



Aquatic Resources Delineation Report Highland Grove IV Development Project Unincorporated Riverside County, California

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SECTION 1: INTRODUCTION

At the request of Adkan Engineers, FirstCarbon Solutions (FCS) completed a delineation of aquatic resources and proposes a jurisdictional determination for the approximate 111.60-acre Highland Grove IV Development Project Site and 2.92-acre Highland Grove IV Development Off-site Improvement Area, collectively called the Study Area (114.52-acres), as depicted on Exhibits 1 to 4. The purpose of this report is to support jurisdictional determinations by the United States Army Corps of Engineers (USACE) and the Regional Water Quality Control Board (RWQCB); to support California Department of Fish and Wildlife (CDFW) evaluation pursuant to Fish and Game Code Sections 1602, *et seq.* (Streambed Alteration Program); and to support the project applicant's planning and permitting efforts for a proposed development project.

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SECTION 2: ENVIRONMENTAL SETTING

2.1 - Location

The approximate 115-acre Study Area is located in unincorporated Riverside County, east of the census-designated El Sobrante and southwest of the Citrus Heights neighborhood in the City of Riverside. The Study Area is centered around 33.867365° latitude and -117.431011° longitude. The location of the Study Area within the Riverside region is shown on Exhibit 1, and the Study Area boundaries on a recent high-resolution aerial image are shown on Exhibit 2.

2.2 - Vegetation and Land Cover Types

Vegetation of the Study Area is dominantly coastal sage scrub with riparian woodland found within the drainages and some of the large tributaries. The coastal sage scrub community is dominated by California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), brittlebush (*Encelia farinosa*), California brittlebush (*Encelia californica*), and fourwing saltbush (*Atriplex canescens*), with California cholla (*Cylindropuntia californica*), castor bean (*Ricinus communis*), tree tobacco (*Nicotiana glauca*), and small blue elderberry (*Sambucus nigra cerulea*) trees scattered across the site. Common forb species present include jimsonweed (*Datura wrightii*), black nightshade (*Solanum nigrum*), common phacelia (*Phacelia distans*), common fiddleneck (*Amsinckia intermedia*), white horehound (*Marrubium vulgare*), and black mustard (*Brassica nigra*). Non-native grasses, including red brome (*Bromus rubens*), ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum murinum*), and common mediterranean grass (*Schismus barbatus*), are present throughout the Study Area and along the banks of the drainages.

Riparian woodland present in the drainages is dominated by Goodding's black willow (*Salix gooddingii*), arroyo willow (*Salix lasiolepis*), Mexican fan palm (*Washingtonia robusta*), Canary Island date palm (*Phoenix canariensis*), mule fat (*Baccharis salicifolia*), and common fig (*Ficus carica*). Common forb species present include watercress (*Nasturtium officinale*), broadleaf cattail (*Typha latifolia*), stinging nettle (*Urtica dioica*), dwarf nettle (*Urtica urens*), hoary bowlesia (*Bowlesia incana*), common eucrypta (*Eurypta chrysanthemifolia*), Douglas' nightshade (*Solanum douglasii*), chilicothe (*Marah macrocarpa*), ladies' tobacco (*Pseudognaphalium californicum*), and areas of dense patches of broadleaved pepperweed (*Lepidium latifolium*).

Vegetation associated with drainage channels is described for each feature in more detail, below.

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Source: Census 2000 Data, The California Spatial Information Library (CaSIL).

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Exhibit 1

Regional Location Map

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Source: ESRI Aerial Imagery.



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2.3 - Topography and Hydrogeomorphology

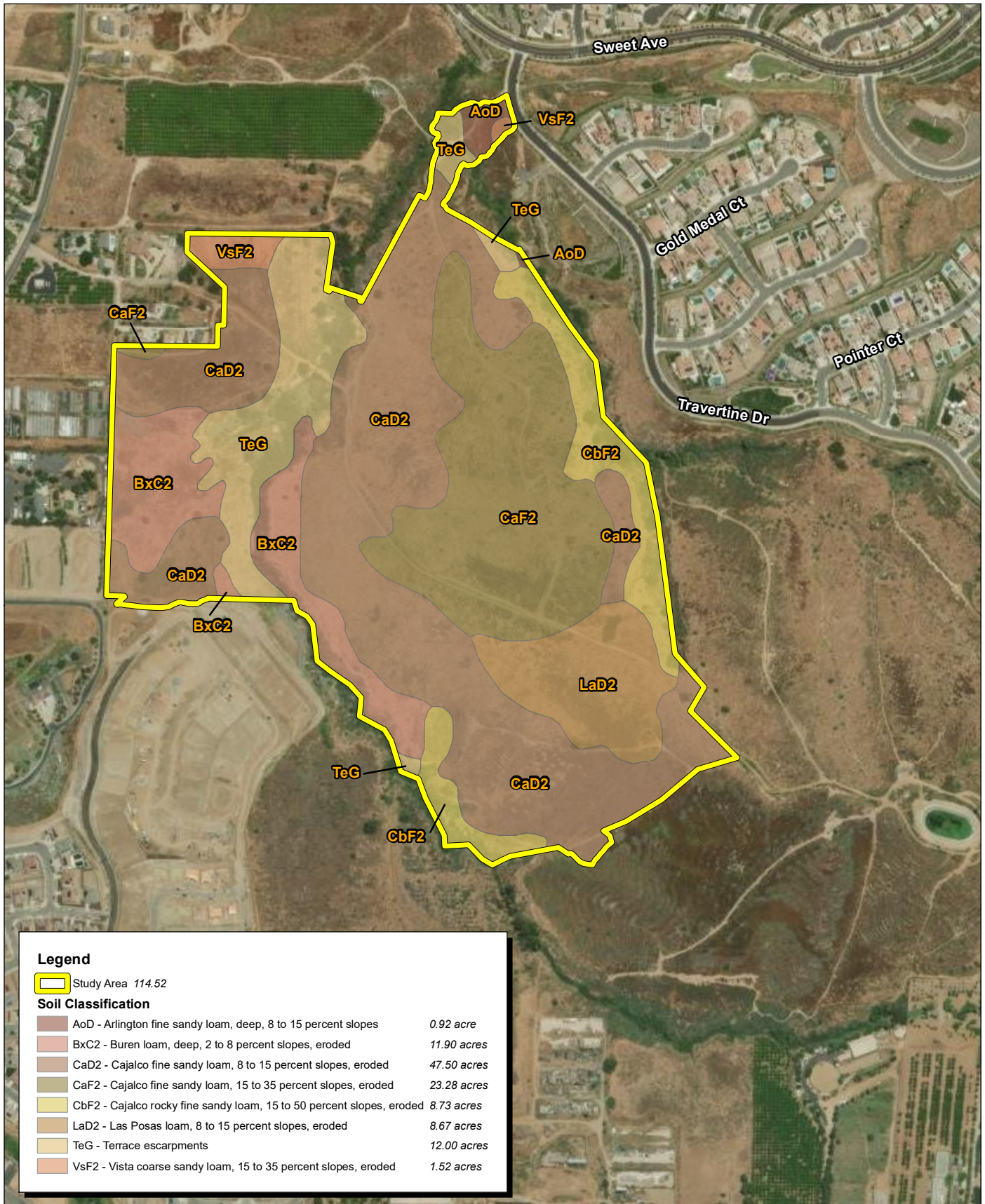
Elevation within the Study Area ranges from approximately 1,180 feet above mean sea level (AMSL) near the north central portion of the project site to 1,348 feet AMSL near the southeast corner of the project site. Intermittent drainage channels and ephemeral tributaries along the eastern edge of the Study Area boundary and through the western third of the Study Area drain direct precipitation to the north and merge before moving off-site. Additional flows may be provided by a culvert-fed drainage from the adjacent Citrus Heights Residential Development that meets the eastern drainage off-site. Flows leaving the Study Area travel through two 9-foot-wide culverts under Sweet Avenue and toward Citrus Drive. Flows are then conveyed beneath the Gage Canal and terminate approximately 2 miles northwest of the Study Area within a concrete pipe culvert at an agricultural field south of the intersection of Cleveland Avenue and -Harrison Street. Subsurface flow continues in the storm drain indefinitely and does not appear to reemerge as surface flow.

2.4 - Soils

The soils of 70 percent of the Study Area are mapped by Natural Resources Conservation Service (NRCS) as Cajalco soil series. Approximately 10 percent of the Study Area was mapped as Buren loam and 8 percent was mapped as Las Posas loam. Smaller portions of the Study Area consist of Vista course sandy loam and Arlington fine sandy loam. Approximately 11 percent of the Study Area was mapped as Terrace escarpments (Exhibit 3). None of the soil types mapped or observed are classified as hydric soils.¹

¹ United States Department of Agriculture (USDA), Natural Resources Conservation Service. 2023. Web Soil Survey 3.3.2. Website: <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. Accessed May 2024.

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Source: ESRI Aerial Imagery. USDA Soils Data Mart, Riverside County Western Area.



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SECTION 3: REGULATORY SETTING

3.1 - Federal

3.1.1 - Clean Water Act

Section 404

The agencies are in receipt of the U.S. Supreme Court’s May 25, 2023 decision in the case of *Sackett v. Environmental Protection Agency*. In light of this decision, the agencies will interpret the phrase “waters of the United States” consistent with the Supreme Court’s decision in the *Sackett* case. In *Sackett*, the Supreme Court adopted the Rapanos plurality’s test for adjacent wetlands: only those wetlands with a continuous surface connection to other regulated waters, such that the two are indistinguishable.

The United States Army Corps of Engineers (USACE) administers Section 404 of the federal Clean Water Act (CWA), which regulates the discharge of dredge and fill material into waters of the United States. The term “waters of the United States” is defined in USACE regulations at 33 Code of Federal Regulations Part 328.3(a) as:

1. Waters which are:
 - a. Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
 - b. The territorial seas; or
 - c. Interstate waters;
2. Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;
3. Tributaries of waters identified in paragraphs (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;
4. Wetlands adjacent to the following waters:
 - a. Waters identified in paragraph (a)(1) of this section; or
 - b. Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;
5. Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section.

The following are not “waters of the United States”:

1. Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;

2. Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the United States Environmental Protection Agency (EPA);
3. Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;
4. Artificially irrigated areas that would revert to dry land if the irrigation ceased;
5. Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;
6. Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;
7. Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and
8. Swales and erosional features (e.g., gullies, small washes) characterized by low volume, infrequent, or short duration flow.

Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the EPA and/or USACE.

"Wetland" refers to 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. Wetlands generally include swamps, marshes, bogs, and seasonal wetlands. Wetlands are considered jurisdictional if they fall under one of the categories of waters of the United States defined above. The USACE jurisdiction typically extends up to the ordinary high water mark (OHWM).

In general, a USACE permit must be obtained before placing fill in wetlands or other waters of the United States. The type of permit depends on the impacted acreage, the purpose of the proposed fill, and other factors.

Section 401

Section 401 of the CWA states that "any applicant for a federal permit for activities that involve a discharge to waters of the State, shall provide the federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the federal Clean Water Act." Therefore, before the USACE will issue a

Section 404 permit, applicants must apply for and receive a Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB).

3.2 - State

3.2.1 - California Porter-Cologne Water Quality Control Act

The RWQCB regulates actions that would involve “discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the State” (Water Code § 13260(a)), pursuant to provisions of the Porter-Cologne Water Quality Act. “Waters of the State” are defined as “any surface water or groundwater, including saline waters, within the boundaries of the State” (Water Code § 13050(e)). In 2019, the California State Water Resources Control Board (State Water Board) published the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures) to guide wetland waters of the State determinations and the permitting process.²

3.2.2 - California Fish and Game Code

Sections 1600–1617 of the California Fish and Game Code require that a Notification of Lake or Streambed Alteration be submitted to the CDFW for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” The CDFW reviews the proposed actions in the Notification and, if necessary, prepares a Lake or Streambed Agreement that includes measures to protect fish and wildlife resources.

² California State Water Resources Control Board (State Water Board). 2019. State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. October 20, 2023.

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SECTION 4: METHODS

FCS Senior Biologist Robert Carroll, assisted by FCS Botanist Juliet Simpson, surveyed the Study Area on April 25–26, 2024, as described in the following section.

4.1 - Wetlands

The presence/absence of wetlands was determined based on the requirements of the Corps of Engineers Wetlands Delineation Manual and revised procedures in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region.^{3,4} These procedures include standards that define wetlands, including specific saturation and/or ponding regimes, and evaluate hydrophytic vegetation, hydric soils, and wetland hydrology. Wetland indicator status of vegetation follows the 2022 National Wetland Plant List for the Arid West Region.⁵

4.2 - Drainage Channels and Tributaries

Drainage channels were characterized through presence/absence of bed, bank, and OHWM; hydrology; and hydrological connectivity. The OHWM is determined and characterized using definitions and guidance of A Field Guide to the Identification of the OHWM in the Arid West Region of the Western United States.⁶ A discussion of what constitutes a potentially jurisdictional “tributary” pursuant to *Sackett* and which features, such as ditches or ephemeral drainages, may be excluded from the definition of waters of the United States is provided in Section 5, below.

Culverted drainage sections were examined for evidence of concentrated flow, including presence of water stains, mineral or sediment deposits, and biofilm.

4.2.1 - Definitions of Hydrological Regimes

An ephemeral stream is defined as a watercourse that carries only surface runoff and flows during and immediately after periods of precipitation. An intermittent stream is defined as a watercourse that is temporally intermittent or seasonal and that flows during the wet season, continues to flow after the period of precipitation, and ceases surface flow during at least part of the dry season. A perennial stream is a watercourse that flows throughout the year. Riparian vegetation is defined as vegetation associated with a watercourse and relying on the higher level of water provided by the watercourse. Riparian vegetation can include trees, shrubs, and/or herbaceous plants.

4.3 - Additional Background Information Review

Additional relevant information about the Study Area was reviewed, including current and historical aerial imagery; the Watershed Assessment, Tracking and Environmental Results System (WATERS);

³ Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1.

⁴ United States Army Corps of Engineers (USACE). 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.

⁵ The National Wetland Plant List—Arid West Version 3. 2022. United States Army Corps of Engineers.

⁶ Lichvar, R.W. and S.M. McColley. 2008. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States.

the EPA's National Hydrography Data Set Plus (NHDPlus Version 2); the United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI);⁷ and the NRCS Web Soil Survey and Climate Analysis for Wetlands (WETS).^{8,9,10} Specifically, the standard NRCS WETS analysis includes a weighted comparison of historical rainfall to observed rainfall for the 3-month period before a wetland delineation field survey in order to evaluate if abnormal rainfall patterns may have contributed to observed presence or absence of wetland indicators.¹¹ The WETS analysis is based on data from the nearest WETS-listed station with a robust data set (e.g., over 30 years of precipitation data), located at Riverside Municipal Airport, Riverside County, approximately 7 miles north of the Study Area. Additionally, the United States Drought Monitor data for Riverside County was incorporated into the analysis.

⁷ United States Fish and Wildlife Service (USFWS). National Wetlands Inventory. Website: <https://www.fws.gov/wetlands/data/mapper.html>. Accessed April 2024.

⁸ United States Environmental Protection Agency (EPA). Watershed Assessment, Tracking and Environmental Results System (WATERS) Website: <https://www.epa.gov/waterdata/waters-watershed-assessment-tracking-environmental-results-system>. Accessed April 2024.

⁹ United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2020. Web Soil Survey 3.3.2. Website: <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. Accessed April 2024.

¹⁰ United States Department of Agriculture (USDA), Natural Resources Conservation Service. 1997. Part 650 Engineering Field Handbook - Chapter 19: Hydrology Test for Wetland Determination.

¹¹ Ibid.

SECTION 5: RESULTS

The following section describes the results of both the background research and analysis and the results of the protocol-level delineation field work. Representative photographs of current site conditions are included in Appendix A.

5.1 - Climatic Conditions

Results of the WETS analysis (Appendix B) indicate that conditions during the delineation survey were wetter than normal for the 3-month period prior the delineation (i.e., January through March 2024). The last rain event prior to the delineation occurred in March 2024, with an accumulated precipitation volume of 2.38 inches for the month, based on data of the nearest publicly available weather station located in Riverside.

5.2 - Aquatic Resources

Aquatic resources are shown in Exhibit 4. Dimensions of all aquatic resources occurring within the Study Area boundary are presented in Table 1 and described in more detail below.

Table 1: Summary of Aquatic Resources within the Study Area

Type	Segment ID	Length (linear feet)	Width (feet)	Area (square feet)	Area (acres)
Open Drainage Channel	1-1	2,079	8	16,635	0.38
Open Drainage Channel	1-1A	125	1	125	0.0028
Open Drainage Channel	1-1B	265	1	265	0.006
Open Drainage Channel	1-1C	53	1	53	0.001
Open Drainage Channel	1-2	113	2	227	0.005
Open Drainage Channel	1-4	74	2	148	0.003
Open Drainage Channel	2-1	2,978	10	29,781	0.68
Open Drainage Channel	2-1A	187	1	187	0.004
Open Drainage Channel	2-1B	101	1	101	0.002
Open Drainage Channel	2-1C	36	1	36	0.0008
Open Drainage Channel	2-1D	94	1	94	0.002
Open Drainage Channel	2-1E	528	1	528	0.012
Open Drainage Channel	2-3	395	1.5	593	0.014
Open Drainage Channel	2-4	73	2	146	0.003
Open Drainage Channel	3-1	245	1	245	0.0056
Sum Open Drainage Channels	–	7,346	N/A	49,164	1.13
Wetland	N/A	N/A	N/A	8,486	0.19

Type	Segment ID	Length (linear feet)	Width (feet)	Area (square feet)	Area (acres)
Sum Wetlands	–	N/A	N/A	8,486	0.19
Culvert Pipe	1-3	72	1	72	0.002
Culvert Pipe	2-2	30	1	30	0.0007
Sum Culvert Pipes	–	102	N/A	102	0.003
Sum All Potentially Jurisdictional Waters	–	7,449	N/A	57,752	1.32

5.2.1 - Open Drainage Channels

The following is a description and discussion of all observed open drainage channel segments. Dimensions of each segment are listed in Table 1, and locations are shown on Exhibit 4. A definition of ephemeral and intermittent flow regimes is provided in Section 4.2.1.



Source: ESRI Aerial Imagery.

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Intermittent Drainage Segment 1-1

Intermittent Drainage Segment 1-1 is a naturally occurring first order drainage that conveys flows south to north along the entire eastern boundary of the Study Area. This drainage is fed by ephemeral drainages on-site. There is an off-site culvert from the neighboring Citrus Heights Residential Development that also appears to provide flows to portions of this drainage segment that are off-site of the Study Area. This segment drains a narrow eastern portion of the Study Area to the north. The channel is characterized by the presence of deeply incised banks. The OHWM is characterized by scour and sediment deposits. At the time of the survey, flowing or standing water was present in multiple locations along this drainage but not consistent throughout. Many areas within this segment were inaccessible due to the deeply incised banks and the presence of extremely dense vegetation.

Broadleaf cattail, watercress, and stinging nettle were found growing within the OHWM at various locations along this drainage segment, with common eucrypta often present along the OHWM. The canopy layer along this drainage segment was composed of scattered Goodding's black willow, arroyo willow, Mexican fan palm, Canary Island date palm, common fig, and pepper tree (*Schinus molle*), with mule fat common throughout the drainage. Segment 1-1 provides intermittent flows to Intermittent Drainage Segment 1-2 in the Off-site Improvement Area after a short segment that travels outside of the Study Area.

Ephemeral Drainage Segment 1-1A

Ephemeral Drainage Segment 1-1A is a naturally occurring ephemeral tributary that runs southwest to northeast on the southwestern side of Intermittent Drainage Segment 1-1. Segment 1-1A is the southern-most tributary to Intermittent Drainage Segment 1-1. This drainage is characterized by the presence of narrow banks. There was dense vegetation obscuring the OHWM; however, it appeared to be a maximum of 10 inches wide. At the time of the survey, no water or soil moisture was present, indicating an ephemeral hydrological regime. Species found in this tributary segment include blue elderberry, California brittlebush, white horehound, dwarf nettle, spiny sowthistle (*Sonchus asper*), black mustard, and red brome. Segment 1-1A drains the southeastern corner of the Study Area into Intermittent Drainage Segment 1-1.

Ephemeral Drainage Segment 1-1B

Ephemeral Drainage Segment 1-1B is a naturally occurring ephemeral tributary that runs south to north on the midwestern side of Intermittent Drainage Segment 1-1. This drainage is characterized by the presence of narrow banks. There was dense vegetation obscuring the OHWM; however, it appeared to range from 6 to 14 inches wide. At the time of the survey, no water or soil moisture was present, indicating an ephemeral hydrological regime. Species found in this tributary segment include California sagebrush, brittlebush, California brittlebush, dwarf nettle, common fiddleneck, spiny sowthistle, prickly lettuce (*Lactuca serriola*), stinknet (*Oncosiphon piluliferum*), foxtail barley, and red brome. Segment 1-1B drains the eastern edge of the Study Area into Intermittent Drainage Segment 1-1.

Ephemeral Drainage Segment 1-1C

Ephemeral Drainage Segment 1-1C is a remnant culvert-fed ephemeral tributary that runs southwest to northeast on the midwestern side of Intermittent Drainage Segment 1-1. Segment 1-1C is the northern-most tributary to Intermittent Drainage Segment 1-1. This drainage is characterized by the presence of narrow banks. There is no substantial OHWM; however, there was running water present at the time of the survey and clear moist areas containing small flowered melica (*Melica imperfecta*), rattail fescue (*Festuca myuros*), and common eucrypta. Other species found in this tributary segment include California sagebrush, brittlebush, California brittlebush, California cholla, Douglas' nightshade, pearly everlasting (*Anaphalis margaritacea*), common fiddleneck, dwarf nettle, and red brome. Segment 1-1C drains an eastern portion of the Study Area into Intermittent Drainage Segment 1-1.

Intermittent Drainage Segment 1-2

Intermittent Drainage Segment 1-2 is a continuation of Intermittent Drainage Segment 1-1 after a short segment outside of the Study Area. Segment 1-2 conveys flows southeast to northwest within the Off-site Improvement Area. This segment provides drainage to a small southeastern portion of the Off-site Improvement Area. The channel is characterized by the presence of slightly incised banks and a shallow bed. The OHWM is characterized by scour and sediment deposits. Extremely dense vegetation along the banks of this segment made it difficult to observe the OHWM within some reaches of the drainage. At the time of the survey, flowing water was present in this drainage. There were no species found growing within the OHWM in this drainage segment, though stinging nettle, dwarf nettle, hairy bitter cress (*Cardamine hirsuta*), hoary bowlesia, and common eucrypta were present along the OHWM. The canopy layer along this drainage segment was composed of mule fat. Segment 1-2 provides intermittent flows through Culvert Segment 1-3 to Intermittent Drainage Segment 1-4.

Intermittent Drainage Segments 1-4 and 2-4

Intermittent Drainage Segment 1-4 is a continuation of Intermittent Drainage Segment 1-2 after it flows through Culvert Segment 1-3. Segment 1-4 drains a small northern portion of the Off-site Improvement Area into Intermittent Drainage Segment 2-4.

Intermittent Drainage Segment 2-4 is a continuation of Intermittent Drainage Segment 2-3 after it flows off the Study Area and back in the Off-site Improvement Area. Segment 2-4 appears to drain a small northwestern section off-site from the Study Area. Segment 2-4 conveys flows southwest to northeast across the Off-site Improvement Area before moving off-site to the north. The channel is characterized by the presence of sharply incised banks. The OHWM is characterized by scour and sediment deposits. At the time of the survey, water was present in this drainage. Watercress was found growing within the OHWM in this drainage segment, with stinging nettle, dwarf nettle, and hoary bowlesia present along the OHWM. The canopy layer along this drainage segment was composed of Goodding's black willow, mule fat, and willow baccharis (*Baccharis salicina*). Segment 1-4 provides intermittent flows to Intermittent Drainage Segment 2-4 before continuing north off-site and ultimately discharging into two 9-foot culverts that pass underneath Sweet Avenue and toward Citrus Drive. Flows are then conveyed beneath the Gage Canal and terminate approximately

2 miles northwest of the Study Area within a concrete pipe culvert at an agricultural field south of the intersection of Cleveland Avenue and Harrison Street. Subsurface flow continues in the storm drain indefinitely and does not appear to reemerge as surface flow.

Intermittent Drainage Segment 2-1

Intermittent Drainage Segment 2-1 is a naturally occurring first order drainage that conveys flows from the south to north along the southwestern portion of the Study Area boundary. The drainage then cuts through the northern portion of the Study Area where it discharges into Culvert Segment 2-2. This segment drains the majority of the western portion of the Study Area to the north. The channel is characterized by the presence of deeply incised banks. The OHWM is characterized by scour and sediment deposits. The OHWM became wider near Ephemeral Drainage Segment 2-1E and Culvert Segment 2-2. At the time of the survey, flowing water was present in portions of this drainage that were not obscured by dense vegetation. Many areas within this segment were inaccessible due to the deeply incised banks and the presence of extremely dense vegetation. Broadleaf cattail, watercress, broadleaved pepperweed and stinging nettle were found growing within the OHWM at various locations along this drainage segment, with hoary bowlesia often present along the OHWM. The canopy layer along this drainage segment was composed of scattered Goodding's black willow, Mexican fan palm, Canary Island date palm, common fig, and a few eucalyptus (*Eucalyptus sp.*), with mule fat and Anderson's thornbush (*Lycium andersonii*) common throughout the drainage. A Freshwater Forested/Shrub Wetland identified by USFWS NWI was mapped adjacent to Segment 2-1, this feature is further discussed in Section 5.2.2 below. Segment 2-1 provides intermittent flows through Culvert Segment 2-2 into Intermittent Drainage Segment 2-3.

Ephemeral Drainage Segment 2-1A

Ephemeral Drainage Segment 2-1A is a naturally occurring ephemeral tributary that runs east to west on the southeastern side of Intermittent Drainage Segment 2-1. The drainage is characterized by the presence of narrow banks. The OHWM was obscured by dense vegetation, and at the time of the survey, no water or soil moisture was present, indicating an ephemeral hydrological regime. Species found in this tributary segment include fourwing saltbush, California brittlebush, brittlebush, pine bush (*Ericameria pinifolia*), blue elderberry, tree tobacco, white horehound, stinging nettle, common fiddleneck, common eucrypta, black mustard, redstem stork's-bill (*Erodium cicutarium*), red brome, and common mediterranean grass. Segment 2-1A drains the southwestern corner of the Study Area into Intermittent Drainage Segment 2-1.

Ephemeral Drainage Segment 2-1B

Ephemeral Drainage Segment 2-1A is a naturally occurring ephemeral tributary that runs east to west on the southeastern side of Intermittent Drainage Segment 2-1. The drainage is characterized by the presence of narrow banks. The OHWM was obscured by dense vegetation, and at the time of the survey, no water or soil moisture was present, indicating an ephemeral hydrological regime. Species found in this tributary segment include tree tobacco, California brittlebush, brittlebush, white horehound, stinging nettle, dwarf nettle, common fiddleneck, black mustard, Maltese star thistle (*Centaurea melitensis*), redstem stork's-bill, and red brome. Segment 2-1B drains the southwestern corner of the Study Area into Intermittent Drainage Segment 2-1.

Ephemeral Drainage Segment 2-1C

Ephemeral Drainage Segment 2-1C is a remnant culvert-fed ephemeral tributary that runs east to west on the southeastern side of Intermittent Drainage Segment 2-1. The drainage is characterized by the presence of narrow banks. There is no substantial OHWM, and at the time of the survey, no water or soil moisture was present, indicating an ephemeral hydrological regime. Species found in this tributary segment include tree tobacco, white horehound, black mustard, prickly lettuce, red brome, and foxtail barley. Segment 2-1C drains the southwestern corner of the Study Area into Intermittent Drainage Segment 2-1.

Ephemeral Drainage Segment 2-1D

Ephemeral Drainage Segment 2-1D is a remnant culvert-fed ephemeral tributary that runs east to west on the northeastern side of Intermittent Drainage Segment 2-1. The drainage is characterized by the presence of narrow banks. There is no substantial OHWM and at the time of the survey, no water or soil moisture was present, indicating an ephemeral hydrological regime. Species found in this tributary segment include tree tobacco, mule fat, pepper tree, white, stinging nettle, common fiddleneck, black mustard, Maltese star thistle, London rocket (*Sisymbrium irio*), stinknet, and red brome. Segment 2-1D drains a central portion of the Study Area into Intermittent Drainage Segment 2-1.

Ephemeral Drainage Segment 2-1E

Ephemeral Drainage Segment 2-1E is a naturally occurring ephemeral tributary that runs west to east on the northwestern side of Intermittent Drainage Segment 2-1. The drainage is characterized by the presence of shallow banks and a broad OHWM. At the time of the survey, there was no water but there was some soil moisture present, indicating an ephemeral hydrological regime. The OHWM was dominated by a large patch of broadleaved pepperweed with a single Persian lilac (*Melia azedarach*) tree growing in it. Other species found in this tributary segment include Mexican fan palm, mule fat, castor bean, brittlebush, white horehound, stinging nettle, dwarf nettle, climbing milkweed (*Funastrum cynanchoides hartwegii*), common fiddleneck, black mustard, stinknet, redstem stork's-bill, red brome, and foxtail barley. The downstream portion of this segment was mapped as a Freshwater Forested/Shrub Wetland by USFWS NWI, which is further discussed under Section 5.2.2 below. Segment 2-1E drains the northwestern edge of the Study Area into Intermittent Drainage Segment 2-1.

Intermittent Drainage Segment 2-3

Intermittent Drainage Segment 2-3 is a continuation of Intermittent Drainage Segment 2-1 after it passes through Culvert Segment 2-2. This segment flows north outside of the Study Area before returning to the Off-site Improvement Area as intermittent Drainage Segment 2-4. This segment drains a small northern section of the Study Area to the north. The channel is characterized by the presence of deeply incised banks. The OHWM is characterized by scour and sediment deposits. The OHWM directly below (north of) Culvert Segment 2-2 was much wider than in the rest of this drainage segment. At the time of the survey, flowing water was present in this drainage. Watercress and stinging nettle were found growing within the OHWM in this drainage segment. The canopy layer along this drainage segment was composed of Mexican fan palm and blue elderberry. The

southern portion of this segment was mapped as a Freshwater Forested/Shrub Wetland by USFWS NWI, see Section 5.2.2 below. In the field, this area of the Drainage Segment was much wider and had a large patch of stinging nettle obscuring the OHWM. Segment 2-3 provides intermittent flows outside the Study Area to the north and then returns to the Off-site Improvement Area as Intermittent Drainage Segment 2-4.

Ephemeral Drainage Segment 3-1

Ephemeral Drainage Segment 3-1 is a cement culvert inlet-fed ephemeral drainage that flows southwest to northeast within the southwest corner of the Study Area. The drainage is characterized by the presence of a shallow floodplain and narrow bed. The OHWM is characterized by scour and sediment deposits. At the time of the survey, no water or moist soils were present, indicating an ephemeral hydrological regime. Dwarf nettle, white horehound, and stinknet were found growing in the OHWM. Other species found in this drainage segment include tree tobacco and black mustard. This drainage segment appears to terminate with the broadening of the floodplain. This segment does not provide a downstream connection.

5.2.2 - Wetland

FCS established one wetland sample point within the NWI-mapped Freshwater Forested/Shrub Wetland, adjacent to Ephemeral Drainage Segment 2-1E and Intermittent Drainage Segment 2-1 (Appendix C; SP-1). This area appears to be hydrologically connected to Ephemeral Drainage Segment 2-1E and Intermittent Drainage Segment 2-1. This area was covered by a robust patch of broadleaved pepperweed, a facultative wetland species. Soils in the edge of the broadleaved pepperweed patch were soft and saturated, indicating a high water table and the presence of wetland hydrology. There was also evidence of standing water in lower portions of the broadleaved pepperweed patch, closer to the main flows of Intermittent Drainage Segment 2-1.

5.2.3 - Culvert Segments

Culvert Segment 1-3

Culvert Segment 1-3 is a 42-inch metal corrugated pipe that hydrologically connects Intermittent Drainage Segments 1-2 and 1-4 under a secondary access road (Exhibit 4).

Culvert Segment 2-2

Culvert Segment 2-2 is a 42-inch metal corrugated pipe that hydrologically connects Intermittent Drainage Segments 2-1 and 2-3 under a secondary access road (Exhibit 4).

5.2.4 - Riparian Vegetation

In addition to the streambeds outlined above, the Study Area contains approximately 6.71 acres of riparian vegetation associated with drainage segments 1-1, 2-1, and 2-3.

5.3 - United States Fish and Wildlife Service National Wetland Inventory

The USFWS NWI depicted Freshwater Forested/Shrub Wetland within one portion of the Study Area, in the areas of Ephemeral Tributary Segment 2-1E and Intermittent Drainage Segments 2-1 and 2-3,

surrounding Culvert Segment 2-2.¹² However, per the NWI, determinations are only made based on high altitude imagery, and according to the NWI Data Limitations information, “a margin of error is inherent in the use of imagery; thus, detailed on the ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.” Additionally, the USFWS clarifies that NWI mapping is not adequate to be used to establish regulatory boundaries or jurisdiction.

FCS established one wetland sample point within the NWI-mapped wetland in an area that showed evidence of hydrophytic vegetation due to the presence of a robust patch of broadleaved pepperweed (Appendix C; SP-1). This area is hydrologically connected to Ephemeral Drainage Segment 2-1E and Intermittent Drainage Segment 2-1. Broadleaved pepperweed, a facultative wetland species, completely covered the sample point, meeting both the dominance test and prevalence index. Dense vegetation made it difficult to access the sample point to dig a soil pit; however, soils in the edge of the broadleaved pepperweed patch were soft and saturated, indicating a high water table. There was evidence of standing water in lower portions of the broadleaved pepperweed patch closer to the main flows of Intermittent Drainage Segment 2-1. The presence of wetland indicators may be influenced by recent weather, as conditions in the three months prior to the delineation survey were much wetter than normal, as demonstrated by the WETS analysis (see Section 5.1 and Appendix B).

5.4 - Proposed Jurisdictional Determination

5.4.1 - Proposed United States Army Corps of Engineers Jurisdiction

As of the preparation of this report on June 19, 2024, the final “Revised Definition of Waters of the United States” rule was published in the Federal Register on January 18, 2023, and became effective March 20, 2023. On May 25, 2023, the U.S. Supreme Court issued a decision in the case of *Sackett v. Environmental Protection Agency*. This decision determined that areas of federal jurisdiction under Section 404 of the CWA must have a “continuous surface connection” with navigable waters of the United States or relatively permanent tributaries to navigable waters. This report proposes preliminary conclusions regarding the jurisdictional status of non-wetland waters, based on the *Sackett* decision.

On August 29, 2023, the USACE and the EPA issued a release noting that a revised definition of waters of the United States would be issued in conformance with *Sackett*. On September 8, 2023, the USACE and EPA issued the final rule updating the definition of waters of the United States in conformance with *Sackett* in the Federal Register. The final rule is not currently operative in certain states and for certain parties due to litigation. California is excluded from this litigation and is currently operating under the guidance issued in the Federal Register on September 8, 2023.

¹² United States Fish and Wildlife Service (USFWS). National Wetlands Inventory (NWI). Website: <https://www.fws.gov/wetlands/data/mapper.html>. Accessed April 2024.

5.4.2 - Features Proposed to be Exempt from United States Army Corps of Engineers Jurisdiction

Per the guidance outlined above, no aquatic features within the Study Area contain a continuous surface connection with a navigable water of the United States. As noted in Section 2.3 and 5.2.1 above, flows leaving the Study Area terminate approximately 2 miles northwest within a concrete pipe culvert at an agricultural field south of the intersection of Cleveland Avenue and Harrison Street. Subsurface flow continues in the storm drain indefinitely and does not appear to reemerge as surface flow. Therefore, the on-site aquatic features do not contain a continuous surface connection to a navigable water of the United States and would likely not be classified as waters of the United States under the jurisdiction of the USACE. Note that a final jurisdictional determination can only be made by the USACE following verification.

5.4.3 - Proposed Regional Water Quality Control Board Jurisdiction

Waters of the State are defined as “any surface water or groundwater, including saline waters, within the boundaries of the State” (Water Code § 13050(e)) and are under the jurisdiction of the RWQCB. Therefore, FCS proposes that all drainages within the Study Area boundary as shown on Exhibit 4 would fall under the jurisdiction of the RWQCB. This proposed jurisdictional determination is preliminary until confirmed by the RWQCB.

5.4.4 - California Department of Fish and Wildlife Streambed Alteration Program Considerations

Because of the presence of drainage beds and banks, it is expected that the CDFW will assert regulatory oversight over potential impacts on all drainage channels and associated vegetation pursuant to California Fish and Game Code Section 1602, *et seq.* (Streambed Alteration Program). It is expected that the CDFW will classify all vegetation in the drainages and trees with canopies overhanging the drainages as “riparian vegetation” and that the CDFW will require a Notification of Streambed Alteration and subsequent Streambed Alteration Agreement for any work that could adversely affect the drainages on-site and associated riparian vegetation.

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SECTION 6: CONCLUSION

The Study Area includes 17 open and vegetated ephemeral and intermittent channels (with two segments consisting of culvert pipes) and one Freshwater Forested/Shrub Wetland, for a total length of 7,449 linear feet, covering an aggregate area of approximately 57,752 square feet (1.32 acres). Additionally, the Study Area supports 6.71 acres of riparian vegetation. These features are shown in further detail on Exhibit 4.

The Study Area does not contain potential waters of the United States regulated by the USACE under Section 404 of the Clean Water Act. The Study Area includes 57,752 square feet (1.32 acres) and 7,449 linear feet of potential waters of the State regulated by the RWQCB under Section 13260 of the California Water Code; and 341,648 square feet (7.84 acres) of aquatic features and associated riparian habitat regulated pursuant to the Streambed Alteration Program.

The findings and conclusions presented in this report, including the location and extent of waters subject to regulatory jurisdiction, represent the professional opinion of FCS. These findings and conclusions should be considered preliminary until confirmed by the USACE, RWQCB, and CDFW.

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Appendix A: Site Photographs

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Photograph 1: Headwaters of Drainage Segment 1-1, facing south.



Photograph 2: Overgrown watercress patch in OHWM where Drainage Segment 1-4 meets Drainage Segment 2-4.



Photograph 3: Flowing water present in OHWM in southern portion of Drainage Segment 2-1.



Photograph 4: Northwest side of project site facing west showing drainage vegetation. Drainage Segment 2-1.



Photograph 5: Broadleaved pepperweed patch indicating marshy habitat.
Tributary Segment 2-1E.



Photograph 6: Cement culvert feeding Drainage Segment 3-1 and floodplain.



Photograph 7: Outflow culvert to Drainage Segment 1-4. West end of Culvert Segment 1-3.



Photograph 8: Northern off-site discharge culvert for Study Area leading into Citrus Heights Residential Development.

Appendix B: WETS Analysis

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**WETS Analysis for Highland Grove IV Development Project JD, Riverside County, CA
based on 30 year averages of Riverside Municipal Airport WETS Station**

Month	30% Chance Precipitation ≤ (in)	Average	30% Chance Precipitation > (in)	Observed Rainfall (in)	Conditions (dry, wet, normal)	Condition Value*	Weighting Factor	Product
January	0.33	1.54	1.65	1.68	wet	3	3	9
February	0.59	2.05	2.32	6.94	wet	3	2	6
March	0.42	1.12	1.36	2.38	wet	3	1	3
							Sum**=	18

*Condition Values:
Dry = 1
Normal = 2
Wet = 3

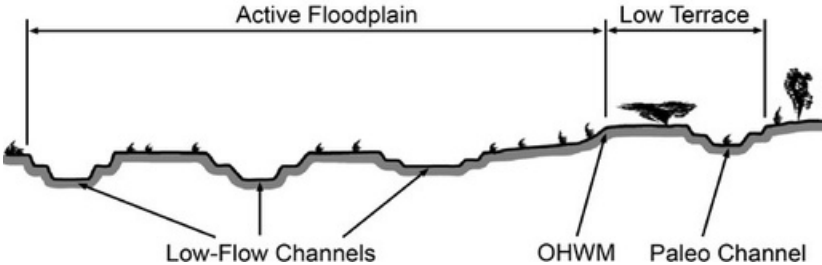
**Sum Values:
6-9 = prior period has been dryer than normal
10-14 = prior period has been normal
15-18 = prior period has been wetter than normal

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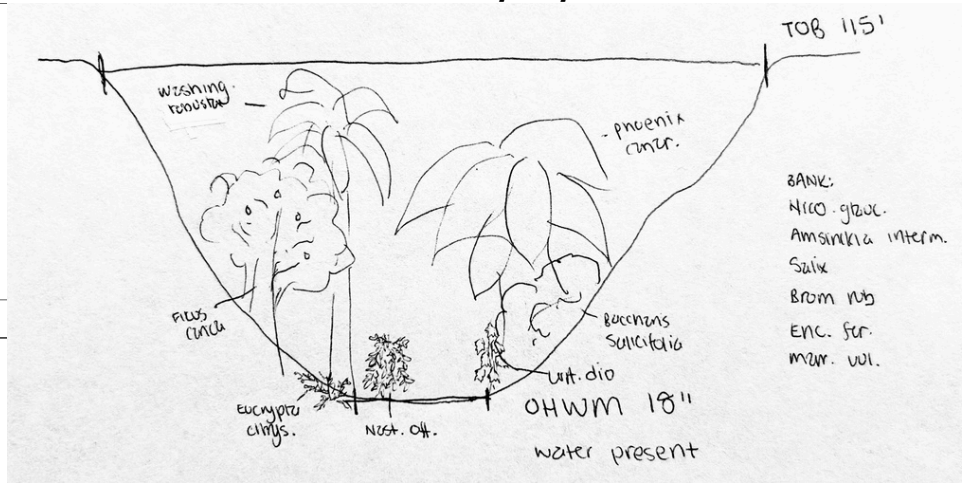
Appendix C: Wetland Delineation Data Forms

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Arid West Ephemeral and Intermittent Streams OHW M Datasheet

Project: Highland Grove IV Development Project Project Number: 2434.0005 Stream: Drainage Segment 1-1 Investigator(s): Robert Carroll, Juliet Simpson		Date: 4/26/2024 Town: Riverside Photo begin file#:		Time: 9:40 am State: CA Photo end file#:	
Y ☒ / N ☐ Do normal circumstances exist on the site?			Location Details:		
Y ☐ / N ☒ Is the site significantly disturbed?			Projection: Datum: Coordinates: 33.869313°N, -117.428634°W		
Potential anthropogenic influences on the channel system: remnant culverts					
Brief site description: coastal sagebrush scrub with dense riparian woodland in the drainages					
Checklist of resources (if available): ☐ Aerial photography Dates: ☒ Topographic maps ☐ Geologic maps ☐ Vegetation maps ☒ Soils maps ☐ Rainfall/precipitation maps ☐ Existing delineation(s) for site ☒ Global positioning system (GPS) ☐ Other studies ☐ Stream gage data Gage number: Period of record: ☐ History of recent effective discharges ☐ Results of flood frequency analysis ☐ Most recent shift-adjusted rating ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event					
Hydrogeomorphic Floodplain Units 					
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHW M:					
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 OHW M and record the indicators. Record the OHW M position via:					
☐ Mapping on aerial photograph		☐ GPS			
☐ Digitized on computer		☐ Other:			

Cross section drawing:



OHWM

GPS point: OHWM data point 1

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover

- ☒ Break in bank slope
- ☐ 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)

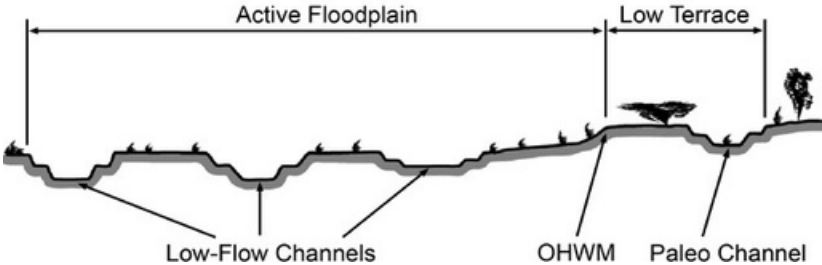
Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches

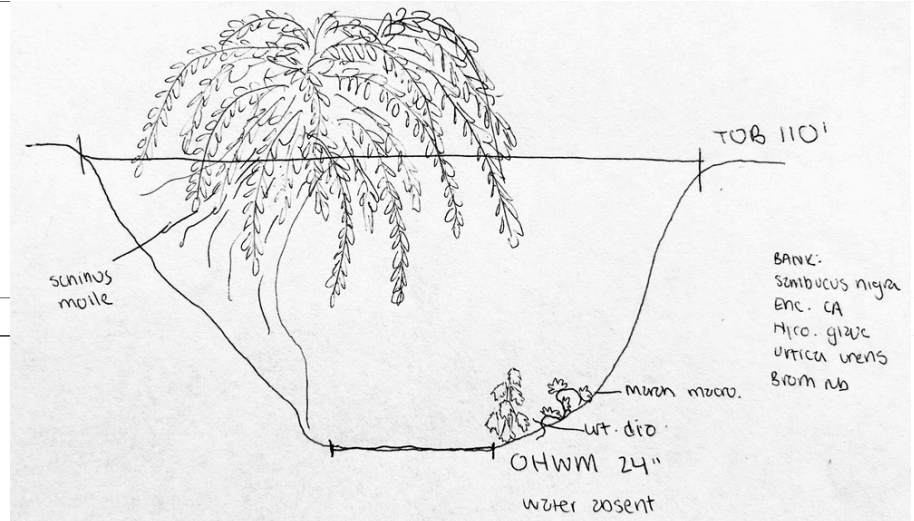
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWB Datasheet

Project: Highland Grove IV Development Project Project Number: 2434.0005 Stream: Drainage Segment 1-1 Investigator(s): Robert Carroll, Juliet Simpson		Date: 4/26/2024 Town: Riverside Photo begin file#:		Time: 10:00 am State: CA Photo end file#:	
Y ☒ / N ☐ Do normal circumstances exist on the site?			Location Details:		
Y ☐ / N ☒ Is the site significantly disturbed?			Projection: Datum: Coordinates: 33.867357°N, -117.427730°W		
Potential anthropogenic influences on the channel system: remnant culverts					
Brief site description: coastal sagebrush scrub with dense riparian woodland in the drainages					
Checklist of resources (if available): ☐ Aerial photography Dates: ☒ Topographic maps ☐ Geologic maps ☐ Vegetation maps ☒ Soils maps ☐ Rainfall/precipitation maps ☐ Existing delineation(s) for site ☒ Global positioning system (GPS) ☐ Other studies ☐ Stream gage data Gage number: Period of record: ☐ History of recent effective discharges ☐ Results of flood frequency analysis ☐ Most recent shift-adjusted rating ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event					
Hydrogeomorphic Floodplain Units 					
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:					
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site. 2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units. 3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units. a) Record the floodplain unit and GPS position. b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit. c) Identify any indicators present at the location. 4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section. 5. Identify the OHWM and record the indicators. Record the OHWM position via: ☐ Mapping on aerial photograph ☐ Digitized on computer ☐ GPS ☐ Other:					

Cross section drawing:



OHWM

GPS point: OHWM data point 2

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover

- ☒ Break in bank slope
- ☐ 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)

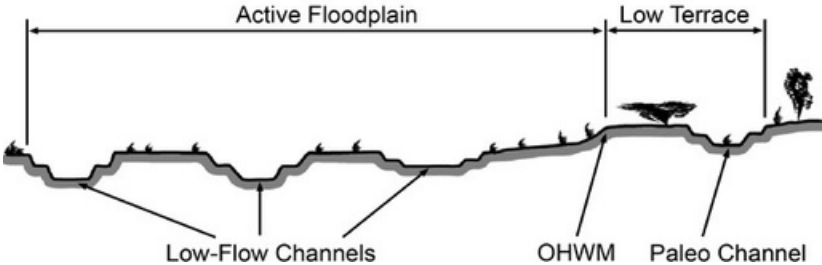
Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches

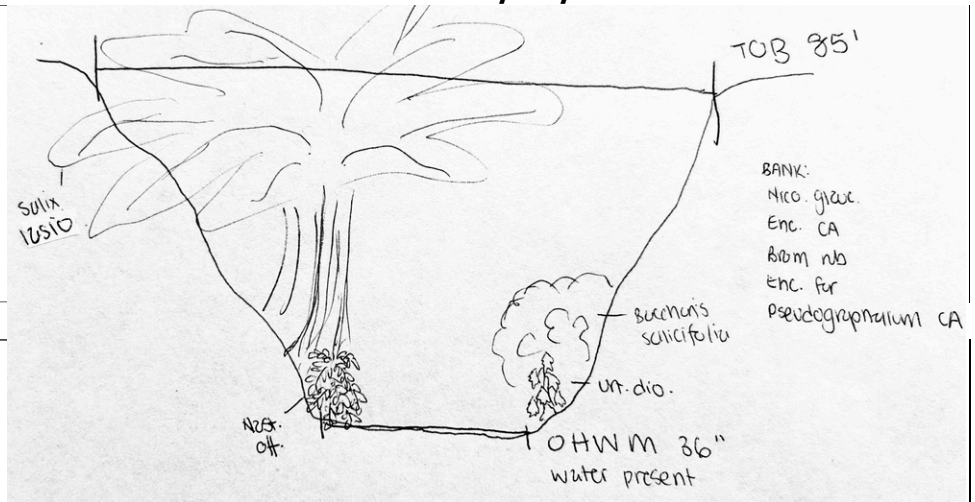
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHW M Datasheet

Project: Highland Grove IV Development Project Project Number: 2434.0005 Stream: Drainage Segment 2-1 Investigator(s): Robert Carroll, Juliet Simpson		Date: 4/26/2024 Town: Riverside Photo begin file#:		Time: 11:00 am State: CA Photo end file#:	
Y ☒ / N ☐ Do normal circumstances exist on the site?			Location Details:		
Y ☐ / N ☒ Is the site significantly disturbed?			Projection: Datum: Coordinates: 33.863355°N, -117.430045°W		
Potential anthropogenic influences on the channel system: development on W side of drainage & existing culverts					
Brief site description: coastal sagebrush scrub with dense riparian woodland in the drainages					
Checklist of resources (if available): ☐ Aerial photography Dates: ☒ Topographic maps ☐ Geologic maps ☐ Vegetation maps ☒ Soils maps ☐ Rainfall/precipitation maps ☐ Existing delineation(s) for site ☒ Global positioning system (GPS) ☐ Other studies ☐ Stream gage data Gage number: Period of record: ☐ History of recent effective discharges ☐ Results of flood frequency analysis ☐ Most recent shift-adjusted rating ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event					
Hydrogeomorphic Floodplain Units 					
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHW M:					
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 OHW M and record the indicators. Record the OHW M position via: ☐ Mapping on aerial photograph ☐ Digitized on computer ☐ GPS ☐ Other:					

Cross section drawing:



OHWM

GPS point: OHWM data point 3

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover

- ☒ Break in bank slope
- ☐ 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)

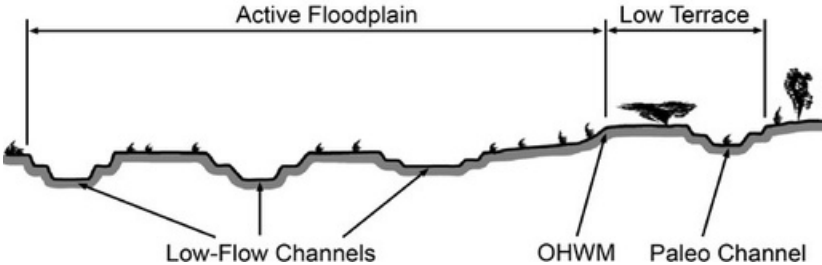
Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches

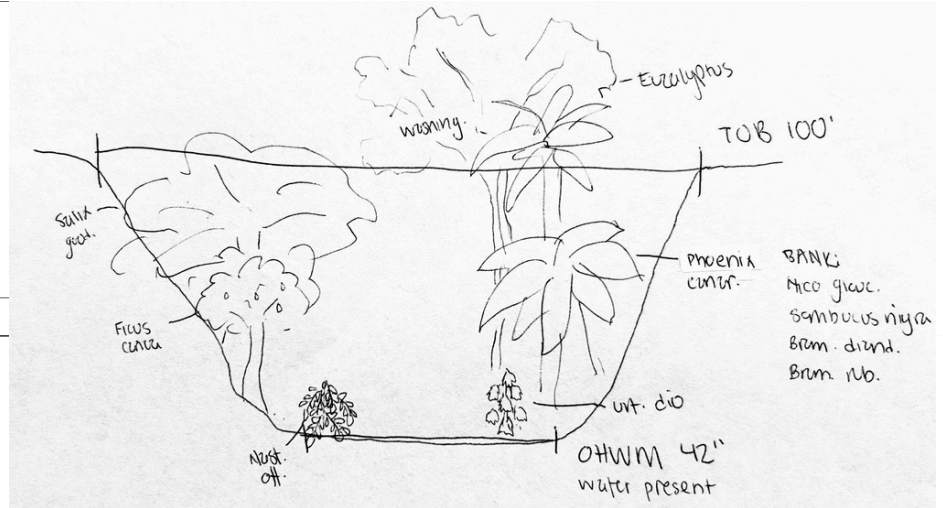
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHW M Datasheet

Project: Highland Grove IV Development Project Project Number: 2434.0005 Stream: Drainage Segment 2-1 Investigator(s): Robert Carroll, Juliet Simpson		Date: 4/26/2024 Town: Riverside Photo begin file#:		Time: 11:30 am State: CA Photo end file#:	
Y ☒ / N ☐ Do normal circumstances exist on the site?			Location Details:		
Y ☐ / N ☒ Is the site significantly disturbed?			Projection: Datum: Coordinates: 33.866300°N, -117.432744°W		
Potential anthropogenic influences on the channel system: development on W side of drainage & existing culverts					
Brief site description: coastal sagebrush scrub with dense riparian woodland in the drainages					
Checklist of resources (if available): ☐ Aerial photography Dates: ☒ Topographic maps ☐ Geologic maps ☐ Vegetation maps ☒ Soils maps ☐ Rainfall/precipitation maps ☐ Existing delineation(s) for site ☒ Global positioning system (GPS) ☐ Other studies ☐ Stream gage data Gage number: Period of record: ☐ History of recent effective discharges ☐ Results of flood frequency analysis ☐ Most recent shift-adjusted rating ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event					
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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 OHW M and record the indicators. Record the OHW M position via:					
☐ Mapping on aerial photograph		☐ GPS			
☐ Digitized on computer		☐ Other:			

Cross section drawing:



OHWM

GPS point: OHWM data point 4

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover

- ☒ Break in bank slope
- ☐ 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

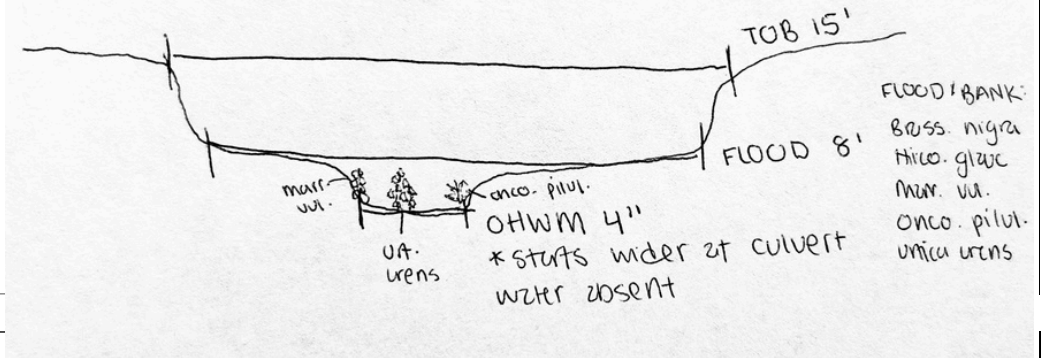
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWB Datasheet

Project: Highland Grove IV Development Project Project Number: 2434.0005 Stream: Drainage Segment 3-1 Investigator(s): Robert Carroll, Juliet Simpson		Date: 4/26/2024 Town: Riverside Photo begin file#:		Time: 12:00 pm State: CA Photo end file#:	
Y ☒ / N ☐ Do normal circumstances exist on the site?		Location Details:			
Y ☐ / N ☒ Is the site significantly disturbed?		Projection: Datum: Coordinates: 33.866388°N, -117.434933°W			
Potential anthropogenic influences on the channel system: cement culvert-fed drainage					
Brief site description: coastal sagebrush scrub with dense riparian woodland in the drainages					
Checklist of resources (if available):					
☐ Aerial photography Dates: ☐ Stream gage data Gage number: ☒ Topographic maps ☐ Geologic maps ☐ Vegetation maps ☒ Soils maps ☐ Rainfall/precipitation maps ☐ Existing delineation(s) for site ☒ Global positioning system (GPS) ☐ Other studies ☐ History of recent effective discharges ☐ Results of flood frequency analysis ☐ Most recent shift-adjusted rating ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event					
Hydrogeomorphic Floodplain Units					
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:					
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site. 2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units. 3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units. a) Record the floodplain unit and GPS position. b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit. c) Identify any indicators present at the location. 4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section. 5. Identify the OHWM and record the indicators. Record the OHWM position via: ☐ Mapping on aerial photograph ☐ Digitized on computer ☐ GPS ☐ Other:					

Cross section drawing:



OHWM

GPS point: OHWM data point 5

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover

- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

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

GPS point: OHWM data point 5

Characteristics of the floodplain unit: sparsely vegetated, mostly small vegetative forbs

Average sediment texture: _____

Total veg cover: 5% Tree: 1% Shrub: 0% Herb: 4%

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:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Highland Grove IV Development Project City/County: Unincorporated Riverside County Sampling Date: 4/26/2024
Applicant/Owner: Adkan Engineers State: CA Sampling Point: Sample Point 1
Investigator(s): Robert Carroll, Juliet Simpson Section, Township, Range: _____
Landform (hillslope, terrace, etc.): bottom of drainage Local relief (concave, convex, none): _____ Slope (%): 0-3%
Subregion (LRR): _____ Lat: 33.868911°N Long: 117.432553°W Datum: _____
Soil Map Unit Name: Terrace Escarpments NWI classification: Forested/Shrub Wetlands
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: Prior three months have been much wetter than normal according to Riverside Municipal Airport WETS Station analysis	

VEGETATION

<u>Tree Stratum</u> (Use scientific names.)	<u>Absolute Dominant Indicator % Cover Species? Status</u>		
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
Total Cover: _____			
<u>Sapling/Shrub Stratum</u>			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
Total Cover: _____			
<u>Herb Stratum</u>			
1. <u>Lepidium latifolium</u>	<u>100%</u>	<u>X</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
Total Cover: <u>100%</u>			
<u>Woody Vine Stratum</u>			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
Total Cover: _____			
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____		
Remarks:			

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

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

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X Prevalence Index is ≤3.01
____ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation¹ (Explain)

Hydrophytic Vegetation Present? Yes X No _____

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

SOIL

Sampling Point: 1

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

Depth (inches)	Matrix		Redox Features		Type1	Loc2	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-12"	see comment							standing water present

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

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

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No _____

Remarks: presence of standing water and hydrophytic vegetation indicates presence of hydric soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--|--|
| ☒ Surface Water (A1) | ☐ Salt Crust (B11) |
| ☒ High Water Table (A2) | ☐ Biotic Crust (B12) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Plowed Soils (C6) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Other (Explain in Remarks) |
| ☐ Water-Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
☐ Sediment Deposits (B2) (**Riverine**)
☐ Drift Deposits (B3) (**Riverine**)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☒ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: not inundated in satellite images

Remarks: Edges of Lepidium latifolium patch had soft, wet soil. Satellite photos show area is normally much drier.