2004	0.11	3.25	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00	5.151	2.46	13.33
2005	6.81	6.25	0.84	1.15	0.29	0.00	1.50	0.00	0.47	1.25	0.00	0.00	18.56
2006	1.13	2.02	2.90	1.81	0.22	0.00	0.36	0.00	0.76	0.00	0.07	0.44	9.71
2007	0.16	1.38	0.27	0.48	0.00	0.00	0.00	0.00	0.00	0.00	2.61	0.51	5.41
2008	4.50	1.72	0.38	0.00	0.64	0.00	0.00	0.00	0.00	0.00	0.04	M1.67	8.95
2009	0.65	1.30	0.12	0.08	0.00	0.02	0.00	0.00	0.00	0.08	0.46	3.24	5.95
2010	6.08	2.85	0.16	0.86	0.00	0.00	0.06	0.04	0.17	1.29	0.49	7.13	19.13
2011	0.39	M0.20	1.43	0.12	0.25	0.07	0.42	0.00	0.00	0.30	2.13	0.53	5.84
2012	M0.12	1.51	1.37	1.47	0.01	0.00	0.10	0.56	0.85	0.13	0.21	1.88	8.21
2013	0.93	0.78	M0.94	0.00	0.26	0.00	0.02	0.20	0.44	0.60	0.75	0.43	5.35
2014	0.01	1.90	1.65	0.62	0.00	0.00	0.00	0.96	2.20	0.00	0.39	5.12	12.85
2015	0.35	0.94	0.76	0.26	1.56	0.19	1.42	0.00	0.60	0.58	0.27	0.92	7.85
2016	2.94	0.23	0.41	0.31	0.44	0.00	0.00	0.00	0.41	0.26	1.18	3.06	9.24
2017	5.48	3.13	0.10	0.00	0.15	0.00	0.02	0.31	0.00	0.00	0.07	0.00	9.26
2018	2.35	0.58	2.48	0.02	0.27	0.00	0.15	0.00	0.00	0.95	0.59	2.09	9.48
2019	2.57	8.87	2.26	0.19	1.41	0.00	0.00	0.00	0.16	0.00	3.12	3.09	21.67
2020	0.28	0.70	4.64	4.27	0.00	0.00	0.00	0.80	0.00	0.00	0.73	1.63	13.05
2021	2.73	0.22	1.90	0.32	0.04	0.03	0.37	0.00	0.07	1.04	0.00	2.85	9.57
2022	0.13	0.80	0.77	0.37	M0.00								2.07

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

Creation date: 2022-06-07