Appendix C:
Biological Resources Supporting Information

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C-1: Biological Resources Assessment and Western Riverside County Multiple Species Habitat Conservation Plan Consistency Analysis

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FCS
An ADEC Innovation

Biological Resources Assessment and Western Riverside County Multiple Species Habitat Conservation Plan Consistency Analysis Highland Grove II Development Project Unincorporated Riverside County, California

Assessor's Parcel Numbers (APNs) 270-160-002, -003, -018, -020, -021, -022, -023, and -024

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SECTION 1: INTRODUCTION

This Biological Resources Assessment (BRA) and Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Consistency Analysis was prepared by FirstCarbon Solutions (FCS) to support the proposed Highland Grove II Project (proposed project) in unincorporated Riverside County, California. The purpose of this document is to (1) briefly describe the proposed project and characterize existing and potentially occurring biological resources on the project site and adjacent areas; (2) summarize relevant local, State, and federal regulations pertaining to biological resources; (3) identify and analyze requirements of the MSHCP and determine project consistency with its goals, objectives, and requirements; (4) analyze potential project-related impacts on regulated biological resources in the context of the California Environmental Quality Act (CEQA); and (5) recommend appropriate measures to mitigate potential impacts on biological resources to less than significant levels according to CEQA standards.

1.1 - Project Location and Setting

The approximately 60.68-acre project site is located in Unincorporated Riverside County (County), California (Exhibit 1). The project site is surrounded by the City of Riverside to the north, the community of Woodcrest to the east, Lake Mathews to the south, and the City of Corona to the west. Regional access to the site is provided via Interstate 15 (I-15), which bisects the project vicinity north to south. Additional regional access to the site is provided via State Route (SR) 91, which bisects the project vicinity east to west. Local access to the site is provided via El Sobrante Road.

The site is located at the southwest corner of McAllister Street and El Sobrante Road on several parcels, which includes Assessor's Parcel Numbers (APNs) 270-160-002, -003, -018, -020, -021, -022, -023, and -024. The site is located within the *Lake Mathews, California* United States Geological Survey (USGS) 7.5-minute Topographic Quadrangle Map.

1.1.1 - Environmental Setting

The project site is surrounded by undeveloped lands to the north and east; single-family residential developments to the west; and agricultural operations and El Sobrante Road to the south (Exhibit 2a and Exhibit 2b). The project site is vacant and undeveloped and has been used for hay production. Undeveloped lands directly north and east of and adjacent to the project site have also been used for agricultural production. The project site and adjacent undeveloped areas functioned as a citrus operation until the early 2000s. Evidence of operational site disturbance includes compacted soils, erosional areas, debris piles, and various dirt roads. There is a drainage feature outside of and along the northeastern boundary of the project site between the undeveloped areas.

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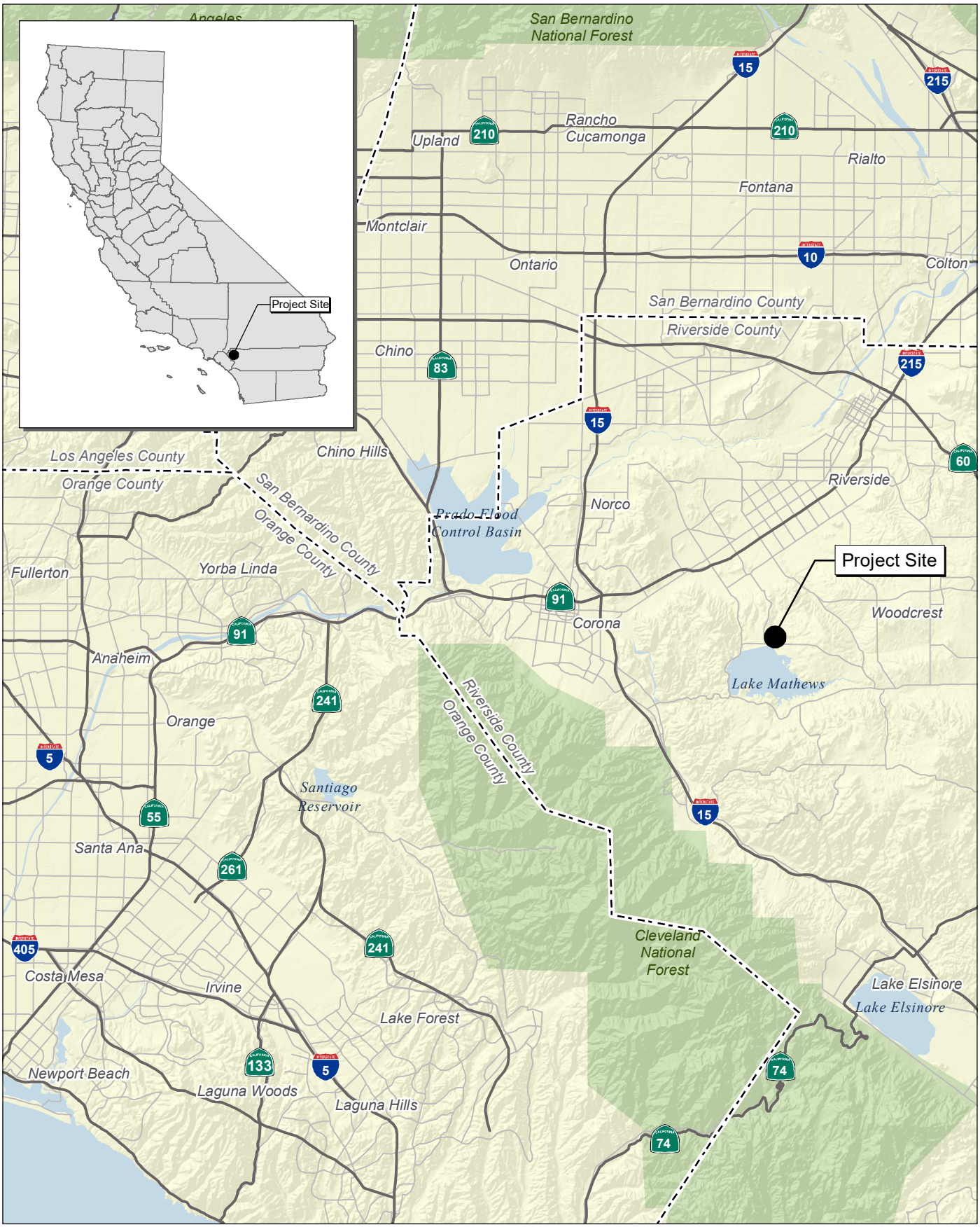

Source: Census 2000 Data, The California Spatial Information Library (CaSIL).

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Exhibit 1
Regional Location Map

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Source: USGS Lake Mathews 7.5' Quadrangles / T03S,R05W,sec32.

FIRSTCARBON SOLUTIONS™

2,000 1,000 0 2,000 Feet

Exhibit 2a
Local Vicinity Map
Topographic Base

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RIVERSIDE COUNTY
HIGHLAND GROVE II PROJECT
BIOLOGICAL RESOURCES ASSESSMENT/WESTERN
RIVERSIDE COUNTY MSHCP CONSISTENCY ANALYSIS

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Source: ESRI Aerial Imagery.

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1,000 500 0 1,000 Feet

Exhibit 2b
Local Vicinity Map
Aerial Base

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RIVERSIDE COUNTY
HIGHLAND GROVE II PROJECT
BIOLOGICAL RESOURCES ASSESSMENT/WESTERN
RIVERSIDE COUNTY MSHCP CONSISTENCY ANALYSIS

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1.2 - Project Description

Pulte Home Company, LLC (project applicant) proposes a residential subdivision on the 60.68-acre project site, located at the southwest corner of McAllister Street and El Sobrante Road in unincorporated Riverside County. The proposed project consists of subdividing approximately 61.3 acres of vacant land into 128 lots to be developed with single-family detached residential dwelling units for a density of 2 dwelling units per acre (du/acre) (Exhibit 3). The project site would connect to existing water, sewer, electrical, telephone, and gas utilities in the El Sobrante Road right-of-way. All existing power poles on the project site would be relocated underground.

1.2.1 - Off-site Improvements

The proposed project would also include improvements on El Sobrante Road, along the southern property line. Ingress/egress for the proposed Street A is planned off El Sobrante Road and the associated right-of-way improvements. At the crossing, Street A would be 44 feet pavement from curb face to curb face and 66 feet right-of-way. This section would allow parking on both sides of the road and one lane of travel in each direction. The proposed improvements would include frontage improvements along El Sobrante Road, including curb, gutter, sidewalk, and landscaping.

1.2.2 - Site Access and Circulation

Vehicular access to the project site would be provided via one access point (Street A), connecting El Sobrante Road to the internal circulation system. On-site circulation would consist of several new two-lane, two-way roadways throughout the project site with interconnecting roads (Streets A–K).

The proposed project would include on-street parking available on all public streets in the tract in addition to private residential parking within garages.

1.2.3 - Lighting

Existing outdoor lighting at and near the project site is associated with residential and street lighting typical of suburban areas. The proposed project would generate lighting from two primary sources: lighting from building interiors that would pass through windows and lighting from exterior sources (e.g., street lighting, vehicles, security lighting, and landscape lighting). Lighting associated with the proposed project would not be directed toward adjacent properties across El Sobrante Road or toward the residential homes adjacent to the west.

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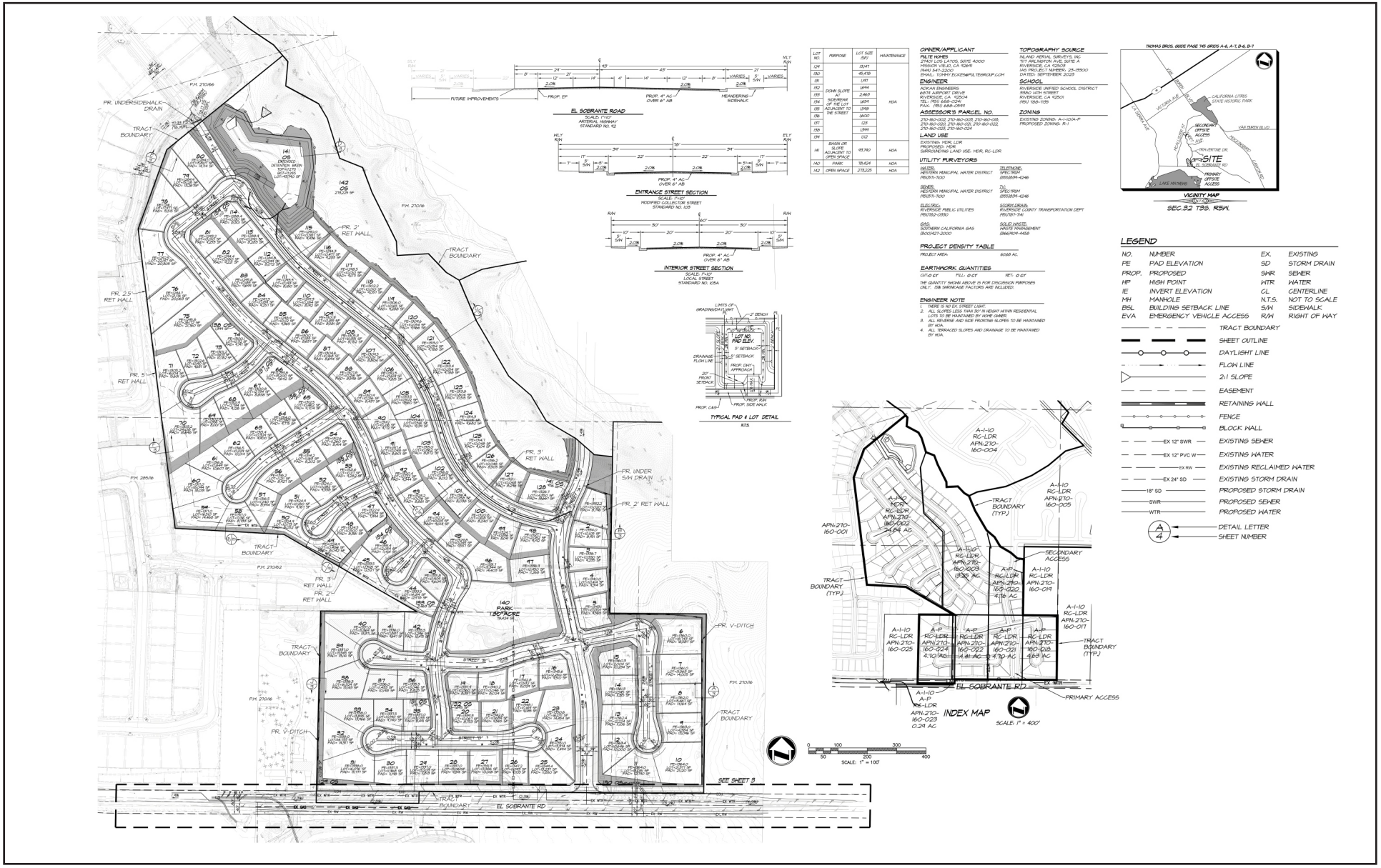

Source: Adkan Engineering, Feb 2024.

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Exhibit 3
Site Plan

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1.2.4 - Storm Drainage

The proposed project has been designed to avoid and protect the drainage courses along the northerly, easterly, and westerly boundaries and a portion of the southern boundary. The proposed project also includes three water quality and storm detention basins to treat site runoff before discharging to the pre-existing flow paths at the drainage courses along the project perimeter.

The proposed culvert crossing at El Sobrante Road and Street A would include a headwall at the upstream end collecting the drainage flows from the east side of the drainage course into a 72-inch reinforced concrete pipe culvert approximately 198 linear feet and discharging the flows downstream through a headwall to a rip rap pad for velocity dissipation to the downstream end of the drainage course on the west side of the road. This culvert crossing has been sized for an anticipated approximately 632.91 cubic feet per second (CFS) in the 100-year rational storm event.

1.2.5 - Construction and Phasing

Construction activities would include site preparation, grading, and construction. Construction is anticipated to take approximately 22 months and would occur from May 2028 to March 2030. Construction would take place Monday through Friday between the hours of 7:00 a.m. and 7:00 p.m. and Saturdays between the hours of 8:00 a.m. and 5:00 p.m., pursuant to the Riverside County Code of Ordinances noise standards. Construction staging would occur within the project site boundaries.

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SECTION 2: REGULATORY SETTING

2.1 - Federal

2.1.1 - Endangered Species Act

The United States Fish and Wildlife Service (USFWS) has jurisdiction over species listed as threatened or endangered under the Endangered Species Act. Section 9 of the Endangered Species Act protects listed species from "take," which is broadly defined as actions taken to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." The Endangered Species Act protects threatened and endangered plants and animals and their critical habitat. Candidate species are those proposed for listing; these species are usually treated by resource agencies as if they were listed during the environmental review process.

A proposed project may acquire permission to take listed and candidate species through implementation of sections of the Endangered Species Act. If the proposed project is funded by, authorized by, or otherwise involves a federal agency, Section 7 requires those agencies to consult with the USFWS to ensure that the project does not jeopardize the future existence of any listed species. The consultation results in either a concurrence letter from USFWS stating that the proposed action does not jeopardize the species or a Biological Opinion issued by USFWS that includes a defined limit of take of listed species that is authorized for the action. When there is no federal nexus to pursue Section 7 permissions, USFWS may authorize take of listed species through Section 10, which allows private landowners, corporations, Native American Tribes, states, cities, and counties to implement projects that could affect listed species. Under this process, the project proponent seeks take permissions through completing and submitting for approval a Habitat Conservation Plan (HCP) approved by the USFWS. The HCP defines the project and potential for take of species and outlines measures to mitigate or compensate for impacts that would occur during implementation of the project. Often a draft Implementing Agreement (IA) is included with the permit application for larger HCPs, such as a regional plan. An IA is a contract that describes the roles and responsibilities of the permit holder, the federal wildlife agency, and any other parties responsible for implementing the HCP.

2.1.2 - Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds, their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping unless expressly authorized in the regulations or by permit. All migratory birds and their nests are protected from take and other impacts under the MBTA (16 United States Code [USC] § 703, *et seq*.).

2.1.3 - Bald and Golden Eagle Protection Act

The golden eagle (*Aquila chrysaetos*) and bald eagle (*Haliaeetus leucocephalus*) are afforded additional protection under the Eagle Protection Act, amended in 1973 (16 USC § 669, *et seq*.) and the Bald and Golden Eagle Protection Act (16 USC §§ 668–668d).

2.1.4 - Clean Water Act

Section 404

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 of the CWA, the USACE regulates the discharge of dredged and/or fill material into waters of the United States. The term "waters of the United States" is defined in in accordance with the 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).

2.2 - State

2.2.1 - CEQA Guidelines

The following CEQA Guidelines Appendix G checklist questions serve as thresholds of significance when evaluating the potential impacts of a proposed project on biological resources. Impacts are considered significant if a project would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as being a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or USFWS.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State Habitat Conservation Plan.

2.2.2 - California Endangered Species Act

The State of California enacted the California Endangered Species Act (CESA) in 1984. CESA pertains to State-listed endangered and threatened species. CESA requires State agencies to consult with the CDFW when preparing CEQA documents to ensure that the State lead agency actions do not jeopardize the continued existence of a listed species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available (Fish and Game Code [FGC] § 2080). CESA directs agencies to consult with the CDFW on projects or actions that could affect listed species, directs the CDFW to determine whether jeopardy would occur, and allows the CDFW to identify “reasonable and prudent alternatives” to the project consistent with conserving the species. CESA allows the CDFW to authorize exceptions to the State’s prohibition against take of a listed species if the take of a listed species is incidental to carrying out an otherwise lawful project that has been approved under CEQA (FGC § 2081). Under CESA, the California Fish and Game Commission may authorize taking of candidate species, and the CDFW may recommend that the Commission authorize (or not authorize) the taking of listed or candidate species (FGC § 2084).

2.2.3 - California Fish and Game Code

Rare, Threatened, and Endangered Species

Under CESA, the CDFW has the responsibility for maintaining a list of endangered and threatened species (FGC § 2070). Fish and Game Code Sections 2050 through 2098 outline the protection provided to California's rare, endangered, and threatened species. Fish and Game Code Section 2080 prohibits the taking of plants and animals listed under the CESA, and Fish and Game Code Section 2081 established an incidental take permit program for State-listed species. The CDFW maintains a list of "candidate species" which it formally notices as being under review in addition to the list of endangered or threatened species.

Fully Protected Species

Fish and Game Code Sections 3500–5500 outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. The CDFW cannot issue permits or licenses that authorize the take of any fully protected species except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock.

Species of Special Concern

In addition to formal listing under the Endangered Species Act and CESA, some species receive additional consideration by the CDFW and local lead agencies during the CEQA process. Species that may be considered for review are those listed as a "Species of Special Concern." The CDFW maintains lists of Species of Special Concern that serve as species "watch lists." Species with this status may have limited distributions or limited populations and/or the extent of their habitats has been reduced substantially, such that their populations may be threatened. Thus, their populations are monitored, and they may receive special attention during environmental review. While they do not have statutory protection, they may be considered rare under CEQA, and specific protection measures may be warranted. In addition to Species of Special Concern, the CDFW Special Animals List identifies animals that are tracked by the California Natural Diversity Database (CNDDB) and may be potentially vulnerable but warrant no federal interest and no legal protection.

Other Sensitive Species

Sensitive species that would qualify for listing but are not currently listed are afforded protection under CEQA. CEQA Guidelines Section 15065 (Mandatory Findings of Significance) requires that a substantial reduction in numbers of a rare or endangered species be considered a significant effect. CEQA Guidelines Section 15380 (Rare or Endangered Species) provides for the assessment of unlisted species as rare or endangered under CEQA if the species can be shown to meet the criteria for listing. Unlisted plant species on the California Native Plant Society (CNPS) List ranked 1A, 1B, 2A, and 2B would typically require evaluation under CEQA.

Native Bird Protection

Fish and Game Code Sections 3503, 3503.5, and 3513 protect native birds. Under Section 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any native bird. Under Section

3503.5, it is unlawful to take, possess, or destroy any birds in the orders of *Falconiformes* or *Strigiformes* (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird; and under Fish and Game Code Section 3513, it is unlawful to take or possess any native migratory bird as designated in the MBTA except as provided by rules and provisions of the MBTA. Mitigation for avoidance of impacts to nesting birds is typically included in CEQA and other permitting documents to ensure project compliance with these Fish and Game Code Sections.

Native Plant Protection Act

The Native Plant Protection Act of 1977 (NPPA) (FGC § 1900, *et seq*.) prohibits the taking, possessing, or sale within the State of any plants with a State designation of rare, threatened, or endangered (as defined by the CDFW). An exception to this prohibition in the NPPA allows landowners to take listed plant species under specified circumstances, provided that the owners first notify CDFW and give the agency at least 10 days to come and retrieve (and presumably replant) the plants before they are plowed under or otherwise destroyed. Fish and Game Code Section 1913 exempts from take prohibition "the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right-of-way." Project impacts to these species are not considered significant unless the species are known to have a high potential to occur within the area of disturbance associated with construction of the proposed project.

Lake or Streambed Alteration

Fish and Game Code Section 1602 requires any entity to notify the CDFW before beginning any activity that "may substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake" or "deposit debris, waste, or other materials that could pass into any river, stream, or lake." "River, stream, or lake" includes waters that are episodic and perennial and ephemeral streams, desert washes, and watercourses with a subsurface flow. A Lake or Streambed Alteration Agreement will be required if the CDFW determines that project activities may substantially adversely affect fish or wildlife resources through alterations to a covered body of water.

Natural Community Conservation Planning Act

Section 2800 of the California Fish and Game Code establishes the Natural Community Conservation Planning Act (NCCP Act), which allows the CDFW to authorize Natural Community Conservation Plans (NCCPs) to allow take of species listed under CESA and other sensitive species and vegetation communities on a regional scale. The primary objective of the NCCP Act is to conserve covered natural communities and species at the ecosystem scale while accommodating compatible land uses, or covered activities. NCCPs must provide conservation and management of natural communities and species in perpetuity within the area covered by permits. Each NCCP provides measures necessary to conserve and manage sensitive biological resources, including natural vegetation communities and the plant and wildlife species they support, within a reserve system, while also allowing compatible developments and other projects to take species and habitats under special conditions outside of areas targeted for conservation. NCCPs are different from HCPs because the NCCP Act requires that conservation actions improve the long-term conservation of species, whereas HCPs typically only require avoidance of adverse impacts to species. Additionally, while HCPs can be

implemented at a project or regional scale, an NCCP must be applied across regional scales to promote the long-term recovery of species, protection of habitats and natural communities, and maintenance of species diversity at the landscape level.

2.2.4 - 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 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)).

2.2.5 - California State Water Resources Control Board/RWQCB Stormwater Management Permitting

While federal CWA National Pollutant Discharge Elimination System (NPDES) regulations allow two permitting options for construction-related stormwater discharges (individual permits and General Permits), the State Water Board has elected to adopt only one Statewide Construction General Permit at this time that will apply to all stormwater discharges associated with construction activity, except from those on Tribal Lands, in the Lake Tahoe Hydrologic Unit, and those performed by the California Department of Transportation (Caltrans).

The Construction General Permit requires all dischargers where construction activity disturbs greater than 1 acre of land or those sites less than 1 acre that are part of a common plan of development or sale that disturbs more than one acre of land surface to:

1. Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting stormwater with the intent of keeping all products of erosion from moving off-site into receiving waters.
2. Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the nation. Achieve quantitatively-defined (i.e., numeric) pollutant-specific discharge standards, and conduct much more rigorous monitoring based on the project's projected risk level.
3. Perform inspections of all BMPs.

2.2.6 - California Oak Woodlands Conservation Act (AB 242)

The State of California enacted the California Oak Woodlands Conservation Act (Assembly Bill [AB] 242) in 2001. It established requirements for the preservation and protection of oak woodlands and trees and allocated funding to be managed by the Wildlife Conservation Board that would support a variety of ways to preserve oak woodlands throughout the State. In order to qualify to use these funds, counties were required to adopt an oak woodland conservation management plan. In 2004, Senate Bill (SB) 1334 (Public Resources Code [PRC] § 21083.4) expanded this preservation effort by requiring that a county, "in determining whether CEQA requires an environmental impact report,

negative declaration, or mitigated negative declaration, to determine whether a project in its jurisdiction may result in a conversion of oak woodlands that will have a significant effect on the environment, and would require the county, if it determines there may be a significant effect to oak woodlands, to require one or more of specified mitigation alternatives to mitigate the significant effect of the conversion of oak woodlands."

2.2.7 - California Native Plant Society Rare Plant Rankings

The CNPS maintains a rank of plant species native to California that have low population numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. Following are the definitions of the CNPS ranks:

- **Rank 1A:** Plants presumed extirpated in California and either rare or extinct elsewhere
- **Rank 1B:** Plants Rare, Threatened, or Endangered in California and elsewhere
- **Rank 2A:** Plants presumed extirpated in California but common elsewhere
- **Rank 2B:** Plants rare, threatened, or endangered in California but more common elsewhere
- **Rank 3:** Plants about which more information is needed
- **Rank 4:** Watch List: Plants of limited distribution

Potential impacts to populations of CNPS ranked plants receive consideration under CEQA review. All plants appearing on the CNPS List ranked 1 or 2 are considered to meet the CEQA Guidelines Section 15380 criteria. Rank 3 and 4 plants do not automatically meet this definition. Rank 4 plants do not clearly meet CEQA standards and thresholds for impact considerations.[1]

2.3 - Regional and Local Ordinances

2.3.1 - Ordinance Number 559

Ordinance Number 559 stipulates that no person shall remove any living native tree on any parcel or property greater than one-half acre in size located in an area above 5,000 feet in elevation and within the unincorporated area of the County of Riverside without first obtaining a permit to do so. Native trees within this ordinance are defined as any woody plant which is indigenous to Riverside County, and all smog-resistant species introduced as part of a reforestation program, which have one well-defined stem that at maturity normally attains a height of at least 15 feet and which is not less than 6 inches in diameter measured 4 feet above the ground.

2.3.2 - County Code Chapter 12.24

The County of Riverside Code of Ordinances Chapter 12.24 stipulates Tree Protection Ordinances. The Ordinance defines native trees as plants which, at maturity, normally attain a height of at least 30 feet and are not less than 12 inches in diameter when measured four and one-half feet above the ground and includes woody plants indigenous to Riverside County and all smog-resistant species introduced as part of a reforestation program. The Ordinance requires that no person shall remove

[1] California Native Plant Society (CNPS). 2020. Considerations for Including CRPR Four Plant Taxa in CEQA Biological Resource Impact Analysis. Sacramento, CA.

any living native tree on any parcel or property greater than one-half acre in size located in an area above 5,000 feet in elevation, and within the unincorporated area of the county without first obtaining a permit to do so, unless exempted by the provisions of Section 12.24.040. Applications for a permit to remove one or more living native trees shall be made in writing to the planning director on the form provided by the Riverside County planning department.

2.3.3 - Riverside County Oak Tree Management Guidelines

The Riverside County Oak Tree Management Guidelines require a biological study for all applications on properties that contain oak trees. This study would produce an inventory of on-site vegetation, including oak trees and oak woodlands.

2.4 - Habitat Conservation Plans

2.4.1 - Western Riverside County Multiple Species Habitat Conservation Plan

The MSHCP serves as a multijurisdictional HCP pursuant to Section 10(a)(1)(B) of the Endangered Species Act and an NCCP pursuant to Fish and Game Code Section 2081.1 that focuses on the conservation of species and habitats in western Riverside County. The MSHCP allows permittees to obtain take of threatened, endangered, and rare plant and animal species covered by the MSHCP. Regulation of take of species is authorized by the USFWS and the CDFW for lawful actions (e.g., public and private projects) in exchange for the assembly and management of a conservation reserve system. The MSHCP covers take of 146 species in the plan area, including 32 that are State and/or federally listed.

The MSHCP area encompasses approximately 1.26 million acres and includes all unincorporated land in Riverside County west of the crest of the San Jacinto Mountains to the Orange County line, inclusive of the jurisdictional areas of the cities of Eastvale, Jurupa Valley, Wildomar, Menifee, San Jacinto, Hemet, Perris, Calimesa, Beaumont, Banning, Moreno Valley, Riverside, Corona, Norco, Canyon Lake, Lake Elsinore, Murrieta, and Temecula. Conservation areas that comprise the reserve system will be assembled from Criteria Area cells that consist of 0.75-section cells of approximately 160 acres, each with specific criteria for conservation.

The Conservation Areas that comprise the reserve system will total 500,000 acres when complete, which is projected by 2028. Of the 500,000 acres targeted for conservation, 347,000 were in existing open spaces in Public/Quasi Public (PQP) Lands at the time the MSHCP was adopted in 2003. These lands are under ownership or management of government agencies and their development is not likely. The County and City permittees are responsible for assembling the remaining 153,000 acres in the reserve system by 2028 through implementing the MSHCP during the development and entitlement process.

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SECTION 3: METHODS

3.1 - Literature and Database Reviews

This literature review provides a baseline from which to evaluate potential project impacts on biological resources within the project site and the surrounding area.

3.1.1 - Existing Documentation

As part of the literature review, an FCS Biologist examined existing environmental documentation for the project site and vicinity. This documentation included literature pertaining to MSHCP conservation requirements, habitat requirements of special-status species with the potential to occur in the project vicinity, federal register listings, protocols, and species data provided by USFWS and CDFW or contained within the MSHCP.

3.1.2 - Topographic Maps and Aerial Photographs

An FCS Biologist reviewed current USGS 7.5-minute topographic quadrangle map(s) and aerial photographs as a preliminary analysis of the existing conditions within the project site and immediate vicinity.[2] Information obtained from the topographic maps included elevation, general watershed information, and potential drainage feature locations using Google Earth in conjunction with the United States EPA Watershed Assessment, Tracking, and Environmental Results System (WATERS).[3] Aerial photographs provided a perspective of the current site conditions relative to on-site and off-site land use, plant community locations, and potential locations of wildlife movement corridors. The Regional Conservation Authority (RCA) website was also reviewed to identify MSHCP wildlife and plant species survey areas and the limits of Criteria Cells, Cell Groups, and the MSHCP Conservation Area.

3.1.3 - Soil Surveys

FCS Biologists reviewed United States Department of Agriculture (USDA) soil surveys[4] to establish if soil conditions on the project site are suitable for occurrence of special-status plant species. The soil surveys provide descriptions of taxonomy, parent material, landform, thickness, arrangement, and other important characteristics. FCS Biologists reviewed characteristics for soils mapped on the project site and habitat requirements for special-status plant species that occur in the project vicinity to determine whether there was potential for these species to occur on the project site.

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2 United States Geological Survey (USGS). 2024. National Geospatial Program. Website: https://www.usgs.gov/core-science-systems/national-geospatial-program/us-topo-maps-america?qt-science_support_page_related_con=4#qt-science_support_page_related_con. Accessed March 4, 2024.

3 United States Environmental Protection Agency (EPA). 2024. Watershed Assessment, Tracking and Environmental Results System (WATERS). Website: https://www.epa.gov/waterdata/waters-watershed-assessment-tracking-environmental-results-system. Accessed March 4, 2024.

4 Natural Resources Conservation Service (NRCS). 2024. Web Soil Survey (WSS). United States Department of Agriculture (USDA). Website: https://websoilsurvey.nrcs.usda.gov/app/. Accessed March 4, 2024.

3.1.4 - Special-status Species Database Search

An FCS Biologist compiled a list of threatened, endangered, and otherwise special-status species previously recorded within the project vicinity based on a search of the USFWS Information for Planning and Consultation (IPaC) database,[5] the CNDDB, and the CNPS Electronic Inventory (CNPSEI) of Rare and Endangered Vascular Plants of California.[6,7] The CNDDB search focused on species records within 5 and 10 miles of the project site. The CNPSEI search focused on records from the *Lake Mathews, California* USGS 7.5-minute Topographic Quadrangle Map and the eight surrounding quadrangles. The CNDDB Biogeographic Information and Observation System (BIOS 6) was used to determine distances between species occurrences and the project site.[8]

3.1.5 - Assessment of Potential for Occurrence of Special-status Species

The potential for occurrence on the project site was assessed for each of the special-status species identified in the database searches. The assessment of potential for occurrence was based on conditions on the project site, habitat requirements of special-status species, and number of recent (< 20 years old) occurrences in the project vicinity. The occurrence potential for each special-status species was classified into one of the following categories:

No Potential for Occurrence or Absent–There is no suitable habitat for the species on the project site or the project site is located outside of the known range of the species.

Low Potential to Occur–Species is known to occur in the project vicinity (within the nine USGS quadrangle search area); however, there is only poor quality or marginal habitat on the project site.

Moderate Potential to Occur–Species is known to occur in the vicinity of the project site (based on recent [within 20 years] CNDDB or other records within 10 miles of the project site or based on professional expertise specific to the project site or species) and there is marginally or partially suitable habitat on the project site. Alternatively, there is marginally or partially suitable habitat on the project site and the project site is within the known range of the species.

High Potential to Occur–Species is known to occur in the vicinity of the project site (based on recent [within 20 years] CNDDB or other records within 5 miles of the project site or based on professional expertise specific to the project site or species) and there is suitable habitat on the project site. Alternatively, there is suitable habitat on the project site and the project site is within the known range of the species.

[5] United States Fish and Wildlife Service (USFWS). 2024. Information for Planning and Consultation (IPaC). Website: https://ecos.fws.gov/ipac/. Accessed March 4, 2024.
[6] California Department of Fish and Wildlife (CDFW). 2024. California Natural Diversity Database (CNDDB) RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: https://apps.wildlife.ca.gov/rarefind/view/RareFind.aspx. Accessed March 4, 2024.
[7] California Native Plant Society (CNPS). 2024. California Native Plant Society Rare and Endangered Plant Inventory. Website: http://www.rareplants.cnps.org/. Accessed March 4, 2024.
[8] California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://wildlife.ca.gov/Data/BIOS. Accessed March 4, 2024.

Present–Species is known to occur on the project site based on recent (within 20 years) CNDDB or other records and there is suitable habitat present on the project site or the species was observed on the project site during the field survey(s).

3.1.6 - Trees and Native Vegetation

Prior to conducting the reconnaissance-level field survey, an FCS Biologist reviewed applicable County ordinances pertaining to tree and native vegetation preservation and protection and ascertained whether measures or permits are required to remove, replace, or transplant protected trees or native vegetation.

3.1.7 - MSHCP Information Map

As part of the MSHCP Consistency Analysis, an FCS Biologist reviewed the RCA MSHCP Information Map to assess species survey and conservation requirements for the parcels that comprise the project site.[9]

3.2 - Field Surveys

3.2.1 - Survey Personnel

A general biological survey, focused burrowing owl surveys, focused rare plant surveys, and vegetation community mapping of the project site were performed between March 27 and June 5, 2024, by FCS Staff Biologists. FCS Biologists also conducted Crotch's bumble bee focused surveys on April 1 and 24, 2025 and May 9, 2025. Focused surveys for least Bell's vireo were performed by South Environmental Biologists between May and July 2024.

3.2.2 - General Biological Survey

The objective of the general biological survey was to ascertain general site conditions and identify whether existing vegetation communities provide suitable habitat for special-status plant or wildlife species, including burrowing owls. During this survey, the Biologist walked and drove the project site and characterized and mapped vegetation communities, identified and recorded plants and wildlife observed on-site, and recorded evidence of wildlife habitats, including wildlife corridors, nests, dens, or burrows. Special-status or unusual biological resources identified during the literature review were ground-truthed during the field survey for mapping accuracy. Special attention was paid to sensitive habitats and areas potentially supporting special-status floral and faunal species.

Vegetation Communities and Plants

Common plant species observed during the general biological survey were identified by visual characteristics and morphology in the field and recorded in a field notebook and on field maps. Uncommon and unfamiliar plants were identified with the use of taxonomical guides, including

[9] Regional Conservation Authority (RCA). 2024. Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Information Map. Website: hhttps://wrcrca.maps.arcgis.com/apps/webappviewer/index.html?id=2b9d4520bd5f4d35add35fb58808c1b7. Accessed March 4, 2024.

Jepson eFlora and Calflora.[10,11] Taxonomic nomenclature used in this study follows The Jepson Manual: Vascular Plants of California.[12] Common plant names, when not available from The Jepson Manual, were taken from other regionally specific references. Vegetation community types and boundaries were noted on aerial photos, verified through field observation, and digitized using Esri ArcGIS software® ArcMap 10.0. By incorporating collected field data and interpreting aerial photography, a map of habitat types, land cover types, and other biological resources within the project site was prepared. Vegetation community and land cover types used to help classify habitat types are based on the CNPS Manual of California Vegetation (MCV) and cross-referenced with the CDFW Natural Communities List.[13,14,15]

Wildlife

Wildlife species detected during the general biological survey by sight, calls, tracks, scat, or other signs were recorded. Notations were made regarding suitable habitat for those special-status species determined to have the potential to occur within the project site.[16] Appropriate field guides were used to assist in species identification during surveys, such as Peterson, Reid, and Stebbins.[17,18,19] Online resources such as eBird and California Herps were also consulted as necessary. [20,21]

Wildlife Movement Corridors

Wildlife movement corridors link areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. Urbanization and the resulting fragmentation of open space areas create isolated “islands” of wildlife habitat, forming separated populations. Corridors act as an effective link between populations.

The project site was evaluated for evidence of a wildlife movement corridor during the general biological survey. The scope of the biological resource assessment did not include a formal wildlife movement corridor study utilizing track plates, camera stations, scent stations, or snares. Rather, the focus of this study was to determine whether a change in land use at the project site could have significant impacts on the regional movement of wildlife. Conclusions are based on the information compiled during the literature review, including aerial photographs, USGS topographic maps, and

[10] Jepson Flora Project (eds.) 2023. Jepson eFlora. Website: https://ucjeps.berkeley.edu/eflora/. Accessed March 4, 2024.
[11] Calflora. 2020. Calflora: Information on California plants for education, research, and conservation. Website: http://www.calflora.org/. Accessed March 4, 2024.
[12] Baldwin, B., et al. 2012. The Jepson Manual: Vascular Plants of California. Berkeley: University of California Press. County of San Bernardino (Bernardino). 2007 (amended 2015).
[13] Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation, Second Edition. Sacramento, CA: California Native Plant Society.
[14] California Department of Fish and Wildlife (CDFW). 2022. Natural Communities List, Sacramento, CA: California Department of Fish and Wildlife. July 5, 2022. Website: https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities#sensitive%20natural%20communities. Accessed March 4, 2024
[15] California Native Plant Society (CNPS). 2024. A Manual of California Vegetation Online. Website: https://vegetation.cnps.org/. Accessed September 4, 2024.
[16] California Department of Fish and Wildlife (CDFW). 2024. CNDDB RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: https://apps.wildlife.ca.gov/rarefind/view/RareFind.aspx. Accessed March 4, 2024.
[17] Peterson, T.R. 2010. A Field Guide to Birds of Western North America, 4th Edition. Boston, MA: Houghton Mifflin Harcourt.
[18] Reid, F. 2006. A Field Guide to Mammals of North America, Fourth Edition. Boston, MA: Houghton Mifflin Harcourt.
[19] Stebbins, R.C. 2003. A Field Guide to Western Reptiles and Amphibians. Third Edition. Boston, MA: Houghton Mifflin Harcourt.
[20] eBird. 2023. Online bird occurrence database. Website: http://ebird.org/content/ebird/. Accessed March 4, 2024.
[21] California Herps. 2023. A Guide to the Amphibians and Reptiles of California. Website: http://www.californiaherps.com/. Accessed March 4, 2024.

resource maps for the vicinity; the field survey; and professional experience with the desired topography, habitat, and resource requirements of the special-status species potentially utilizing the project site and vicinity.

3.2.3 - Rare Plant Surveys

The project site is not located within the Narrow Endemic Plant Species Survey Areas (NEPSSA) or the Criteria Area Plant Species Survey Areas (CAPSSA); therefore, focused plant surveys are not required pursuant to the MSHCP. However, rare plant surveys were performed to evaluate potential impacts under CEQA.

The surveys to search for rare plants were floristic in nature, performed over the entirety of the project site, and followed the CDFW Rare Plant Survey protocol.[22] The surveys were timed to coincide with flowering phenology or other diagnostic features of target species. Prior to entering the field, FCS Biologists reviewed detailed ecological and taxonomic information, maps, and photographs about each of the target species. All plant species were identified to the level necessary to determine listing status using appropriate taxonomical guides, including Jepson eFlora and Calflora.[23,24] Taxonomic nomenclature used in this study follows The Jepson Manual: Vascular Plants of California.[25] Common plant names, when not available from The Jepson Manual, were taken from other regionally specific references. Vegetation types and boundaries were noted on aerial photos, verified through field observation, and digitized using Esri ArcGIS software® ArcMap 10.8. By incorporating collected field data and interpreting aerial photography, a map of habitat types, land cover types, and other biological resources within the project site was prepared.

Reference Sites

Where possible, known reference populations of target species were visited to assess whether these plants could be observed in a vegetative state at nearby localities with ecological conditions comparable to those on the project site. Potential reference sites were selected by reviewing CNDDB records for special-status plant occurrences and the Calflora online database[26] for herbaria records.

3.2.4 - Burrowing Owl Surveys

Focused burrowing owl surveys were conducted on March 27, March 28, May 8, and June 5, 2024 by FCS Biologists Jeremy Reinhard and Hannah Carney. FCS GIS Specialist Sebastian Macias aided in the 2024 focused burrowing owl surveys to help map all burrowing owl habitat on-site. Surveys were conducted according to MSHCP Burrowing Owl Survey Instructions, which are divided into two main steps. Step I included a general habitat assessment for the burrowing owl. Because of the presence

[22] California Department of Fish and Wildlife. 2018. Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities. Accessed August 29, 2024.
[23] Jepson Flora Project (eds.) 2024. Jepson eFlora, https://ucjeps.berkeley.edu/eflora/. Accessed on August 29, 2024.
[24] Calflora. 2022. Calflora: Information on California Plants for Education, Research, and Conservation. Website: http://www.calflora.org/. Accessed on August 29, 2024.
[25] Baldwin, B., et al. 2012. The Jepson Manual: Vascular Plants of California. Berkeley: University of California Press. County of San Bernardino (Bernardino). 2007 (amended 2015).
[26] Calflora. 2022. Calflora: Information on California Plants for Education, Research, and Conservation. Website: http://www.calflora.org/. Accessed on August 29, 2024.

of suitable habitat on-site, Step II surveys were conducted, including a Step II, Part A focused burrow survey to locate and map suitable burrows and Step II, Part B searches for burrowing owls over three subsequent visits throughout the breeding season (March 1 through August 31). During the habitat assessment, the Biologists characterized and mapped vegetation communities and searched for suitable habitat for burrowing owls, including open habitats with low-growing and/or spaced vegetation and burrows or other potential cover (e.g., concrete slabs, pipes). FCS Biologists then initiated a burrow survey (Step I, Part A) in areas mapped as suitable habitat to locate and record burrows suitable for occupancy by burrowing owls. This included observing the burrows for diagnostic burrowing owl sign, including whitewash (uric acid in feces), regurgitated pellets, bones, feathers, etc. Following the burrow survey, FCS Biologists conducted four focused surveys to search for burrowing owls during the breeding season (March 1 through August 31). The focused surveys were conducted during periods of the day (in the morning 1 hour before sunrise to 2 hours after sunrise or in the early evening 2 hours before sunset to 1 hour after sunset) when burrowing owls are most active and during weather conditions suitable for burrowing owl activity (outside of periods of rain, high winds [> 20 mph], dense fog, or temperatures over 90°F [degrees Fahrenheit]). Following conclusion of the daily focused owl surveys or the survey window (>2 hours after sunrise), the Biologists spent time searching for additional burrows in mapped habitat on the project site. The locations of suitable burrows, burrowing owls, and sign of burrowing owls at burrows were recorded using GPS technology and documented in field notes and photographs. The locations of suitable burrows, burrowing owls, and sign of burrowing owls at burrows were recorded using GPS technology and documented in field notes and photographs.

3.2.5 - Least Bell's Vireo Surveys

Focused surveys for least Bell's vireo were performed by South Environmental Biologists between May 1 and July 24, 2024 (Appendix A). The survey area included riparian habitat along the northeastern border of the project site. The surveys were implemented according to protocols described in the USFWS 2001 Least Bell's Vireo Survey Guidelines.

The surveys were initiated with a habitat assessment of the project site followed by eight least Bell`s vireo surveys in areas supporting suitable habitat. The surveys were conducted during appropriate weather conditions and were timed to occur during the most active period for least Bell`s vireos.

3.2.6 - Crotch's Bumble Bee Surveys

Focused Crotch's bumble bee surveys were conducted by FCS Biologists on April 1 and 24, 2025, and on May 9, 2025 (Appendix B). Three surveys were conducted by FCS Biologists according to the CDFW Survey Conditions for CESA Candidate Bumble Bee Species.[27] During the surveys, FCS Biologists recorded floral resources available within the survey area, recorded habitat conditions with photography, searched for bees, and noted presence of other pollinating insects.

[27] California Department of Fish and Wildlife (CDFW). 2023. Survey Conditions for CESA Candidate Bumble Bee Species. Website: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=213150&inline. Accessed July 23, 2024.

3.2.7 - Jurisdictional Delineation

FCS Biologists performed a delineation of potentially jurisdictional resources (waters and wetlands) on the project site. Prior to conducting the reconnaissance-level survey, an FCS Biologist reviewed EPA WATERS and aerial photography to identify potential natural drainage features and water bodies.[28] In general, all surface drainage features identified as blue-line streams on USGS maps and linear patches of vegetation are expected to exhibit evidence of flow and be considered potentially subject to State and federal regulatory authority as waters of the United States and/or State. During the field delineation, 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.[29,30] 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.[31] Additionally, the FCS Biologists delineated MSHCP Riparian/Riverine resources during the field delineation. Full details of the methods used in the desktop analysis and field delineation are presented in Appendix C.

[28] United States Environmental Protection Agency (EPA). 2024. Watershed Assessment, Tracking and Environmental Results System (WATERS). Website: https://www.epa.gov/waterdata/waters-watershed-assessment-tracking-environmental-results-system. Accessed March 4, 2024.

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

[30] 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.

[31] 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.

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SECTION 4: RESULTS

This section summarizes the results of the literature search and general biological reconnaissance survey. The results of the sensitive biological resources database reviews and an analysis for the potential for occurrence of these resources on the project site are presented in Section 5. An analysis of project requirements for MSHCP consistency is presented in Section 6.

4.1 - Literature Review

4.1.1 - Environmental Setting

The project site is situated on both open land and GoneStraw Farms property adjacent to Lake Mathews in the Riverside Region. The Riverside Region contains areas of valleys and hills bounded by the Lake Mathews Estelle Mountain Range to the south, the Box Springs Mountains on the north, and the Santa Ana Mountains on the southwest. The project site has an elevation that ranges from approximately 1,260 feet above mean sea level (AMSL) near the northern portion of the project site to 1,365 feet AMSL near the southeast corner of the project site.

Soils

The Natural Resource Conservation Service (NRCS) Web Soil Survey (WSS) mapped six soil types on the project site, including three Cajalco soils, Las Posas loam, Buren loam, and Terrace Escarpments (Exhibit 4). The Cajalco soils, which are well drained, moderately permeable, and occur on gently sloping to steep uplands in areas of deeply weathered, basic igneous rocks, included Cajalco fine sandy loam, 2 to 8 percent slopes, eroded; Cajalco fine sandy loam, 8 to 15 percent slopes, eroded; and Cajalco rocky fine sandy loam, 15 to 50 percent slopes, eroded. The Las Posas loam is 2 to 8 percent slope with well-draining Residuum soil weathered from gabbro. Las Posas series soils consist of moderately deep, well drained soils that formed in material weathered from basic igneous rocks. Buren loam consists of well drained slow to moderately slowly permeable soils. Terrace Escarpments are alluvial soils derived from mixed sources.

4.2 - Biological Surveys

FCS Biologists Jeremy Reinhard and Hannah Carney conducted a general biological survey of the project site between March 19-22, 2024. FCS GIS Specialist, Sebastian Macias, aided in the general biological survey to assist in mapping vegetation communities on the project site. Weather conditions during the field surveys were sunny with some cloud cover, with an average temperature of 53°F and wind speeds between 3 and 7 mph.

4.2.1 - Vegetation Communities and Land Use

The vegetation communities and land cover types recorded on the project site are described below. A map showing vegetation communities and land cover types is presented in Exhibit 5. Photographs are presented in Appendix D.

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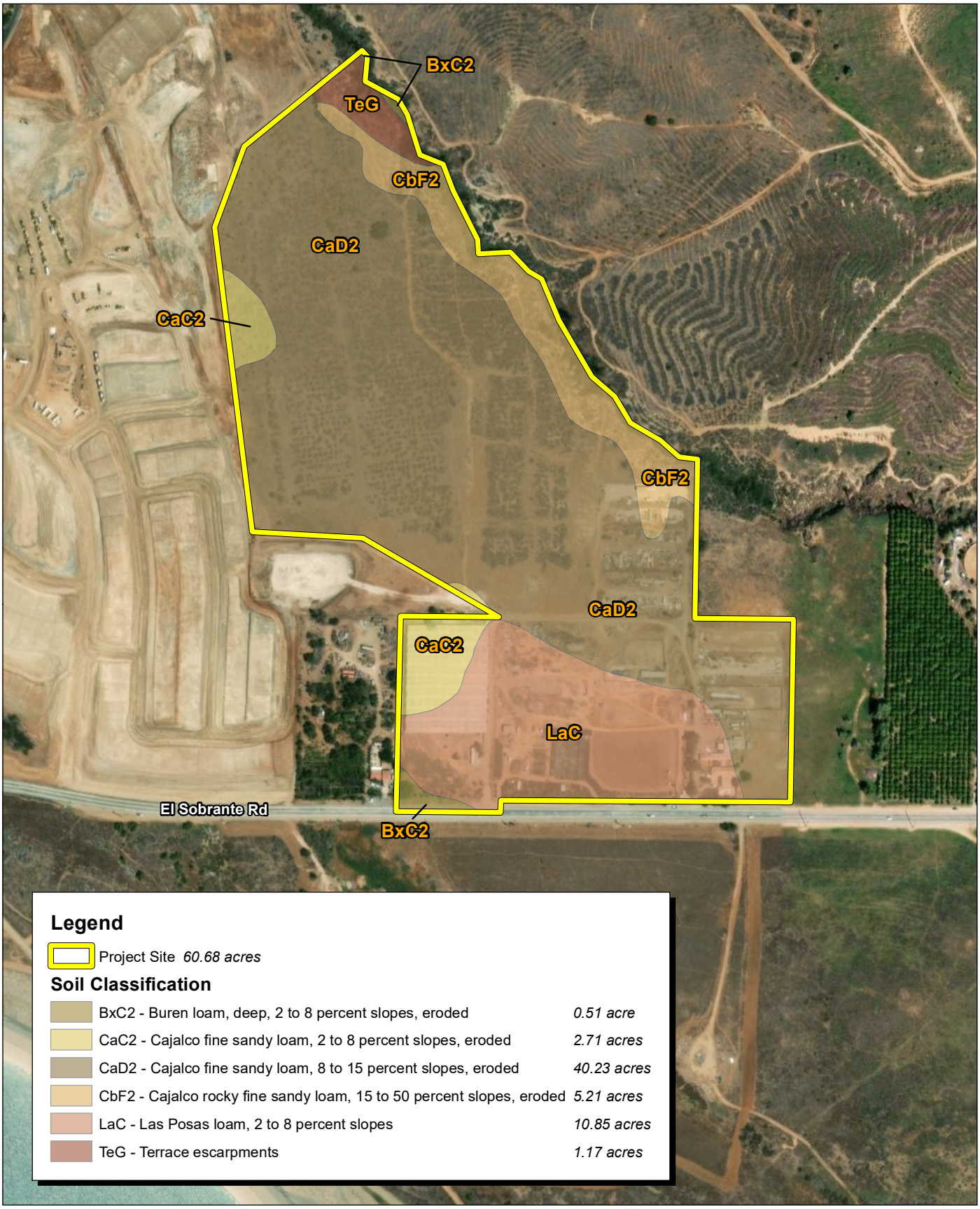

Source: ESRI Aerial Imagery. USDA Soils Data Mart, Riverside County Western area.

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Exhibit 4
Soils Map

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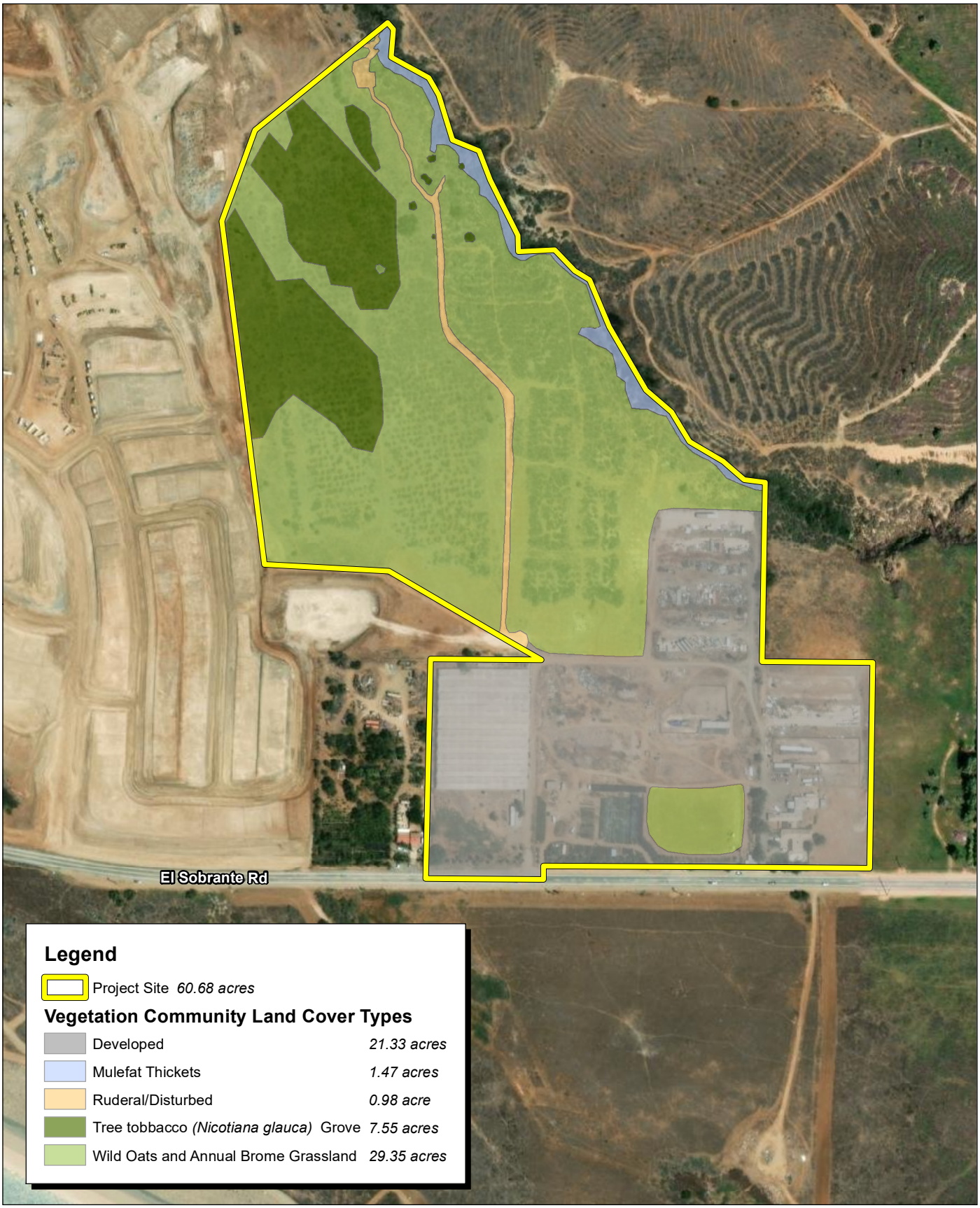

Source: ESRI Aerial Imagery.

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Exhibit 5
Vegetation Community Land Cover Map

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Wild Oats and Annual Brome Grassland

The site contains non-native annual grassland that best matches wild oats and annual brome grassland as described in the CNPS MCV.[32] This community is found in much of the central, north, and northwestern portions of project site. Species observed within this community include red brome (*Bromus rubens*), ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum murinum*), black nightshade (*Solanum nigrum*), common fiddleneck (*Amsinckia intermedia*), white horehound (*Marrubium vulgare*), black mustard (*Brassica nigra*), and Italian thistle (*Carduus pycnocephalus*). Additionally, individual California pepper trees (*Schinus molle*) are scattered throughout the northern portion of the site in this community.

Mulefat Thickets

Drainages along the northern and eastern border of the project site support riparian vegetation best described as mulefat thickets or *Baccharis salicifolia* Shrubland Alliance as described in the CNPS MCV.[33] This community includes mulefat (*Baccharis salicifolia*), willow baccharis (*Baccharis salicina*), blue elderberry (*Sambucus nigra cerulea*), arroyo willow (*Salix lasiolepis*), red willow *(Salix laevigata*), and Anderson boxthorn (*Lycium andersonii*). Several emergent trees occur in scattered locations within this community, including Mexican fan palm (*Washingtonia robusta*), Canary Island date palm (*Phoenix canariensis*), and blue gum (*Eucalyptus globulus*).

Tree Tobacco Grove

A tree tobacco (*Nicotiana glauca*) grove is located within the northwestern portion of the site. This species, a native of South America, is a tree/shrub that grows to 10–20 feet tall. The tree tobacco grove, located in the western portion of the project site, is very dense, preventing the growth of other species.

Ruderal/Disturbed

Ruderal/disturbed habitat is present within northern and central portions of the project site. This land cover type is characterized by disturbed, cleared, and/or bare ground that is being invaded by native and non-native ruderal plant species. On the project site, ruderal/disturbed lands are found along a bare dirt road that traverses the site.

Developed

Developed land is characterized by areas that have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported and retains little to no soil substrate. Developed land is characterized by permanent or semi-permanent structures, pavement, or hardscape and landscaped areas that often require irrigation. Areas where no natural land is evident due to large amounts of debris or other materials having been placed upon it may also be considered developed (e.g., car recycling plant, quarry). Characteristic vegetation includes unvegetated or landscaped with a variety of ornamental (usually non-native) plants. Developed

[32] California Native Plant Society (CNPS). 2024. A Manual of California Vegetation Online. Website: https://vegetation.cnps.org/. Accessed September 4, 2024.
[33] Ibid.

lands associated with a farming operation (GoneStraw Farms) are present throughout most of the southern portion of the project site, where there are several buildings, landscaped vegetation, a nursery, and additional storage coverings. Additionally, the center of the project site contains abandoned machinery, vehicles, and storage sheds, where much of the vegetation is ruderal, heavily disturbed, and shows signs of regular moving and tilling.

4.2.2 - Rare Plant Surveys

Four floristic surveys were conducted on the project site, during which all plant species observed on-site were identified and recorded. The floristic surveys were conducted on March 17, March 26, and May 9, 2024, by FCS Biologist Hannah Carney and FCS Botanist Juliet Simpson. An additional floristic survey was later performed on July 25, 2024, by FCS Senior Biologists Joseph Vu and Kayla Belanger. The survey dates covered the blooming periods of target rare plants and most other native annual and perennial species in the region.

One of the target species, paniculate tarplant (*Deinandra paniculata*), was not observed on-site but was observed on the neighboring Highland Grove IV project site during a Rare Plant Survey conducted by FCS Biologists Joseph Vu and Kayla Belanger on July 25, 2024, and could be present on the project site, which contains similar habitat types. The other target species, Brand's star phacelia (*Phacelia stellaris*), was not observed on the project site during any of the floristic surveys.

Reference Sites

Nearby populations of paniculate tarplant were observed blooming at Sycamore Canyon Wilderness Park on July 2, 2024, by FCS Botanist Juliet Simpson.

4.2.3 - Wildlife

The vegetation community and land cover types on the project site provide habitat for wildlife species that associate with non-native annual grassland, riparian, and disturbed or ruderal habitat types. The non-native grassland provides foraging opportunities for common invertebrates, reptiles, birds, and mammals and potential nesting habitat for ground-nesting birds. The anthropogenic features within the southern portion of the project site (buildings and ornamental trees) could provide habitat for several wildlife species, including nesting birds. Wildlife activity during the general biological reconnaissance survey was low and only one species, California ground squirrel (*Otospermophilus beecheyi*), was observed. No special-status wildlife species were observed during the survey.

4.2.4 - Special-Status Wildlife Surveys

Burrowing Owl Surveys

Focused burrowing owl surveys were conducted by FCS Biologists Jeremy Reinhard and Hannah Carney on March 27, March 28, May 8, and June 5, 2024. The habitat assessment (Step I of the protocol) found that the wild oat and annual brome grassland on and adjacent to the project site supports marginally suitable foraging, burrowing, and nesting habitat for burrowing owls (Exhibit 6a and 6b). The vegetation in this community is very dense over much of the project site, but there are scattered areas of sparse vegetation clearings that would provide suitable habitat for burrowing

owls. The burrow survey (Step II, Part A of the protocol) found numerous California ground squirrel burrows on-site and within the 500-feet east of the site that could serve as suitable nesting habitat for burrowing owls (Exhibit 6). The focused burrowing owl surveys (Step II, Part B of the protocol) found that no burrowing owl, nor signs of the species (i.e., whitewash, feathers, pellets, etc.), are present on-site.

Least Bell's Vireo Surveys

Least Bell's vireo surveys were conducted on the project site by South Environmental Biologists Philip Samples and Meagan Najera on May 1 (Survey #1), May 13 (Survey #2), May 24 (Survey #3), June 4 (Survey #4), June 14 (Survey #5), June 24 (Survey #6), July 5 (Survey #7), and July 24, 2024 (Survey #8). A habitat assessment of the project site was conducted concurrently with Survey #1. Throughout the eight focused surveys, a total of five detections of least Bell's vireo, including a pair, were made in the riparian habitat along the northeastern border of the project site (Appendix A).

Crotch's Bumble Bee Surveys

FCS performed focused Crotch's bumble bee surveys on April 1 and 24, 2025, and on May 9, 2025 (Appendix B). The species was not observed during the focused surveys and is therefore considered absent from the project site. Other bee species observed during the surveys included European honeybee (*Apis mellifera*). Other pollinator species observed included *Copestylum marginatum*, a species of syrphid fly. The full results of the focused Crotch's bumble bee surveys are provided in Appendix B.

4.2.5 - Wildlife Movement Corridors

The project site consists primarily of non-native grassland and disturbed/ruderal habitat and is surrounded by urbanized and disturbed areas and roads to the south that limit wildlife movement through the project site. The project site itself does not serve as a wildlife movement corridor.

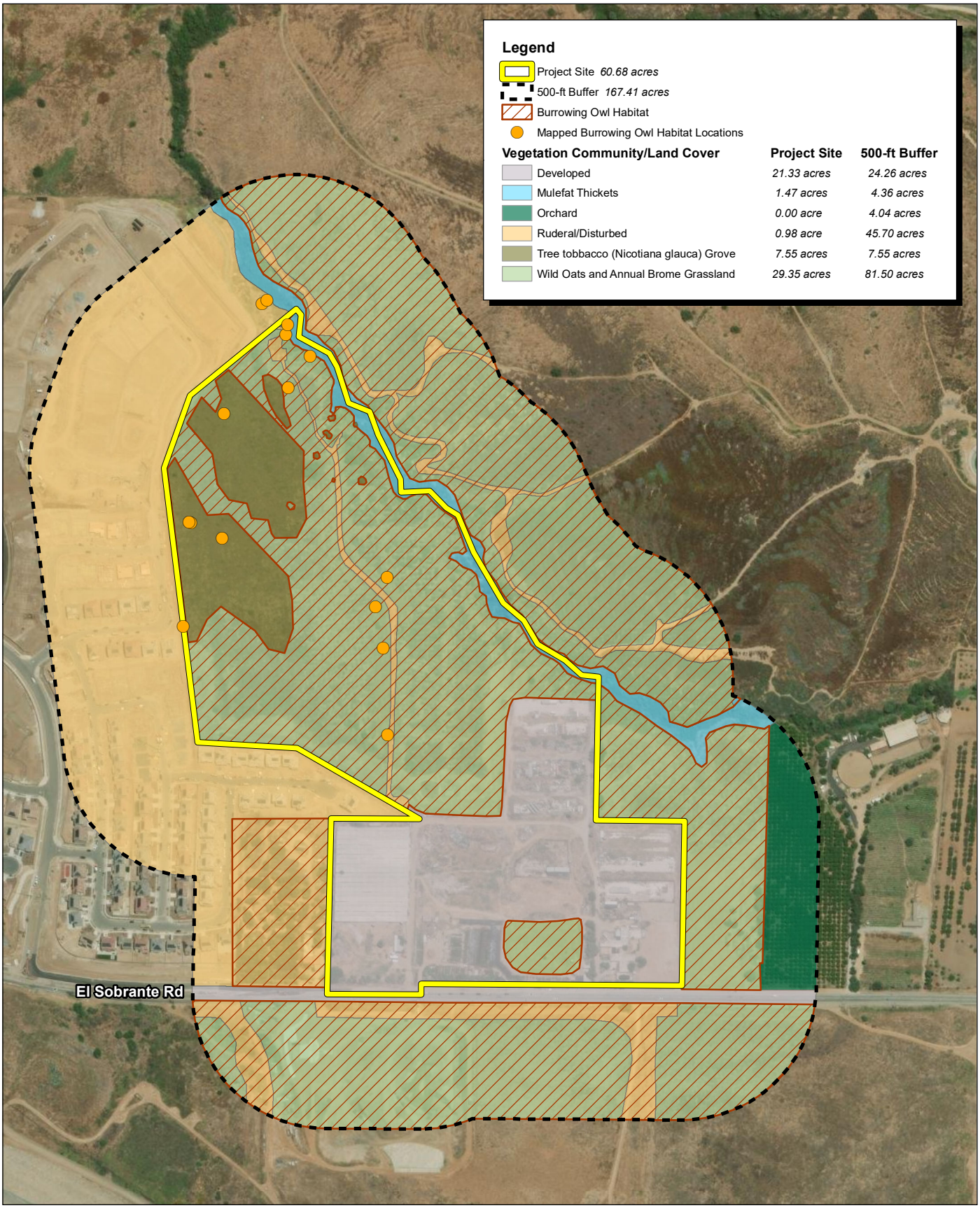
4.2.6 - Potentially Jurisdictional Water and Wetlands

FCS Biologists conducted a formal Aquatic Resource Delineation on the project site in May 2024 (Appendix C), as summarized below.

The project site includes four open and vegetated ephemeral and intermittent channels, for a total length of 2,431 feet (0.45 acres), covering an aggregate area of approximately 19,738 square feet, as shown on Exhibit 7. No additional aquatic features, including wetlands, were observed within the project site boundaries.

The project site does not include potential waters of the United States regulated by the USACE under Section 404 of the CWA. The project site includes 19,738 square feet (0.45 acre) and 2,431 linear feet of potential waters of the State regulated by the RWQCB under Section 13260 of the California Water Code; and 83,635 square feet (1.92 acres) of aquatic features and associated riparian habitat regulated pursuant to CDFW's Streambed Alteration Program. The vegetation community within the drainages is mulefat thickets, which is considered Riparian habitat under the MSHCP. The drainages

are considered Riverine features under the MSHCP. MSHCP Riparian/Riverine features on the project site are discussed further in Section 6 of this report.



Source: ESRI Aerial Imagery.

FIRSTCARBON SOLUTIONS™

500 250 0 500 Feet

Exhibit 6a
Mapped Burrowing Owl Habitat On and Adjacent to the Project Site

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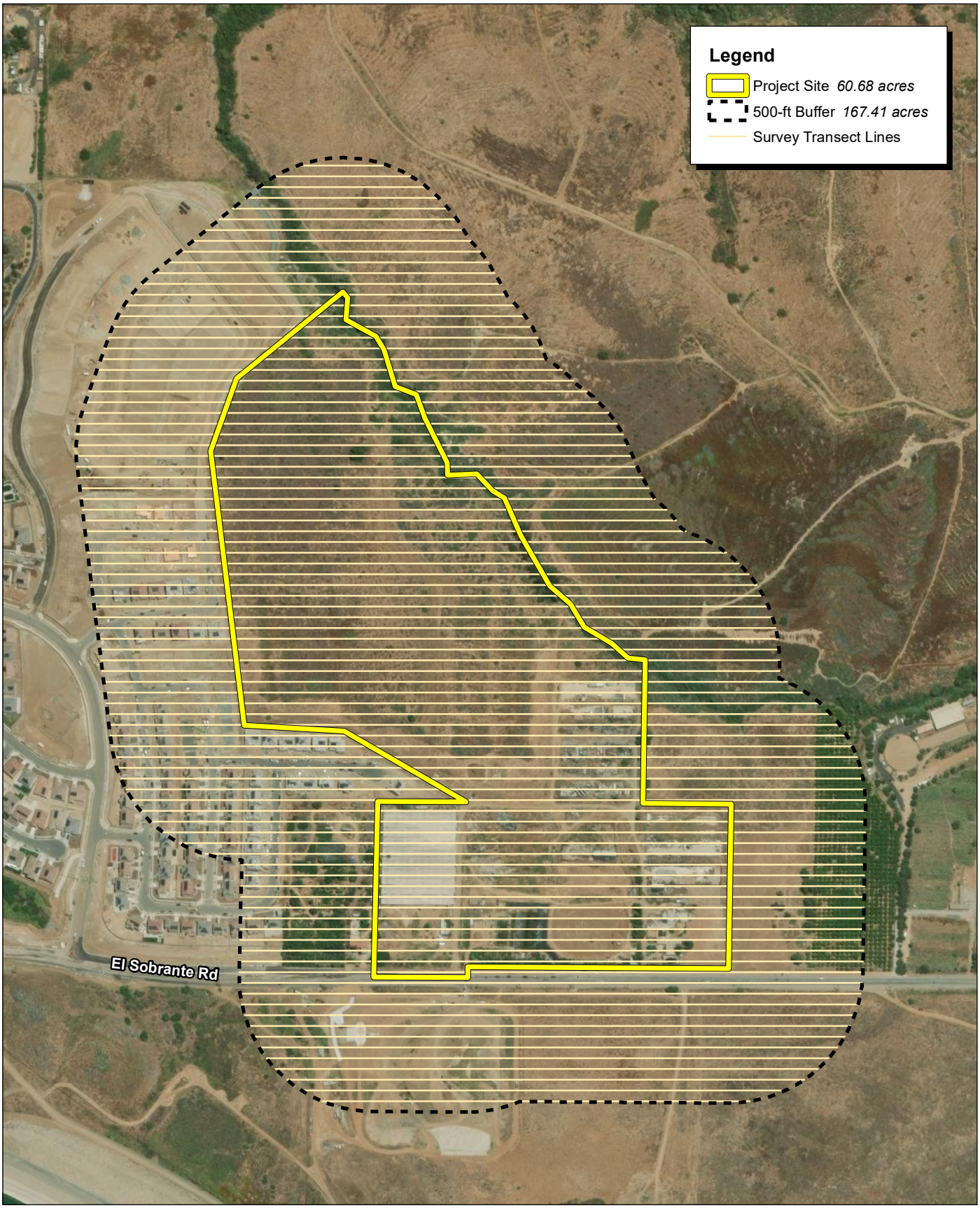

Source: ESRI Aerial Imagery.

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Exhibit 6b
Burrowing Owl Survey Transect Map

07600052 • 04/2025 | 6b_BUOW_survey_transect.mxd

RIVERSIDE COUNTY
HIGHLAND GROVE II PROJECT
BIOLOGICAL RESOURCES ASSESSMENT/WESTERN
RIVERSIDE COUNTY MSHCP CONSISTENCY ANALYSIS

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Source: ESRI Aerial Imagery. adkan Engineers, March 2024.

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Exhibit 7
Delineation of Riparian/Riverine Resources

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SECTION 5: ANALYSIS OF POTENTIAL FOR OCCURRENCE OF SENSITIVE BIOLOGICAL RESOURCES

The following section discusses the results of the database reviews for sensitive biological resources and an analysis of the potential for these resources to occur within the project site based on existing biological conditions on and adjacent to the site.

5.1 - Sensitive Natural Communities

Sensitive natural communities are vegetation communities or special wildlife habitats that are rare or occur in limited distributions or provide specific habitat requirements for special-status plant or wildlife species. The CDFW maintains a list of natural vegetation communities found in California and ranks them based on rarity. Communities ranked S1–S3 are considered sensitive natural communities.[34] The CNDDB identified seven sensitive natural community types—Southern Coast Live Oak Riparian Forest, Southern Cottonwood Willow Riparian Forest, Southern Riparian Forest, Southern Sycamore Alder Riparian Woodland, and Southern Willow Scrub—within 5 miles of the project site. An additional two sensitive natural community types, Southern Interior Cypress Forest and Southern Sycamore Alder Riparian Woodland, have been recorded in the CNDDB between 5 and 10 miles from the site.[35] No sensitive vegetation communities were recorded on or directly adjacent to the project site.

5.2 - Special-status Plant Species

Within 10 miles of the project site, 53 special-status plant species have been recorded in the CNDDB (Exhibit 8),[36,37] on the nine-quadrangle search area of the CNPSEI,[38] and in the IPaC query results and were considered in an analysis of their potential to occur on the project site (Appendix E, Table 1). Table 1 in Appendix E includes the legal status of each species, their required habitat, and a summary analysis of the potential for each species to occur on the project site.

[34] California Department of Fish and Wildlife (CDFW). 2024. Natural Communities List, Sacramento: California Department of Fish and Wildlife. Accessed March 4, 2024.
[35] California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://wildlife.ca.gov/Data/BIOS. Accessed March 4, 2024.
[36] California Department of Fish and Wildlife (CDFW). 2024. CNDDB RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed March 4, 2024.
[37] California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://wildlife.ca.gov/Data/BIOS. Accessed March 4, 2024.
[38] California Native Plant Society (CNPS). 2024. California Native Plant Society Rare and Endangered Plant Inventory. Website: http://www.rareplants.cnps.org/. Accessed March 4, 2024.

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CNDDB version 09/2024. Please Note:
The occurrences shown on this map represent the known locations of the species listed here as of the date of this version. There may be additional occurrences or additional species within this area which have not yet been surveyed and/or mapped. Lack of information in the CNDDB about a species or an area can never be used as proof that no special status species occur in an area.

Legend

- Project Site

CNDDB

Symbology

- Plant (80m)
- Plant (specific)
- Plant (non-specific)
- Plant (circular)
- Animal (80m)
- Animal (specific)
- Animal (non-specific)
- Animal (circular)
- Terrestrial Comm. (80m)
- Terrestrial Comm. (specific)
- Terrestrial Comm. (non-specific)
- Terrestrial Comm. (circular)
- Aquatic Comm. (80m)
- Aquatic Comm. (specific)
- Aquatic Comm. (non-specific)
- Aquatic Comm. (circular)
- Multiple (80m)
- Multiple (specific)
- Multiple (non-specific)
- Multiple (circular)
- Sensitive EO's (Commercial only)

Source: Bing Street Imagery. California Natural Diversity Database (CNDDB), September 2024.

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8.5 4.25 0 8.5 Miles

Exhibit 8
CNDDB Special-Status Species Occurrences

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The potential for occurrence of a species was based on current biological conditions on the project site and presence of suitable habitats, soil types, and proximity and number of occurrences recorded in the CNDDB.[39,40,41] Intensive agricultural land uses and associated previous surface disturbances evident throughout the project site have limited the possibility for persistence and occurrence of most special-status plant species that were considered in the analysis. Most special-status plant species considered in the analysis were determined to have no or low potential to occur on-site due to the absence of suitable habitat or the lack of recent records in the project vicinity. Special-status plant species with moderate to high potential to occur on-site are analyzed further below.

Paniculate Tarplant

The paniculate tarplant has a CNPS ranking of 4.2 and is an annual herb found in sandy soils (sometimes) and in vernally mesic soils (usually) in coastal scrub, valley and foothill grassland, and vernal pool communities. Its blooming period is between April and November and occurs within elevations of 82–3,083 feet. The project site supports suitable habitat for this species in the wild oats and annual brome grassland. Although no occurrences of this species have been recorded within 5 and 10 miles of the project site, this species was observed on the neighboring Highland Grove IV project site during a Rare Plant Survey conducted by FCS Biologists Joseph Vu and Kayla Belanger on July 25, 2024, and could be present on the project site, which contains similar habitat types. Therefore, there is a moderate potential for this species to occur within the project site.

5.3 - Special-status Wildlife Species

Fifty-seven special-status wildlife species were identified as occurring within 10 miles of the project site as recorded in the CNDDB (Exhibit 8)[42,43] or listed in the IPaC[44] query results and were considered in an analysis of their potential to occur on the project site (Appendix E, Table 2). Table 2 in Appendix E includes the legal status of each species, their required habitat types and features, and a summary analysis of the potential for each species to occur on the project site. The potential for wildlife to occur on the project site was based on presence of suitable habitats and proximity and recency of occurrences recorded in the CNDDB.[45,46] Numerous special-status wildlife species considered in the analysis were determined to have no or low potential to occur on-site, primarily based on the project site being situated outside of the range of the species or absence of suitable habitat or the lack of recent records in the project vicinity, along with other justification(s) for their

[39] California Department of Fish and Wildlife (CDFW). 2024. CNDDB RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed March 4, 2024.
[40] California Native Plant Society (CNPS). 2024. California Native Plant Society Rare and Endangered Plant Inventory. Website: http://www.rareplants.cnps.org/. Accessed March 4, 2024.
[41] California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://wildlife.ca.gov/Data/BIOS. Accessed March 4, 2024.
[42] California Department of Fish and Wildlife (CDFW). 2024. CNDDB RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed March 4, 2024.
[43] California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://wildlife.ca.gov/Data/BIOS. Accessed March 4, 2024.
[44] United States Fish and Wildlife Service (USFWS). 2024. Information for Planning and Consultation (IPaC). Website: https://ecos.fws.gov/ipac/. Accessed March 4, 2024.
[45] California Department of Fish and Wildlife (CDFW). 2024. CNDDB RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed March 4, 2024.
[46] California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://wildlife.ca.gov/Data/BIOS. Accessed March 4, 2024.

exclusion from further discussion. Special-status wildlife species with moderate to high potential to occur on-site are analyzed further below.

5.3.1 - Potential for Occurrence of Special-status Wildlife

Most species with records in the project vicinity were assessed as having no or low potential to occur because the project site is outside of the known distributional range of the species or because the project site does not support suitable habitat (Appendix E, Table 2). These species are not discussed further. The following species were assessed as having moderate to high potential to occur on or adjacent to the project site:

- Red-diamond rattlesnake (*Crotalus ruber*): moderate potential to occur
- Cooper's hawk (*Astur cooperii*): moderate potential to occur
- Burrowing owl (*Athene cunicularia*): confirmed absent through focused surveys conducted for the proposed project
- White-tailed kite (*Elanus leucurus*): moderate potential to occur
- Loggerhead shrike (*Lanius ludovicianus*): moderate potential to occur
- Yellow warbler (*Setophaga petechia*): moderate potential to occur
- Least Bell's vireo (*Vireo bellii pusillus*): confirmed present in the drainage through focused surveys conducted for the proposed project
- Stephens' kangaroo rat (*Dipodomys stephensi*): moderate potential to occur
- Western yellow bat (*Lasiurus xanthinus*): moderate potential to occur
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*): moderate potential to occur
- Pocketed free-tailed bat (*Nyctinomops femorosaccus*): moderate potential to occur
- Crotch's bumble bee: confirmed absent through focused surveys conducted for the proposed project

Red-diamond Rattlesnake

The red-diamond rattlesnake is a species that occurs in arid, rocky areas in creosote scrub, coastal sage and Riversidean alluvial fan sage scrub, chaparral, oak and pine woodlands, and grasslands and on cultivated areas. The red-diamond rattlesnake is a California Species of Special Concern and it is covered under the MSHCP. The project site contains suitable habitat for this species within the wild oats and annual brome grassland present on the project site. There are 12 recent and 12 historical records within 5 miles of the project site, and there are 10 recent and 15 historical records between 5 and 10 miles from the project site (Exhibit 8).[47] This species was not observed during any surveys conducted for the proposed project but has a moderate potential to occur on-site.

[47] California Department of Fish and Wildlife (CDFW). 2024. CNDDB RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed March 4, 2024.

Cooper's Hawk

Cooper's hawk is a hawk in the family Accipitridae. This species occurs in riparian forests and woodlands throughout California, including urban forests. It prefers patchy wooded areas, such as groves with edges with snags for perching. It nests in dense stands with moderate crown-depths, usually in second-growth conifer stands or in deciduous riparian areas, and usually near streams. Cooper's hawk preys on mid-sized birds such as jays, starlings, and doves, but they also consume small rodents. The species capture prey from cover or while flying quickly through dense vegetation, relying on surprise. The Cooper's hawk is designated as a California Watch List species, and it is covered under the MSHCP. Their nests are protected by the MBTA and California Fish and Game Code pertaining to native nesting avian species. Suitable foraging and nesting habitat for this species is present in the mulefat thickets and other areas containing trees on and adjacent to the project site. There is one recent and one historical record between 5 and 10 miles from the project site (Exhibit 8).[48] This species was not observed during any surveys conducted for the proposed project but has a moderate potential to occur on-site.

Burrowing Owl

The burrowing owl is an owl in the family Strigidae. Burrowing owls occur in open, dry, annual, or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. This species utilizes, modifies, and nests in burrows created by other species, most notably those of the California ground squirrel but also those excavated by coyotes, American badgers, and other burrowing mammals. Burrowing owl populations are threatened by habitat loss, pesticide use, and ground squirrel eradication programs, which limit suitable burrowing habitat. In October of 2024, the California Fish and Game Commission voted unanimously that listing the western burrowing owl (*Athene cunicularia hypugaea*) was warranted under the California Endangered Species Act (CESA) and the species was advanced to candidate status. The burrowing owl is designated as a California Species of Special Concern and a federal Bird of Conservation Concern, and it is covered under the MSHCP. Limited take of this species is permitted under the MSHCP under certain conditions; however, their nesting burrows are protected by the MBTA and California Fish and Game Code pertaining to native nesting avian species. The project site is also located within the MSHCP burrowing owl Species Survey Zone, requiring that a habitat assessment and surveys (if habitat is present) for burrows and burrowing owls be performed. Marginally suitable burrowing and nesting habitat for this species is present on the project site within wild oats and annual brome grassland where California ground squirrel burrows occur. Much of the vegetation in this community is too tall and dense to support burrowing and foraging activities of this species. Focused burrowing owl surveys conducted on the project site in 2024 did not detect the species. There are two historical records within 5 miles, and there are 11 recent and two historical records between 5 and 10 miles from the project site (Exhibit 8).[49] Focused surveys conducted for burrowing owl for the proposed project were negative, so this species is considered absent from the project site.

[48] California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://wildlife.ca.gov/Data/BIOS. Accessed March 4, 2024.

[49] California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://map.dfg.ca.gov/bios/. Accessed March 4, 2024.

White-tailed Kite

The white-tailed kite is a hawk in the family Accipitridae. This species inhabits open habitats such as grasslands, marshes, and farmlands and is often found near agricultural areas. It prefers areas with trees for perching and nesting and forages in open areas that support diurnal rodent populations. Preferred nesting habitat consists of oak woodlands or trees along marsh edges. Suitable nesting substrates include trees or shrubs of moderate height, such as eucalyptus, cottonwoods, toyons, and coyote bush, with the nests placed near the tops of the shrubs or trees. Nesting occurs in February through August with peak activity in March, April, and May. The white-tailed kite is designated as a California Fully Protected species and it is covered under the MSHCP. Their nests are protected by the MBTA and California Fish and Game Code pertaining to native nesting avian species. Suitable foraging habitat for this species is present on-site and trees adjacent to the project site provide potentially suitable nesting habitat. Suitable foraging habitat exists within the wild oats and annual brome grassland on and adjacent to the project site. There is one historical record between 5 and 10 miles from the project site (Exhibit 8).[50] This species was not observed during any surveys conducted for the proposed project but has a moderate potential to occur on-site.

Loggerhead Shrike

The loggerhead shrike is a passerine bird in the family Laniidae. This species inhabits open country with short vegetation and well-spaced shrubs or low trees, particularly those with spines or thorns. They frequent agricultural fields, pastures, old orchards, riparian areas, desert scrublands, savannas, prairies, golf courses, and cemeteries. Loggerhead shrikes were once widely distributed across southern Canada, the contiguous United States, and Mexico; however, their populations have declined significantly since the 1960s. They are considered a California Special Species of Concern and a federal Bird of Conservation Concern. Their nests are protected by the MBTA and Fish and Game Codes pertaining to native nesting avian species. Suitable foraging habitat is present in the wild oats and annual brome grassland on and adjacent to the project site, and suitable nesting habitat is present in trees and shrubs on and adjacent to the project site. There is one historical record between 5 and 10 miles of the project site (Exhibit 8).[51] This species was not observed during any surveys conducted for the proposed project but has a moderate potential to occur on-site.

Yellow Warbler

The yellow warbler is a passerine bird in the family Parulidae. This species is a Neotropical migrant that breeds in California. It inhabits dense, shrubby areas, often near water. It breeds in riparian thickets, especially in willows. They forage predominantly on caterpillars and insects but will also eat berries and other fruits. The yellow warbler is designated as a California Species of Special Concern. Their nests are protected by the MBTA and Fish and Game Codes pertaining to native nesting avian species. Suitable foraging and nesting habitat is present in the mulefat thickets and riparian areas within the drainage on and adjacent to the project site. There are two recent records between 5 and 10 miles

[50] California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://map.dfg.ca.gov/bios/. Accessed March 4, 2024.
[51] Ibid.

from the project site (Exhibit 8).[52] This species was not observed during any surveys conducted for the proposed project but has a moderate potential to occur on-site.

Least Bell's Vireo

Least Bell's vireo is a passerine bird in the family Vireonidae. This species is a neotropical migrant that breeds in California. This species occurs and nests in willow-dominated, riparian woodland or scrub habitats in the vicinity of water or in dry river bottoms. Least Bell's vireo is federally and State-listed as an Endangered species. Their nests are protected by the MBTA and Fish and Game Codes pertaining to native nesting avian species. Suitable habitat for this species exists within the mulefat thickets in the riparian drainage along the northwest project boundary. Previous surveys have detected least Bell's vireo within this drainage as recently as 2014. There are 13 recent and three historical records within 5 miles of the project site and 29 recent and three historical records between 5 and 10 miles from the project site (Exhibit 8).[53]

South Environmental conducted focused surveys for the least Bell's vireo between May 1 and July 24, 2024, in the riparian habitat along the northeastern border of the project site. Throughout the eight focused surveys, a total of five least Bell's vireo, including a pair, were detected (Appendix A).

Stephens' Kangaroo Rat

The Stephens' kangaroo rat occurs primarily in annual and perennial grasslands but also occurs in coastal scrub and sagebrush with sparse canopy cover. This species prefers buckwheat, chamise, brome grass, and filaree. It will also burrow into firm soil. The Stephen's kangaroo rat is listed as Threatened under both CESA and the Endangered Species Act. It is covered under the Stephen's Kangaroo Rat HCP. Suitable habitat for this species exists within the wild oats and annual brome grassland on the project site. There is one recent and 25 historical records within 5 miles of the project site, and there are 45 historical records between 5 and 10 miles from the project site (Exhibit 8).[54] This species was not observed during any surveys conducted for the proposed project but has a moderate potential to occur on-site.

Western Yellow Bat

Western yellow bat occurs in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats and is a year-round resident in California. This species roosts in the skirts of dead fronds in both native and non-native palm trees. The western yellow bat is designated as a California Species of Special Concern. Palm trees present on the project site may provide potential roosting habitat, and this species may forage in the wild oats and annual brome grassland. There is one historical record within 5 miles and there are two historical records between 5 and 10 miles from the project

[52] California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://wildlife.ca.gov/Data/BIOS. Accessed March 4, 2024.
[53] Ibid.
[54] Ibid.

site (Exhibit 8).[55] GLA conducted focused, acoustic surveys for bats on the adjacent Highland Grove III project site that supports similar habitat and detected western yellow bats.

San Diego Black-tailed Jackrabbit

San Diego black-tailed jackrabbit is a lagomorph in the family Leporidae. This species occurs primarily in arid regions with short grass including open grasslands, agricultural fields, and sparse coastal scrub. It nests under bushes or shrubs that have shallow depressions. The San Diego black-tailed jackrabbit is covered under the MSHCP. Suitable habitat for this species is present on and adjacent to the project site in the wild oats and annual brome grassland. The wild oats and annual brome grassland on the project site provide suitable habitat for this species. There are two historical records within 5 miles and there are three historical records between 5 and 10 miles from the project site (Exhibit 8).[56] This species was not observed during any surveys conducted for the proposed project but has a moderate potential to occur on-site.

Pocketed Free-tailed Bat

Pocketed free-tailed bats are believed to be non-migratory and are generally distributed within a wide range of habitats from sea level to approximately 7,300 feet above mean sea level, including pinon-juniper woodlands, desert scrub, palm oasis, desert wash, and desert riparian. This bat is colonial and roosts primarily in crevices of rugged cliffs, high rocky outcrops and slopes but may also roost in buildings, caves, and roof tiles. Maternity colonies are formed in and females bear a single young in late June or July. Juveniles become volant in August. This species forages primarily on large moths but will also take small moths, beetles, and a variety of other insects. Suitable foraging habitat is present within the wild oats and annual grassland community and riparian areas on the project site. There are two historical records within 5 miles of the project site and two historical records 5 and 10 miles from the project site (Exhibit 8).[57] GLA conducted focused, acoustic surveys for bats on the adjacent Highland Grove III project site that supports similar habitat and detected pocketed free-tailed bats.

Crotch's Bumble Bee

The Crotch's bumble bee is a species of bee in the family Apidae. This species occurs primarily in California, including coastal habitats, the western Mojave Desert, the San Joaquin Valley, and adjacent foothills through most of southwestern California. It inhabits arid grasslands and shrublands, and its food sources include milkweed, pincushion, lupine, clover, phacelia, sage, clarkia, poppy, and buckwheat. Threats to this species include climate change, pesticide use, competition from non-native bees, reduced genetic diversity, and habitat loss and degradation, including agricultural intensification in California's northern Central Valley and rapid urbanization in the southern Central Valley. The listing decision by the Commission was ultimately upheld and the species' candidacy was reinstated under CESA on September 30, 2022. This species was not

[55] Ibid.
[56] California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://wildlife.ca.gov/Data/BIOS. Accessed March 4, 2024.
[57] Ibid.

observed during the focused surveys; therefore, this species is considered absent from the project site. The full results of the focused Crotch's bumble bee surveys are provided in Appendix B.

5.3.2 - Nesting Birds

The project site and adjacent areas contain vegetation and other potential nesting platforms that could provide suitable nesting habitat for bird species protected under the MBTA and the Fish and Game Code, including loggerhead shrike, yellow warbler, least Bell's vireo, Cooper's hawk, burrowing owl, white-tailed kite, and other native avian species. Construction activities could disturb birds that breed and nest in shrubs or on the ground surface on and adjacent to the project site. Potential impacts on special-status and migratory birds that could result from construction and operation of the proposed project include destruction of eggs or occupied nests, mortality of young, and abandonment of nests with eggs or young birds prior to fledging.

5.3.3 - Roosting Bats

The project site offers potentially viable roosting habitat (tree cavities) for special-status bat species, including the pocketed free-tailed bat and the western yellow bat. Bats could potentially forage in the wild oats and annual brome grassland. Roosts are used during the daytime to seek refuge; at night between foraging excursions to rest, digest prey, seek refuge from predators or poor weather conditions, or for social purposes; and in winter for hibernation. Adult females and their young use particularly secure roosts as maternity roosts. The number of bats occupying a given roost can vary from a solitary individual to a large colony, depending on the species. Roosting sites are very sensitive to human disturbance, especially when bats are hibernating or rearing young. At dusk, bats leave their roosts to forage for insects near ponds or riparian habitats. Ecotone areas (areas of transition between habitats) are also used as foraging areas. The project site and adjacent riparian area has foraging potential for bat species. No bats or bat roosts were observed during the general biological field survey conducted by FCS.

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SECTION 6: MSHCP CONSISTENCY ANALYSIS

6.1 - Relationship to Criteria Cells, Cell Groups, and Conservation Areas

The project site is located within the MSHCP plan area and is not within or adjacent to a Criteria Cell. The nearest Criteria Cell Group (2026) is located approximately 1.17 miles southwest of the project site (Exhibit 9). The project site is not within but is adjacent to a Conservation Area and a PQP Conserved Land (Lake Mathews/Estelle Mountain Reserve) along the southern boundary of the project site (Exhibit 9). Other Conservation Areas in the project vicinity include Lake Mathews (PQP Conserved Land) approximately 0.3 miles southwest of the project site and the Riverside Land Conservancy MOU (PQP Conserved Land) approximately 1.6 miles west of the project site. The project site is not located within any Linkage. Because of its location outside of any Criteria Cells or Cell Groups, the proposed project is not subject to Reserve Assembly Analysis requirements under the MSHCP. Because the project site is located adjacent to an MSHCP Conservation Area (PQP Lands within Lake Matthews/Estelle Mountain Reserve), the proposed project would be subject to the MSHCP Guidelines Pertaining to the Urban/Wildlands Interface.

The project site is not located within an area slated for Existing or Pending Conservation. The project site does not feature Avoidance Areas or areas that must be protected by, or proposed to be protected by, deed restriction. Current conditions and full development of the approximately 60.68-acre project site would not provide for any contributions to Undeveloped Areas Potentially Available for Future Conservation.

6.2 - Covered Roads

El Sobrante Road, an expressway, is located south of and adjacent to the project site. Improvements to El Sobrante Road would be limited to access improvements to the El Sobrante Road through the southern portion of the project boundary. However, these improvements to El Sobrante Road would be restricted to the northern portion of the road and therefore would not pass into PQP lands nor any Criteria Cell.

Because the proposed project is located outside of any Criteria Area, the proposed project is not subject to Covered Road requirements under the MSHCP. No roadway improvements are proposed within PQP Lands. Additionally, the proposed off-site road improvements would not be considered capacity-enhancing improvements, so Joint Project Review would not be required.

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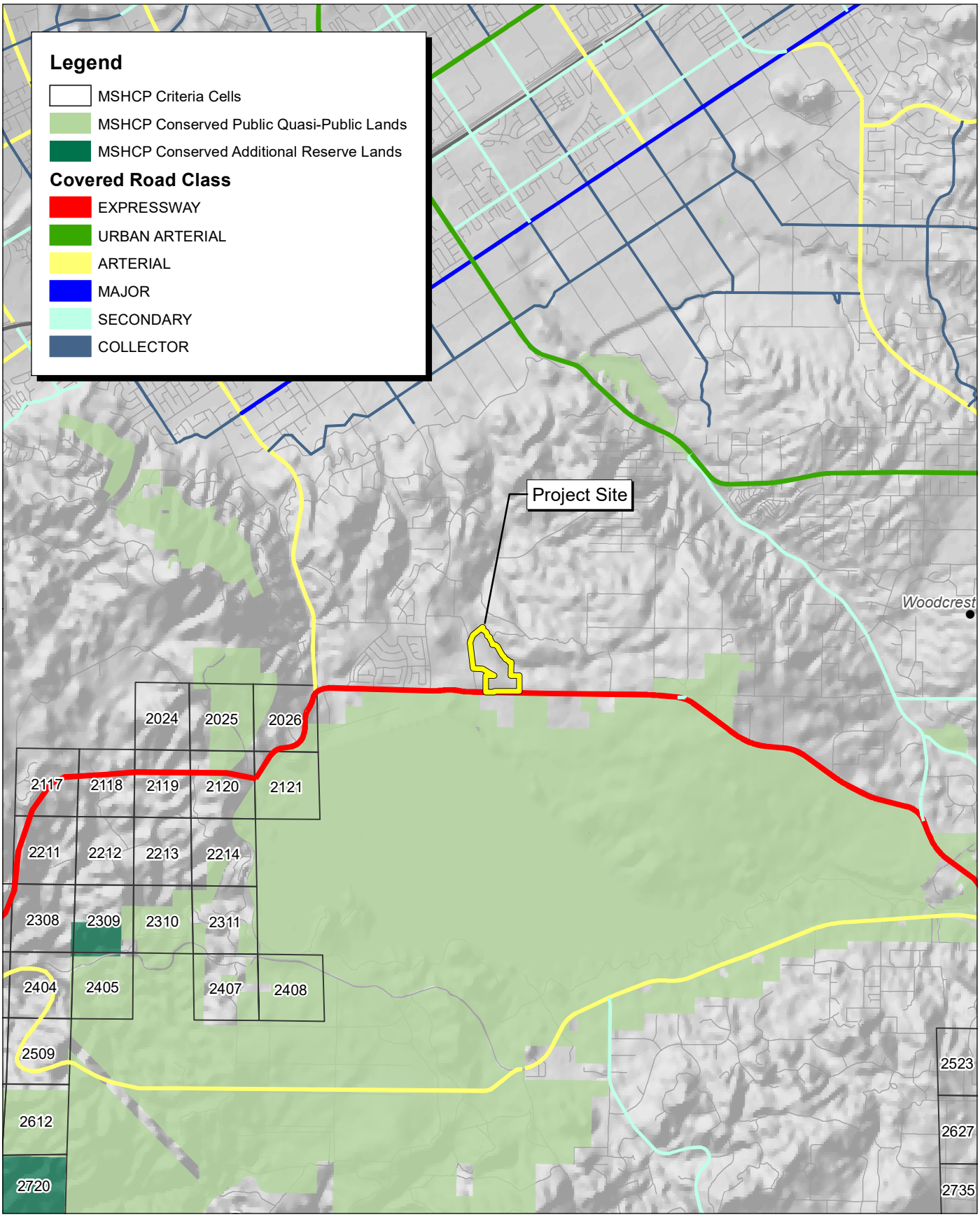

Source: USGS, Western Riverside County Regional Conservation Authority (RCA) MSHCP, Census 2000 data.

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Exhibit 9
MSHCP Conservation Areas

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6.3 - Covered Public Access Activities

The project site is not located within the MSHCP Existing Community or Historic Trail system but is located adjacent to a portion of the Adapted Planned Regional Trail system (Planned Regional Trail). The existing Planned Regional Trail runs along El Sobrante Road and terminates west of Highland Grove Road. The Planned Regional Trail then continues south of El Sobrante Road, outside of both the project site and the off-site road improvement areas. The project is therefore not subject to Covered Public Access Activities requirements under the MSHCP.[58]

6.4 - Public/Quasi Public Lands

Existing Conditions

The project site is located adjacent to the Lake Mathews/Estelle Mountain Reserve, which is PQP Conserved Land under the MSHCP (Exhibit 9). The project would construct an ingress/egress access point off El Sobrante Road but would not encroach onto the PQP Conserved Land.

Potential Project Impacts

Though project construction would not encroach onto PQP Conserved Land, it may be possible that project construction could result in indirect impacts to the Lake Mathews/Estelle Mountain Reserve.

Proposed Mitigation

The project would implement MSHCP Guidelines Pertaining to the Urban/Wildlands Interface to prevent indirect impacts to PQP Conserved Land in the Lake Matthews/Estelle Mountain Reserve. The MSHCP Guidelines Pertaining to the Urban/Wildlands Interface are further detailed in proposed mitigation measures provided in Section 7 of this report.

6.5 - Covered Species Survey Area Requirements

6.5.1 - Protection of Narrow Endemic Plants

Section 6.1.3 of the MSHCP mandates that within identified NEPSSA, site-specific focused surveys for Narrow Endemic Plants Species will be required for all public and private projects where appropriate soils and habitat are present. However, the project site does not occur within NEPSSA; therefore, the proposed project is not subject to any additional NEPSSA requirements pursuant to the MSHCP and would be consistent with the biological requirements of the MSHCP, specifically pertaining to Section 6.1.3 (Protection of Narrow Endemic Plant Species).

[58] Western Riverside County Multiple Habitat Species Conservation Plan (MHSCP). 2004. Multiple Species Habitat Conservation Plan–Trails. Website: https://wrc-rca.org/Permit_Docs/Special-Reports/111003_RCA_Board_Presentation_Trails.pdf. Accessed July 19, 2024.

6.6 - Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools

6.6.1 - Riparian/Riverine Areas

Methods

Riparian/Riverine resources were recorded in the field during a formal jurisdictional delineation by FCS Senior Biologist Robert Carroll in May 2024. The extents of Riparian habitat or Riverine features were mapped using Google Earth Pro and later digitized in shape files using Esri ArcGIS software® ArcMap 10.0. Any drainage features were examined downstream during the surveys and with subsequent mapping in Google Earth Pro. The vegetation communities were described based on the MCV and cross-referenced with the CDFW Natural Communities List.[59] Riparian/Riverine areas are defined for this section as follows in accordance with Section 6.1.2, Volume I, of the Final MSHCP Plan:

> Riparian/Riverine Areas are lands 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.

Existing Conditions and Results

Riparian Habitat

A total of 1.47 acres of Riparian habitat occurs on the project site in the form of mulefat thickets (CDFW Natural Community Code 63.510.00). The Riparian habitat is located in and adjacent to the Intermittent Drainage Segment that borders the northern and eastern boundaries of the project site (Exhibit 7). The mulefat thickets supports small stands of willow species, Canary Island date palm, and Mexican fan palm. Other species present in this community include blue elderberry and Anderson thornbush. The presence of Riparian habitat on the project site requires that habitat assessments and, if habitat is suitable, focused surveys for riparian bird species (least Bell's vireo, southwestern willow flycatcher, and yellow-billed cuckoo) be completed, as discussed further below.

Riverine Feature

The Intermittent Drainage Segment (Segment 1-1) on the northern/eastern boundary of the project site is considered a Riverine feature. This 0.45-acre (19,738 square feet, 2,431 linear feet) feature is a single-threaded stream channel that meanders moderately as it flows south to north, where it later terminates approximately 2 miles northwest of the project site.

[59] California Native Plant Society (CNPS). 2024. A Manual of California Vegetation Online. Website: https://vegetation.cnps.org/. Accessed September 4, 2024.

Potential Project Impacts

The proposed project has been designed to avoid all impacts to the intermittent drainage and its associated Riparian/Riverine habitat (Exhibit 10). Therefore, there are no anticipated project impacts to MSHCP Riparian/Riverine resources.

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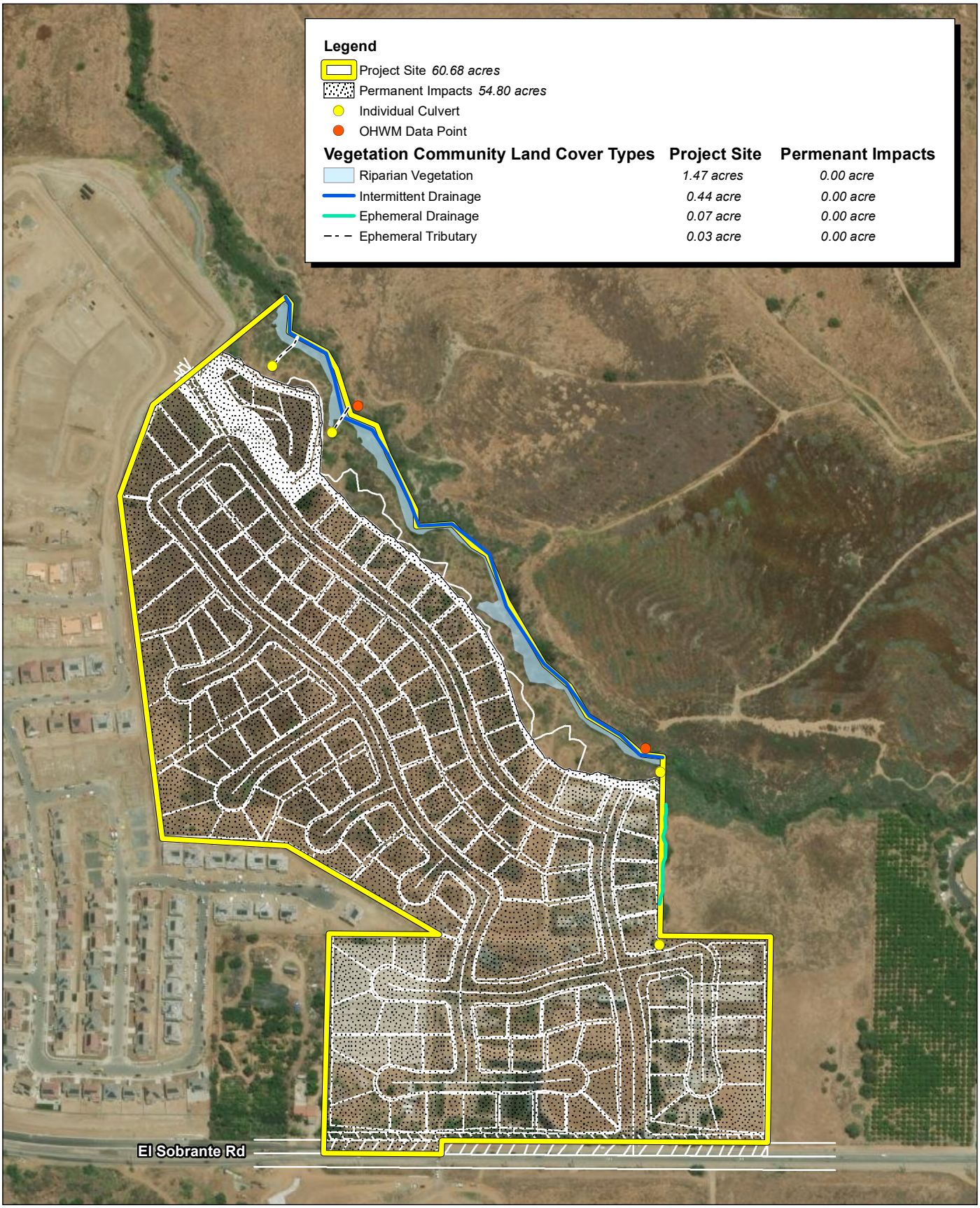

Source: ESRI Aerial Imagery. adkan Engineers, March 2024.

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Feet

Exhibit 10
Riparian/Riverine Resources Avoidance Map

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Avoidance Measure

Mitigation Measures (MMs) BIO-3a through BIO-3c are provided in Section 7 to avoid any potential project impacts to MSHCP Riparian/Riverine resources during the construction phase.

6.6.2 - Riparian Birds

Methods

The potential for occurrence of riparian birds on the project site was assessed based on habitat conditions on the project site, habitat requirements of each species, and number of recent (< 20 years old) occurrences in the project vicinity.

Existing Conditions and Results

The riparian habitat on and adjacent to the project site is situated within a narrow drainage along the northern and eastern boundaries of the project site. The Riparian habitat on-site consists of 83,635 square feet (1.92 acres) of mulefat thickets. Characteristic species present include mulefat, California sagebrush (*Artemisia californica),* tree tobacco, willow, and blue elderberry. The Riparian habitat is a small patch of mostly low-growing species that would be unsuitable for occupancy by western yellow-billed cuckoo (*Coccyzus americanus*), a species that prefers larger or more extensive riparian forests. The Riparian habitat includes several willows but not in densities preferred by southwestern willow flycatcher (*Empidonax traillii extimus*); thus, it is not suitable for occupancy by this species. The Riparian habitat could potentially provide suitable foraging and nesting habitat for least Bell's vireo. During focused surveys for least Bell's vireo on the project site in 2024, five detections of the species were recorded. As such, the riparian habitat is considered occupied by the species. Additionally, there are 13 recent and three historical records for least Bell's vireo within 5 miles of the project site and 29 recent and three historical records between 5 and 10 miles from the project site (Exhibit 8).[60]

Potential Project Impacts

Focused protocol surveys conducted on the project site did not identify least Bell's vireo nests on the project site; however, least Bell's vireo was detected in the on-site Riparian habitat. There are no anticipated direct project impacts to occupied riparian habitat or to individual least Bell's vireos. However, construction of the proposed project could result in indirect noise impacts to nesting least Bell's vireos if ground-disturbing or vegetation-removing construction activities are initiated or conducted during the species' breeding season (March 15 through September 15).

Proposed Mitigation

MM BIO-2 is provided in Section 7 to avoid any potential indirect noise impacts to least Bell's vireo during the construction phase.

[60] California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://wildlife.ca.gov/Data/BIOS. Accessed March 4, 2024.

6.6.3 - Vernal Pools

Vernal pools are depressions in areas where a hard underground layer prevents rainwater from draining downward into the subsoils. When rain fills the pools in the winter and spring, the water collects and remains in the depressions. In the springtime the water gradually evaporates until the pools become completely dry in the summer and fall.[61] In California, vernal pools formed tens of thousands of years ago on ancient alluvial soils. Soils that support vernal pools include extremely impervious clay layers above thick indurated hardpans or cracked basalt that allows water to slowly percolate downward.[62]

According to the NRCS WSS, six soil types are mapped on the project site, all loam soils (Exhibit 4).[63] One of the soil series mapped on the project site, Cajalco series, is known to support vernal pool habitat under certain conditions.[64] However, the Cajalco soils on the project site do not have the clay content to support vernal pools, and no vernal pools or features indicative of the historic presence of vernal pools were observed on the project site. Furthermore, the surface soils on the project site have a long history of disturbances due to agricultural use of the site, and vernal pools would not be able to persist under this land use regime. Therefore, vernal pools are absent from the project site and the proposed project would not be subject to Vernal Pool or Vernal Pool Species requirements under the MSHCP.

6.7 - Additional Survey Needs and Procedures

The project site is located in the following Covered Species survey area:

- Burrowing Owl Survey Area

The proposed project is therefore subject to survey requirements for burrowing owls. Initially, the project site would be subject to a burrowing owl habitat assessment on and adjacent (within 500 feet) to the project site per MSHCP protocol. Survey results and requirements for burrowing owl are discussed below.

The project area is not located in any of the following additional survey needs areas; therefore, focused surveys are not required pursuant to the MSHCP:

- Amphibians Survey Area
- Mammals Survey Area
- Delhi Sands Flower-loving Fly Survey Area
- Criteria Area Plant Species Survey Area

[61] California Department of Fish and Wildlife. 2022. California's Vernal Pools. Website: https://wildlife.ca.gov/Conservation/Plants/Vernal-Pools. Accessed July 19, 2024.
[62] California Department of Fish and Wildlife. 1996. Vernal Pool Substrate and Plant Community Study. Website: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=3216. Accessed July 19, 2024.
[63] Natural Resources Conservation Service. 2024. NRCS Web Soil Survey. Website: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed March 4, 2024.
[64] United States Fish and Wildlife Service. 2017. Survey Guidelines for the Listed Large Branchiopods. Website: https://www.fws.gov/sites/default/files/documents/survey-guidelines-for-large-branchiopods.pdf. Accessed July 19, 2024.

6.7.1 - Burrowing Owl

Methods

The project site is located within the MSHCP Survey Area for the burrowing owl, which requires an assessment of burrowing owl habitat and a determination of species occupancy on-site. Pursuant to Section 6.3.2 of the MSHCP, a burrowing owl habitat assessment is required (Step I of the protocol), followed by a burrow survey (Step II, Part A of the protocol) and focused burrowing owl surveys (Step II, Part B of the protocol) in areas of suitable habitat. Per the MSHCP Burrowing Owl Survey Instructions, FCS Biologists conducted a Step I habitat assessment by walking the project site and mapping areas of suitable habitat on the project site and within 500 feet of the project boundary. During the habitat assessment, the Biologists characterized and mapped vegetation communities and searched for suitable habitat for burrowing owls, including open habitats with low-growing and/or spaced vegetation and burrows or other potential cover (e.g., concrete slabs, pipes). FCS Biologists then initiated a burrow survey (Step I, Part A) in areas mapped as suitable habitat to locate and record burrows suitable for occupancy by burrowing owls. This included observing the burrows for diagnostic burrowing owl sign, including whitewash (feces), regurgitated pellets, bones, feathers, etc. Following the burrow survey, FCS Biologists conducted four focused surveys to search for burrowing owls during the breeding season (March 1 through August 31). The focused surveys were conducted during periods of the day when burrowing owls are most active and during weather conditions suitable for burrowing owl activity (outside of periods of rain, high winds [>20 mph], dense fog, or temperatures over 90°F). Focused burrowing owl surveys were conducted by FCS on March 27 (49–55°F between 6:00 a.m. and 8:15 a.m., winds 3–7 mph, cloud cover 20 percent), March 28 (48–54°Fbetween 6:00 a.m. and 8:15 a.m. , winds 6–11 mph, cloud cover 10 percent), May 8 (53–58°F between 6:00 a.m. and 8:00 a.m., winds 9–15 mph, cloud cover 0 percent), and June 5, 2024 (60–68°F between 6:00 a.m. and 7:45 a.m., winds 0–8 mph).

Existing Conditions and Results

The habitat assessment (Step I of the protocol) found that the wild oat and annual brome grassland on and adjacent to the project site supports marginally suitable foraging, burrowing, and nesting habitat for burrowing owls (Exhibit 6). The vegetation in this community is very dense over much of the project site, but there are scattered areas of sparse vegetation clearings that would provide suitable habitat for burrowing owls. The burrow survey (Step II, Part A of the protocol) found numerous California ground squirrel burrows on-site and within the 500 feet east of the site that could serve as suitable nesting habitat for burrowing owls (Exhibit 6). The focused burrowing owl surveys (Step II, Part B of the protocol) found that no burrowing owls, nor signs of the species (i.e., whitewash, feathers, pellets, etc.), are present on-site. Burrowing owls have been recorded in the project vicinity, with CNDDB records showing two historical records within 5 miles and 11 recent and two historical records between 5 and 10 miles from the project site. Although burrowing owls were not detected on-site during the focused surveys, there is a moderate potential for burrowing owls to occupy the project site prior to its development.

Potential Project Impacts

Although burrowing owl surveys were conducted and no signs of burrowing owls were identified on the project site, it may be possible, because of the presence of suitable burrowing owl habitat, that individuals could occupy the site before construction begins. Construction of the proposed project

could potentially impact burrowing owls if burrowing owls are occupying the project site when ground-disturbing construction activities are initiated. Impacts could occur outside of the nesting season (September 1 through January 31) or during the breeding season (February 1 through August 31) of the species.

Proposed Mitigation

The project applicant shall implement a burrowing owl pre-construction survey prior to the initiation of ground-disturbing or vegetation-removing activities conducted in mapped burrowing owl habitat on the project site. A full description of mitigation proposed for burrowing owls is presented in Section 7.

6.7.2 - Nesting Birds

Analysis

The project area supports vegetation communities, land cover types, and other habitat features that provide nesting habitat for avian species covered under the MBTA and Fish and Game Codes, including common native species and species of special concern such as Cooper's hawk, white-tailed kite, loggerhead shrike, yellow warbler, and least Bell's vireo.

Potential Project Impacts

Construction of the proposed project could potentially impact nesting birds if ground-disturbing construction activities are initiated or conducted during the avian breeding season (February 1 through September 15).

Proposed Mitigation

The project applicant shall implement a pre-construction survey for nesting birds prior to the initiation of ground-disturbing or vegetation-removing activities initiated during the avian breeding season (February 1 through September 15). A full description of mitigation for nesting birds is presented in Section 7.

6.8 - Guidelines Pertaining to the Urban/Wildlands Interface

The project site is adjacent to an MSHCP Conservation Area (PQP Lands within Lake Mathews/Estelle Mountain Reserve). Per Section 6.1.4 of the MSHCP Final Plan, Volume 1, projects adjacent to Conservation Areas are required to implement Guidelines Pertaining to the Urban/Wildlands Interface to control potentially adverse effects from affecting the integrity of those areas. Specific and applicable measures for the proposed project that incorporate the Guidelines Pertaining to the Urban/Wildlands Interface are detailed in Section 7 and include:

1. Implementation of Best Management Practices (BMPs) and design features to prevent discharge or erosion of soils, untreated water, or other chemicals into the intermittent drainage segment.
2. Measures to prevent discharge (including overspray and runoff) of chemicals used in landscaping, such as fertilizers, herbicides, insecticides, or rodenticides into the intermittent drainage segment for the life of the proposed project.

3. Incorporation of barriers along the southern border to minimize unauthorized public access, illegal trespass, or dumping into the intermittent drainage segment.
4. Directing night lighting away from the intermittent drainage segment.
5. Avoid using invasive species in landscaping in the open space area planned for the southern portion of the proposed project. Invasive species that shall not be used in landscaping are listed in Appendix F, Table F-1.
6. Manufactured slopes are not permitted to extend into the intermittent drainage segment.
7. Weed abatement and fuel modification zones may not encroach into the intermittent drainage segment.

6.9 - Best Management Practices

The project applicant shall implement Standard BMPs of the MSHCP (MSHCP Final Plan, Volume I, Appendix C). The BMPs are presented in Section 7.

6.10 - Conclusion of MSHCP Consistency

As outlined above, the proposed project would be consistent with the biological requirements of the MSHCP; specifically pertaining to the proposed project's relationship to reserve assembly, Section 6.1.2 (Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools), Section 6.1.3 (Protection of Narrow Endemic Plant Species), Section 6.1.4 (Guidelines Pertaining to the Urban/Wildlands Interface), and Section 6.3.2 (Additional Survey Needs and Procedures).

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SECTION 7: IMPACT ANALYSIS AND RECOMMENDATIONS

The following discussion addresses potential project impacts on regulated biological resources, including special-status species, and recommends measures to avoid and/or mitigate impacts to a less than significant level under CEQA and to maintain consistency with the MSHCP.

7.1 - Impact Analysis and Mitigation Measures

7.1.1 - Special-status Species

Burrowing Owl

Potential Project Impacts

The wild oats and annual brome grassland on the project site support suitable foraging habitat for burrowing owls. There are numerous small mammal burrows on-site, including those of California ground squirrels that could become occupied by burrowing owls and potentially be used for nesting. The CNDDB shows two historical records within 5 miles, and there are 11 recent and two historical records between 5 and 10 miles from the project site. This species is covered under the MSHCP and protected by the MBTA and Fish and Game Codes.

Construction of the proposed project could potentially impact burrowing owls if ground-disturbing or vegetation-removing construction activities are initiated or conducted during the burrowing owl breeding season (February 1 through August 31). Ground-disturbing and vegetation-removing construction activities could destroy burrows inhabited by burrowing owls, causing destruction of occupied burrows, including nesting burrows. Construction activities could also impact burrowing owls that occupy or nest on lands within 500 meters (1,640 feet) of the project site.

Required Mitigation Measure

To avoid potential project impacts to burrowing owls, the project applicant shall implement the following mitigation measures.

MM BIO-1a Burrowing Owl Pre-construction Survey

The project applicant shall retain a qualified Biologist to perform a pre-construction burrowing owl survey to determine whether burrowing owls are present on-site within 30 days prior to construction activities, according to the California Department of Fish and Wildlife (CDFW) guidelines and Multiple Species Habitat Conservation Plan (MSHCP) protocol. If construction is delayed or suspended for more than 30 days after the survey, the area shall be resurveyed. The pre-construction survey shall be completed on the project site and areas within 500 feet from the project boundary (where possible and appropriate based on habitat). All occupied burrows shall be mapped in an aerial photo. The applicant shall provide a burrowing owl survey report and mapping to the County at least 15 days prior to the expected start of any project-related ground disturbance activities or restart of activities. If the survey is positive for burrowing owls, the project applicant shall

implement MM BIO-1b. If no burrowing owls are detected during the pre-construction survey, no further action is necessary.

MM BIO-1b Burrowing Owl Mitigation Plan

If the pre-construction survey is positive for burrowing owls, the project proponent shall retain a qualified Biologist to develop and implement a Burrowing Owl Mitigation Plan, which must be submitted and approved by the California Department of Fish and Wildlife (CDFW) prior to implementation. The Burrowing Owl Mitigation Plan shall contain the following elements (as outlined in the CDFW 2012 guidelines) at a minimum:

- Avoidance of burrowing owls during construction, including establishment of a 160-foot radius around occupied burrows during the nonbreeding season (September 1 through January 31) or a 200 to 500 meter (656 to 1640 feet) radius around occupied burrows during the breeding season (February 1 through August 31), within which construction activities may not occur until a qualified Biologist has determined that (1) nonbreeding season owls have dispersed from the area; or (2) breeding season owls have fledged their juveniles from the occupied burrows and the juveniles are foraging independently and are capable of independent survival or have dispersed from the area.
- A plan for implementing a passive relocation program for nonbreeding owls, should it be needed. The passive relocation techniques should be consistent with CDFW guidelines, including installation of artificial burrows at an off-site location and use of one-way exclusion doors to ensure owls have left the burrow(s).

Least Bell's Vireo

Potential Project Impacts

Least Bell's vireos have been detected on-site in the riparian habitat supporting the mulefat thickets community. No nests were detected during the focused surveys, but the riparian habitat may become occupied by nesting least Bell's vireo prior to implementation of the proposed project.

The proposed project would avoid occupied habitat and habitat with long-term conservation value for the least Bell's vireo by avoiding direct impacts to Riparian/Riverine resources. Construction of the proposed project would result in indirect noise impacts to least Bell's vireos if ground-disturbing or vegetation-removing construction activities are initiated or conducted during the species' breeding season (March 15 through September 15). Construction activities could also impact least Bell's vireos nesting in areas within 500 feet of the activities. Destruction of least Bell's vireo nests or disturbances to nests in adjacent areas that cause nest failure would be a violation of the MBTA and California Fish and Game Code Sections pertaining to the protection of nesting birds.

Required Mitigation Measure

To avoid potential indirect noise impacts to least Bell's vireo, the project applicant shall implement the following Mitigation Measure.

MM BIO-2a Noise Attenuation

If ground-disturbing or vegetation-removing construction activities are planned within the least Bell's vireo breeding season (March 15 through September 15), prior to conducting any grading or noise-generating project-related disturbance that may exceed 60 A-weighted decibels (dBA), a temporary noise-attenuating wall will be erected along the portion of the perimeter of the impact boundary that occurs within 328 feet (100 meters) of the occupied least Bell's vireo habitat within the intermittent drainage.

As a project design feature, the completed project shall include a permanent noise attenuating solid block wall, at least 6 feet in height, along the perimeter of the development boundary that occurs within 230 feet (70 meters) of the occupied least Bell's vireo habitat within the intermittent drainage.

7.1.2 - Sensitive Communities

Riparian Habitat

The project site contains a total of 1.47 acres of riparian habitat (i.e., mulefat thickets), located in and adjacent to the drainages that border the northern and eastern boundaries of the site. This community is not considered a Sensitive Vegetation Community by CDFW (ranked S4).

Sensitive Natural Communities

There are no natural communities ranked as sensitive by CDFW CNDDB on-site. The riparian habitat within the drainage would be considered a sensitive natural community.

Potential Project Impacts

Construction of the proposed project would not directly impact the riparian habitat within the drainage and, as such, the proposed project would not impact any sensitive natural community.

Avoidance Measure

MM BIO-3a through MM BIO-3c are provided in Section 7 to avoid any potential project impacts to the drainage during the construction phase.

7.1.3 - State or Federally Protected Wetlands

State Protected Wetlands or Jurisdictional Features

The project site includes 19,738 square feet (0.45 acre) and 2,431 linear feet of potential waters of the State; and 83,635 square feet (1.92 acres) of aquatic features and associated riparian habitat regulated pursuant to CDFW's Streambed Alteration Program. No wetlands are located within project site boundaries.

Potential Project Impacts

The proposed project would avoid the drainage on-site and the associated potential waters of the State and riparian habitat. Therefore, there would be no impacts on State or protected wetlands or

jurisdictional features. MM BIO-3a through MM BIO-3c are provided in Section 7 to avoid any potential project impacts to the drainage during the construction phase.

Required Mitigation Measures

MM BIO-3a Avoidance of Aquatic Features

Prior to construction, the on-site limits of the aquatic features and associated riparian habitat shall be delineated with fencing or flagging (orange plastic snow fence, orange silt fencing, or stakes and flagging) and designated as an Environmentally Sensitive Area (ESA). No construction activities and/or access would be permitted within the ESA designated areas. If work occurs within the ESA areas, all work shall cease until the issue has been resolved through the appropriate regulatory agencies and the County. ESA fencing and/or flagging shall be maintained in good repair by the Contractor and shall be removed upon completion of project construction. The project applicant shall ensure that silt-laden runoff is not allowed to enter the aquatic features. Erosion control measures shall be utilized throughout all phases of construction where sediment runoff from the project may enter the aquatic features. Best Management Practices (BMPs) to avoid erosion and uncontrolled stormwater runoff shall be implemented. BMPs typically include silt fencing, coir rolls, and/or straw bale dikes.

MM BIO-3b Water Quality Regulations

The project would comply with all applicable water quality regulations, including obtaining and complying with those conditions established in a National Pollutant Discharge Elimination System (NPDES) permit. Standard Best Management Practices (BMPs), which may include but are not limited to silt fencing, gravel berm, and fiber rolls, shall be installed to prevent any sediment and stormwater flows from entering the riverine area. A project-specific Water Quality Management Plan and/or a Storm Water Pollution Prevention Plan (SWPPP) shall be implemented for the project and shall detail project-specific BMPs.

MM BIO-3c Best Management Practices

The following Best Management Practices (BMPs) shall be implemented during the construction phase to reduce indirect impacts to aquatic resources:

- Time construction activities to avoid impact to sensitive biological resources and protect water quality. To the extent possible, construction activities shall occur during the dry season, between April 15 and October 15, or as otherwise determined by permitting agencies, and in compliance with Section 401 of the Federal Clean Water Act.
- Locate equipment maintenance, refueling, and staging areas at least 100 feet from creeks or other aquatic habitat. Conduct refueling behind a containment barrier that prevents spilled or leaked fuel from entering the aquatic habitat. All

equipment servicing shall be conducted within designated areas with appropriate setbacks from the aquatic features. All motorized equipment used during construction shall be inspected for oil, fuel, and coolant leaks prior to initiating work.

- Implement a SWPPP as part of the project, to ensure that sediment and contaminants from construction areas do not enter creek channels or other aquatic habitat.
- Use only native plant species for reseeding and re-planting to minimize the expansion of exotic plants. Mitigation plantings should be implemented in accordance with applicable regulatory agency permit requirements and consistently with MSHCP requirements.

Federally Protected Wetlands or Waters

As discussed above, the Intermittent Drainage Segment (1-1) located on the northern boundary of the project site accounts for a total of 0.44 acre (1,923 linear feet, 19,230 square feet) of the project site. The intermittent drainage segment does not contain a continuous surface connection with navigable waters of the United States. Flows leaving the project site 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 flows continue in the storm drain indefinitely and do not appear to reemerge as surface flows. Therefore, these intermittent segments do not have hydrological connection to the Santa Ana River and would likely not be considered Traditional Navigable Waters (TNW) by the USACE. Note that a final jurisdictional determination can only be made by the USACE following verification. No wetlands are located within project site boundaries.

Potential Project Impacts

The proposed project would not result in permanent impacts to potential waters of the United States that are regulated by the USACE under Section 404 of the CWA.

Required Mitigation Measures

None required.

7.1.4 - Wildlife Corridors and Nursery Sites

Wildlife Corridors

There are no wildlife movement corridors on the project site. The aquatic features on and adjacent to the project site may provide movement opportunities for common wildlife species, but the construction and operation of the proposed project would not impact the corridor or influence wildlife movement within it. Therefore, mitigation is not proposed.

Nesting Birds

Potential Project Impacts

The project site and adjacent lands support vegetation communities, land cover types, trees, and other habitat features that provide nesting habitat for avian species covered under the MBTA and Fish and Game Code, including common, native species. Construction of the proposed project could

potentially impact nesting birds if ground-disturbing or vegetation-removing construction activities are initiated or conducted during the avian breeding season (February 1 through September 15).

Required Mitigation Measures

The project applicant shall implement the following mitigation measures to avoid potential impacts to nesting birds protected under the Fish and Game Code and/or the MBTA, including Cooper's hawk, white-tailed kite, loggerhead shrike, yellow warbler, and least Bell's vireo. Implementation of the following measures would avoid and/or minimize potential effects to migratory birds and habitat in and adjacent to the project area. These measures shall be implemented for construction work during the nesting season (February 1 through September 15):

MM BIO-4a Nesting Bird Pre-construction Surveys

If ground-disturbing or vegetation-removing construction activities or tree removal is proposed during the breeding/nesting season for migratory birds (typically February 1 through September 15), a qualified Biologist shall conduct pre-construction surveys for special-status birds and other migratory birds within the construction area, including a 300-foot survey buffer, no more than 3 days prior to the start of ground-disturbing activities in the construction area.

MM BIO-4b Avoidance of Active Avian Nests

If an active avian nest is located during the pre-construction survey, a qualified Biologist shall establish and demarcate a 200-foot (for Passerine birds) or 300-foot (for raptors) avoidance buffer using Environmentally Sensitive Area (ESA) fencing, pin flags, and or yellow caution tape. No construction activities or construction foot traffic is allowed to occur within the avoidance buffer(s). Construction personnel shall be instructed not to enter the ESAs, and the Biologist(s) shall ensure that ESA boundaries are maintained. The ESA buffer zone shall be maintained around the active nest site(s) until the young have fledged and are foraging independently.

Roosting Bats

Potential Project Impacts

The project site contains trees that could provide suitable bat roosting habitat, including for special-status bats such as the pocketed free-tailed bat and western yellow bat. Potential direct and indirect impacts could occur to roosting bats due to removal of potential roosting habitat during project construction. These activities could potentially subject bats to risk of death or injury, and they are likely to avoid using the area until such construction activities have dissipated or ceased. Relocation, in turn, could cause hunger or stress among individual bats by displacing them into adjacent territories belonging to other individuals.

Required Mitigation Measures

With implementation of the following mitigation measures, potential project-related impacts on protected roosting bats can be reduced to a less than significant level under CEQA.

MM BIO-5a Roosting Bat Pre-construction Survey

A qualified Biologist with relevant roosting bat experience shall conduct a survey of the project site to determine whether active bat roosts are located on or directly adjacent to the project site. The survey shall be conducted no less than 7 days and no more than 14 days prior to beginning ground disturbance and/or construction in connection with each individual development phase. The survey shall be conducted during an appropriate time of day to maximize detectability of roosting bats. Survey methodology may include visual surveys of bats (e.g., observation of bats during foraging period), inspection for suitable habitat, bat sign (e.g., guano), or use of ultrasonic detectors (Anabat, etc.).

MM BIO-5b Bat Roost Exclusion/Eviction

If the Biologist determines or presumes bat roosts are present, the Biologist shall exclude the bats from suitable cavity spaces by installing one-way exclusion devices. After the bats vacate the space, the Biologist shall close off the space to prevent recolonization. Construction activities in connection with the subject individual development phase shall only commence after the Biologist verifies 7 to 10 days later that the exclusion methods have successfully prevented bats from returning. To avoid impacts on non-volant (i.e., nonflying) bats, the Biologist shall only conduct bat exclusion and eviction from May 1 through October 1. Exclusion efforts may be restricted during periods of sensitive activity (e.g., during hibernation or while females in maternity colonies are nursing young). If bats are present are present outside the exclusion and eviction period (October 2 through April 31), then the project applicant shall coordinate with California Department of Fish and Wildlife (CDFW) to establish an appropriate buffer.

7.1.5 - Local Policies or Ordinances

There are no oak trees or woodlands that would be protected under the California Oak Woodlands Conservation Act or the Riverside County Oak Tree Management Guidelines on the project site, nor trees or woodland communities that would be protected under County Ordinance 559 or County Code Chapter 12.24, and mitigation is not proposed.

7.1.6 - Habitat Conservation Plan

Potential Project Impacts

The project site is located within the MSHCP plan area and subject to MSHCP requirements. Project consistency with the MSHCP is analyzed and presented in Section 6 of this report. To maintain consistency with the MSHCP, the proposed project would be required to address the following issues:

- Because the project site is located adjacent to an MSHCP Conservation Area (PQP Conserved Lands within Lake Mathews/Estelle Mountain Reserve) and because project construction

could result in indirect impacts to PQP Conserved Lands, the proposed project would be subject to the MSHCP Guidelines Pertaining to the Urban/Wildlands Interface.

- Riparian/Riverine resources are located within and adjacent to the drainages that border the northern and eastern sides of the project site.
- Covered species, including burrowing owl and least Bell's vireo, may occur on the project site.
- The project is required to implement MSHCP Construction Minimization Measures and BMPs.

The project will achieve MSHCP consistency with respect to potential impacts to burrowing owl and least Bell's vireo through implementation of MM BIO-1 and MM BIO-2.

Required Mitigation Measures

To maintain consistency with MSHCP requirements and reduce impacts to a less than significant level under CEQA, the following mitigation measures shall be implemented.

MM BIO-6a Implement MSHCP Guidelines Pertaining to the Urban/Wildlands Interface

Because of project adjacency to the Lake Mathews/Estelle Mountain Reserve and the potential for indirect impacts to these Public/Quasi Public (PQP) Conserved Lands during project construction, the project applicant shall incorporate the following measures into the project design or construction Best Management Practices (BMPs):

1. Implementation of BMPs and design features to prevent discharge or erosion of soils, untreated water, or other chemicals into the intermittent or ephemeral drainage channel, either directly or indirectly. BMPs shall be implemented to ensure that siltation and erosion are minimized during construction of the project. The project shall be designed to prevent discharge of untreated surface runoff from developed and paved areas into existing natural drainage courses and/or Multiple Species Habitat Conservation Plan (MSHCP) Conservation Areas, including the drainage along the eastern border of the project and the Salt Creek Channel. Any water quality or other drainage discharges would need to be reviewed by the Regional Conservation Authority (RCA) prior to conveyance into the MSHCP Conservation Area.
2. Measures to prevent discharge (including overspray and runoff) of chemicals used in landscaping, such as fertilizers, herbicides, insecticides, or rodenticides into intermittent or ephemeral drainage channels for the life of the project.
3. Incorporation of barriers along the eastern border of the project site to minimize unauthorized public access, illegal trespass, or dumping into the intermittent or ephemeral drainage channels. Such barriers may include native landscaping, rocks/boulders, fencing, walls, signage, and/or other appropriate mechanisms.
4. Night lighting shall be directed away from the intermittent or ephemeral drainage channels to protect species within this MSHCP Conservation Area from

direct night lighting. Shielding shall be incorporated in project designs to ensure ambient lighting in the intermittent or ephemeral drainage channels is not increased.

5. Proposed noise-generating land uses affecting the MSHCP Conservation Area shall incorporate setbacks, berms, or walls to minimize the effects of noise on MSHCP Conservation Area resources pursuant to applicable rules, regulations, and guidelines related to land use noise standards.
6. Invasive species shall not be used in landscaping in the open space area planned for the southern portion of the project. Invasive species that shall not be used in landscaping are listed in the MSHCP Final Plan, Volume 1, Table 6-2.
7. Manufactured slopes are not permitted to extend into the intermittent or ephemeral drainage channels.
8. Weed abatement and fuel modification zones may not encroach into the intermittent or ephemeral drainage channels.

MM BIO-6b Implement Construction Minimization Measures

To maintain consistency with Multiple Species Habitat Conservation Plan (MSHCP) requirements during construction, the applicant shall implement the following Construction Minimization Measures, per Section 7.5.3 of the MSHCP:

- Plans for water pollution and erosion control will be prepared. The plans shall describe sediment and hazardous materials control, dewatering or diversion structures, fueling and equipment management practices, and use of plant material for erosion control.
- Avoid work in riparian areas during most active breeding season; typically designated as March 1 to June 30 by the California Department of Fish and Wildlife (CDFW)/MSHCP Guidelines. Disturbance is restricted to a minimum of 300 feet away from any active nest.
- If vegetation removal must occur during this avoidance period, then a nest survey by a qualified Biologist is required. The nest survey shall be conducted for five consecutive days and no more than 3 days prior to clearing. If an active nest is observed, then the nest location shall be fenced off surrounding a minimum 300-foot (500 feet for raptors) radius buffer zone. The buffer zone shall not be disturbed until the nest is inactive.
- Sediment and erosion control measures will be implemented until such time soils are determined to be successfully stabilized.
- Short-term stream diversions, if needed, shall be accomplished by use of sandbags or other methods that shall result in minimal instream impacts. Short-term diversions shall consider effects on wildlife.
- Silt fencing or other sediment trapping materials shall be installed at the downstream end of construction activities to minimize the transport of sediments off-site.

- Settling ponds where sediment is collected shall be cleaned in a manner that prevents sediment from re-entering the stream or damaging/disturbing adjacent areas. Sediment from settling ponds will be removed to a location where sediment cannot re-enter the stream or surrounding drainage area. Care shall be exercised during removal of silt fencing to minimize release of debris or sediment into streams.
- No erodible materials shall be deposited into water courses. Brush, loose soils, or other debris material shall not be stockpiled within stream channels or on adjacent banks.
- The footprint of disturbance shall be minimized to the maximum extent feasible. Access to sites shall occur on pre-existing access routes to the greatest extent possible.
- Equipment storage, fueling, and staging areas shall be sited on non-sensitive upland habitat types with minimal risk of direct discharge into riparian areas or other sensitive habitat types.

MM BIO-6c Implement MSHCP Best Management Practices

To maintain consistency with Multiple Species Habitat Conservation Plan (MSHCP) requirements, the project applicant shall implement the following Best Management Practices (BMPs) during the construction phase of the proposed project:

1. A condition shall be placed on grading permits requiring a qualified Biologist to conduct Worker Environmental Awareness Program (WEAP) training for project personnel prior to grading. The training shall include a description of the species of concern and its habitats, the general provisions of the Endangered Species Act and the MSHCP, the need to adhere to the provisions of the Endangered Species Act and the MSHCP, the penalties associated with violating the provisions of the Endangered Species Act, the general measures that are being implemented to conserve the species of concern as they relate to the proposed project, and the access routes to and project site boundaries within which the proposed project activities must be accomplished.
2. The footprint of disturbance shall be minimized to the maximum extent feasible. Access to sites shall be via pre-existing access routes to the greatest extent possible.
3. Equipment storage, fueling, and staging areas shall be located on upland sites with minimal risks of direct drainage into riparian areas or other sensitive habitats. These designated areas shall be located in such a manner as to prevent any runoff from entering sensitive habitat.
4. Necessary precautions shall be taken to prevent the release of cement or other toxic substances into surface waters. Project-related spills of hazardous materials shall be reported to appropriate entities including but not limited to the City, United States Fish and Wildlife Service (USFWS), California

Department of Fish and Wildlife (CDFW), and/or Regional Water Quality Control Board (RWQCB), as applicable, and shall be cleaned up immediately and contaminated soils removed to approved disposal areas.

5. Erodible fill material shall not be deposited into water courses. Brush, loose soils, or other similar debris material shall not be stockpiled within the stream channel or on its banks.
6. The qualified project Biologist shall monitor construction activities for the duration of the proposed project to ensure that practicable measures are being employed to avoid incidental disturbance of habitat and species of concern outside the project footprint.
7. The removal of native vegetation shall be avoided and minimized to the maximum extent practicable. Temporary impacts shall be returned to pre-existing contours and revegetated with appropriate native species.
8. Exotic species that prey upon or displace target species of concern should be permanently removed from the site to the extent feasible.
9. To avoid attracting predators of the species of concern, the project site shall be kept as clean of debris as possible. All food related trash items shall be enclosed in sealed containers and regularly removed from the site(s).
10. Construction employees shall strictly limit their activities, vehicles, equipment, and construction materials to the proposed project footprint and designated staging areas and routes of travel. The construction area(s) shall be the minimal area necessary to complete the proposed project and shall be specified in the construction plans. Construction limits will be fenced with orange snow screens. Exclusion fencing should be maintained until the completion of all construction activities. Employees shall be instructed that their activities are restricted to the construction areas.
11. The City shall have the right to access and inspect the project site to determine its compliance with project approval conditions, including these BMPs.

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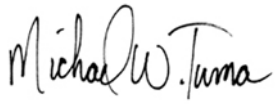
SECTION 8: CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this BRA and MSHCP Consistency Analysis and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: May 23, 2025 Signed:



Michael W. Tuma, PhD, Principal Biologist
FirstCarbon Solutions
250 Commerce, Suite 210
Irvine, CA 92602
714.508.4100

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Appendix A:
Least Bell`s Vireo Survey Report for Highland Grove 4 Project in Riverside, California (South Environmental)

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2061 N. Los Robles Avenue, Ste. 205 Pasadena, California 91104 / www.southenvironmental.com

September 5, 2024

Michael Tuma
Senior Biologist
FirstCarbon Solutions
Email: mtuma@fcs-intl.com
Phone: 626-390-5717

RE: Least Bell`s Vireo Survey Report for Highland Grove 2 Project in Riverside, California

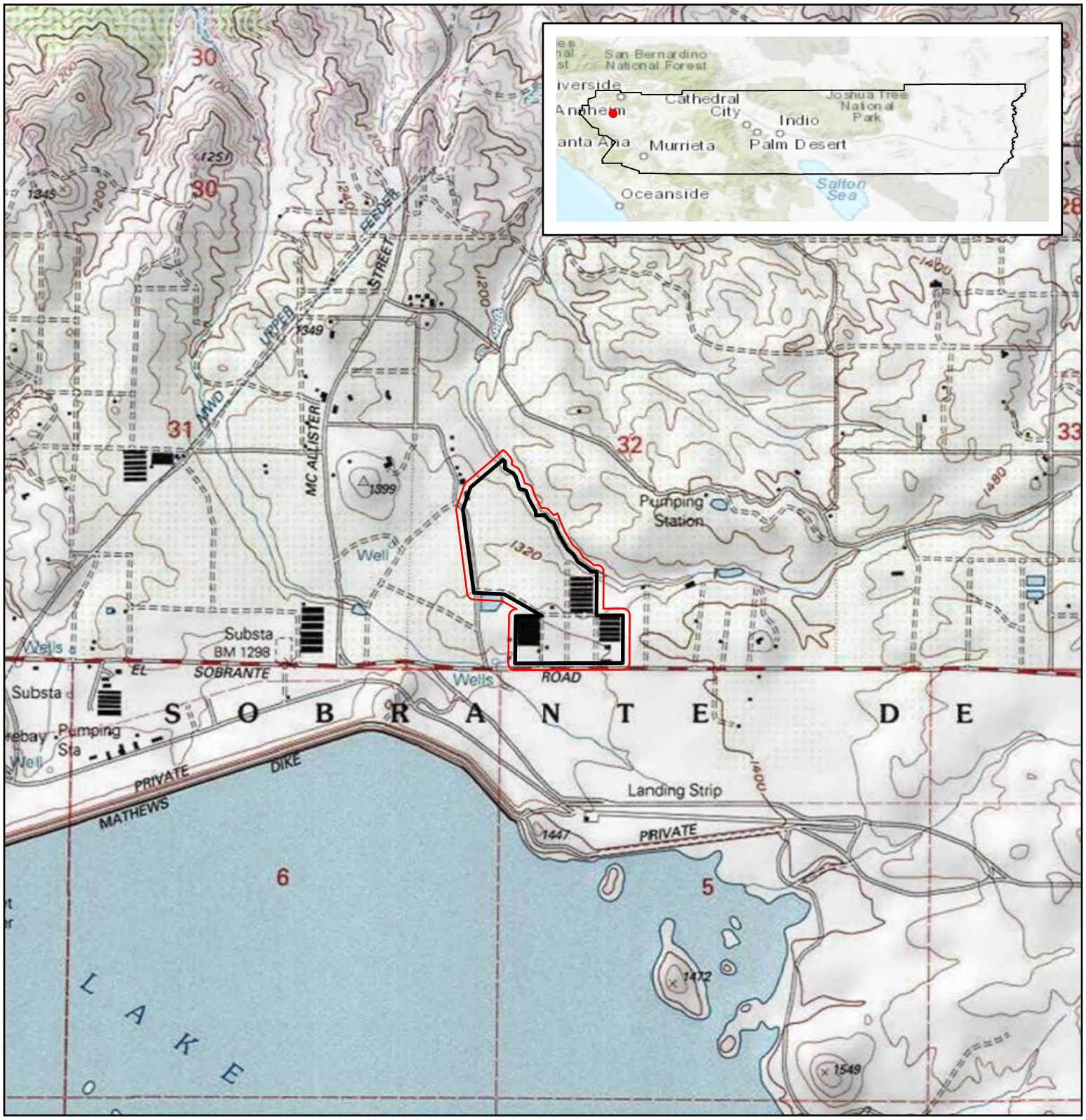
Dear Dr. Tuma,

This least bell`s vireo survey report has been prepared by South Environmental for use by the City of Riverside for the 58.79-acre Highland Grove 2 Project in Riverside, California. The scope of this report includes a description of the project, biological setting, vegetation communities, survey methodology, and survey results. Photographs of the survey area and surveyors' qualifications are included as attachments to this report.

Project Description

Project Location

As shown in Figure 1 below, the survey area is located along Travertine Drive in Riverside, California. The project is within the U.S. Geological Survey (USGS) Lake Mathews 7.5" topographical map, and within Sections 00 of Township 03 South (03S) and Range 5 West (5W). As shown in Figure 2 below, the survey can be accessed from Travertine Drive at a point that is approximately 3-miles south of Highway 91 and approximately 7-miles east of Highway 15. The survey area is north of El Sobrante Road, south of Sweet Avenue, west of Travertine Street, East of Blackburn Road, and Lake Mathews is located south of the project site. Photographs of the survey area are in Attachment A.



Source: ESRI USA Topo Maps and World Topo Map 2024

Highland Grove 2 Project

Figure 1. Regional Location

Project Boundary

Survey Area (100-ft buffer)



0 1,000 2,000 Feet

Scale: 1:24,000

N

SOUTH ENVIRONMENTAL



Source: BING Aerial Map 2024

Highland Grove 2 Project

Figure 2. Site Vicinity

0 262.5 525 Feet

N

Scale: 1:5,242

Project Boundary

Survey Area (100-ft buffer)

SOUTH ENVIRONMENTAL

Proposed Activities

The project site in total is a 58.79-acres, and the entire project site includes proposed construction of new neighborhoods, including new paved streets as well as new single-family homes.

Vegetation Communities

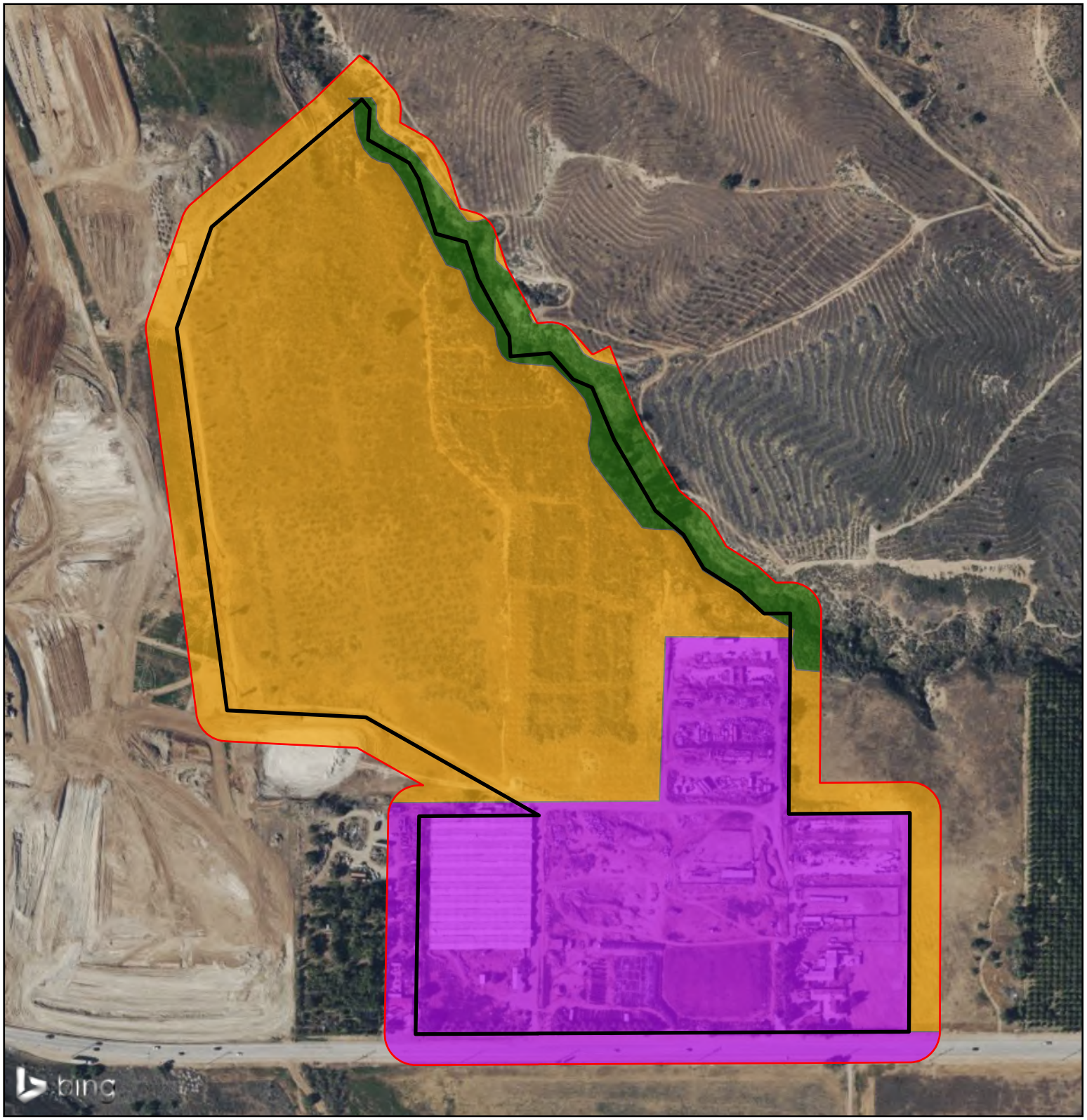
As shown in Figure 3, there are three plant communities mapped within the survey area (CNPS 2022):

- **Wild oats and annual brome grasslands** (*Avena spp.-Bromus spp.* Herbaceous Semi-Natural Alliance) is found in the study area. This area is on the northwest and central area of the project area as well as on the eastern most side of the developed area. This community is co-dominated by wall barley (*Hordeum murinum)* and shortpod mustard (*Hirschfeldia incana)*.
- **Goodding' s Willow-Red Willow Riparian Woodland and Forest** (*Salix gooddingii-Salix laevigata* Forest and Woodland Alliance) is found on the study area on the northeast side of the project area. This community is dominated by black willow (*Salix goodingii),* also present is Freemont cottonwood (*Populus fremontii*), mule fat (*Baccharis salicifolia),* pepper tree (*Schinus molle),* and tree tobacco (*Nicotiana glauca)*.
- **Developed** area occurs on southern region of the project site. The developed area is along El Sobrante Road and has businesses and single-family homes that include garages, patios, driveways, fences, fenced-in areas, and ornamental landscaping.

Least bell`s vireos utilize riparian willow and mule fat dominated habitat during breeding season and during migration. Therefore, the Gooding`s Willow-Red Willow Riparian Woodland and Forest habitat found on the project site was the focus spot for surveying for the presence/absence of the least bell`s vireo. The habitat was found along the northeast region of the project area.

Natural History

According to the U.S Fish and Wildlife service the least bell`s vireo is a migratory songbird that breeds in southern California to northern Baja California, Mexico. The least bell`s vireo will winter in the southern region of Baja California, Mexico from the September to March. They prefer breeding grounds that are willow-dominated riparian woodlands but will also forage and sometimes nest in mulefat scrub, oak woodlands, and chaparral, if it is nearby.



Source: BING Aerial Map 2024

Highland Grove 2 Project

Figure 3. Plant Communities and Land Cover

0 262.5 525 Feet

N

Scale: 1:5,242

- Project Boundary
- Survey Area (100-ft buffer)
- Bromus Ruderal Grassland
- Developing / Developed
- Goodding's Willow - Red Willow Riparian Woodland and Forest

SOUTH ENVIRONMENTAL

They begin migrating from southern Baja California, Mexico in mid-March to early April to Southern California and northern Baja California, Mexico.

Least bell`s vireo`s have two habitat characteristics that they require for breeding: the presence of dense cover within 3-6 feet, where nests are placed and a dense stratified canopy layer for foraging. Their nests are built using plant fibers and spiderweb silk, which can be found a few feet from the ground. Habitat loss has caused their population to decrease as well as decreased nesting productivity due to parasitism by brown-headed cowbirds (*Molothus ater*). Cowbirds will lay their eggs in nests of other birds so their young can be raised by the host species which in turn the host species young to not survive. Although least bell`s vireos numbers have increased since conservation efforts, a large part of their historical range is still unoccupied by them.

Methodology

Prior to conducting surveys, South Environmental referenced the *2001 Least Bell`s Vireo Survey Guidelines* regarding the survey methods proposed, timing of the survey, and potential strategies for avoiding impacts. It was determined that 8 total surveys would be sufficient. Coverage with a start date on May 1st and the final survey on July 24th, with 10 days minimum between each survey.

Least Bell`s Vireo Surveys

South Environmental biologists conducted a habitat assessment and eight total least bell`s vireo surveys in areas of suitable habitat throughout the entire project site. Suitable habitat was found on the northeast border of the project area, this area was surveyed on the east side of the riparian habitat due to access issues on the west side. The west side of the riparian habitat was surveyed by using binoculars. The surveys were conducted according to Appendix D of the *2001 Least Bell`s Vireo Survey Guidelines*, and took place on May 1st (Survey #1), May 13th (Survey #2), May 24th (Survey #3), June 6th (Survey #4), June 14th (Survey #5), June 24th (Survey #6), July 5th (Survey #7), and July 24th (Survey #8). The habitat assessment was conducted concurrently with Survey #1. The surveys were conducted during appropriate weather conditions and were timed to occur during the most active period for least bell`s vireos. Table 1 below provides a summary of the surveys.

Table 1. Least Bell`s Vireo Survey Summary

Survey #	Date - Time	Conditions (Temp, Wind Speed, Cloud cover, precipitation)	Surveyors
Habitat Assessment - Survey #1	5/1/2024 7:00 – 11:00	60-67F, 0-5mph, 100% cloud cover, no precip.	Philip Samples
Survey #2	5/13/2024 7:00 – 11:00	56-60F, 0-5mph, 100-75% cloud cover, no precip.	Philip Samples
Survey #3	5/24/2024 7:00-11:00	57-61F, 0-5mph, 25-100% cloud cover, no precip.	Philip Samples
Survey #4	6/4/2024 8:00-11:00	60-73F, 0-5mph, 100-25% cloud cover, no precip.	Philip Samples, Meagan Najera
Survey #5	6/14/2024 8:00-10:00	64-74F, 0-5mph, 0% cloud cover, no precip.	Meagan Najera
Survey #6	6/24/2024 8:00-10:30	76-85F, 0-5mph, 0% cloud cover, no precip.	Meagan Najera
Survey #7	7/5/2024 7:30-9:30	73-84F, 0-5mph, 0% cloud cover, no precip.	Meagan Najera
Survey #8	7/24/2024 8:15-10:00	77-83F, 0-5mph, 5% cloud cover, no precip.	Meagan Najera

The biologist performed the survey by walking alongside the suitable habitat where they would be able to hear and/or see if the least bell`s vireo if present without being too close and potentially harassing the species. Biologists would periodically scan the area for the least bell's vireo using binoculars to observe the surrounding. During the surveys, biologists recorded sightings or sound identifications. Locations of vireos were recorded in the field using ArcGIS FieldMaps mobile application. Also recorded were brown-headed cowbirds and other incidental threatened or endangered species.

Survey Results

Least Bell`s Vireo Survey Results

The survey results are shown in Figure 4 and summarized in Table 2 below. There was a total of 5 detections of Least Bell`s Vireo (LBVI) by sound and/or visual identification during the survey period, starting on May 1st through July 24th. During Survey #2 there was a pair of LBVI recorded together but all other detections were of a singular species. The LBVI were recorded in the riparian habitat on the northeastern side of the project area.



Source: BING Aerial Map 2024

Highland Grove 2 Project

Figure 4. Survey Results

0 262.5 525 Feet

N

Scale: 1:5,242

- Least Bell's Vireo
- Brown Headed Cowbird
- Coastal California Gnatcatcher
- Survey Area (100-ft buffer)
- Project Boundary

SOUTH ENVIRONMENTAL

Table 2 –Survey Results Summary

Survey #	LBVI Observations	BHCO Observation	CAGN Observations
Survey #1	1	1	0
Survey #2	2	0	0
Survey #3	1	0	0
Survey #4	0	0	0
Survey #5	0	0	0
Survey #6	1	0	0
Survey #7	0	0	0
Survey #8	0	0	0

Incidental Species Survey Results

The incidental species survey results are summarized in Figure 2. There was one brown-headed cowbird (BHCO) detected throughout all eight surveys. No other threatened or endangered species were recorded.

Conclusion

Throughout all eight of the focused, protocol-level least bell`s vireo surveys conducted at the Highland Grove 2 project site, there were a total of 5 least bell`s vireo detections, with either 1 or 2 vireos being detected on only 4 of the survey days and vireo not being detected during the other 4 surveys. Also detected within the survey area was one brown-headed cowbird, which is known to parasitize least bell' s vireo nests. There was one instance of a pair of least bell's vireo recorded in the northern region of the riparian habitat.

If you have any questions regarding the information in this report, please contact Matthew South by email: msouth@southenvironmental.com or by mobile phone: 303.818-3632.

Sincerely,



Matthew R. South

List of Attachments

1. **Attachment A**. Photograph Exhibit
2. **Attachment B**. List of Species Observed

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Attachment A

Photograph Exhibit



Photo 1. Depicts the western region of the project area, facing west.



Photo 2. Depicts the riparian area on the project site, Facing southeast



Photo 3. Depicts the riparian area with the developed area behind it, facing southeast



Photo 4. Depicts the southeast region of riparian area, facing south.

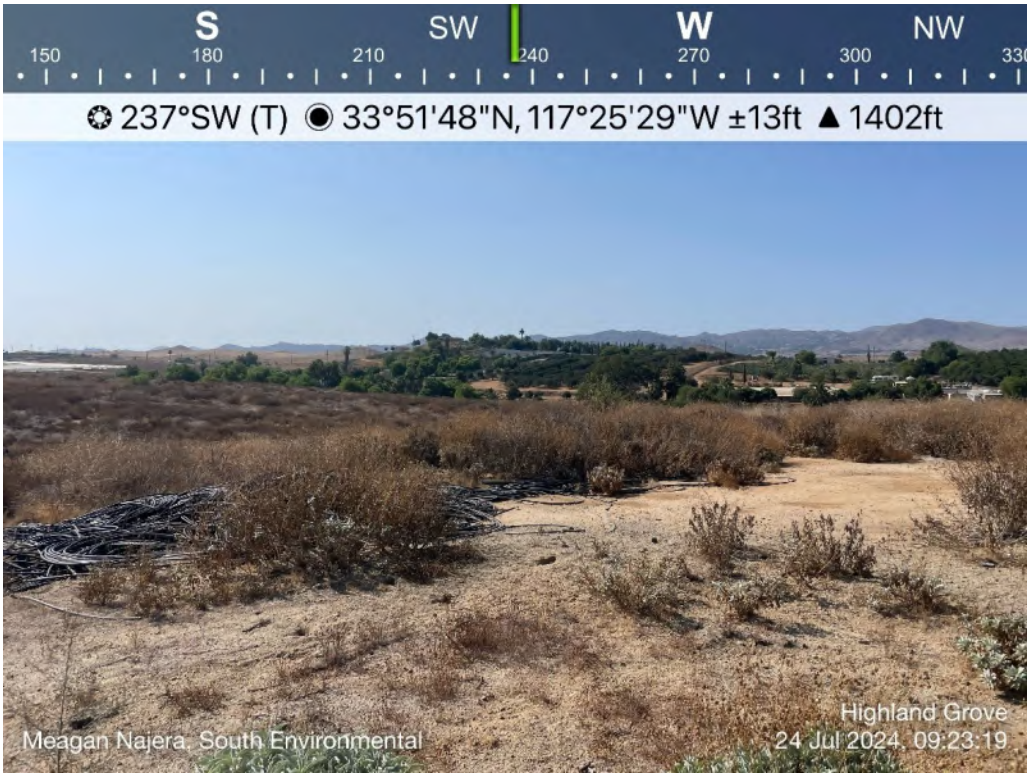

Photo 5. Depicts the developed area on the project site, facing southwest.



Photo 6. Depicts the eastern region of the study area, facing southwest

Attachment B

List of Species Observed

List of Species Observed

Birds		
Family	Common Name	Scientific Name
Accipitridae		
	Red Shouldered Hawk	Buteo linatus
	Red-tailed Hawk	Buteo jamaicensis
Aegithalidae		
	Bushtit	Psaltriparus minimus
Ardeidae		
	Great Blue Heron	Ardea herodias
Apodidae		
	White-throated Swift	Aeronautes saxatails
Bombycillidae		
	Cedar Waxwing	Bombycilla cedrorum
Cathartidae		
	Turley Vulture	Cathartes aura
Charadriidae		
	Killdeer	Charadrius vociferus
Columbidae		
	Eurasian Collared-dove	Streptopelia decaocto
	Mourning Dove	Zenaida macroura
Corvidae		
	California Scrub-jay	Aphelocoma californica
	Common Raven	Corvus corax
	American Crow	Corvus brachyrhyncus
Cuculidae		
	Greater Roadrunner	Geococcyx californianus
Fringillidae		
	American Goldfinch	Spinus tristis
	House Finch	Carpodacus mexicanus
	Lesser Goldfinch	Careuelis psaltria
Hirundinidae		
	Cliff Swallow	Petrochelidon pyrrhonota
	Northern Rough-winged Swallow	Stelgidopteryx serripennis
Icteridae		
	Brown-headed Cowbird	Molothrus ater
	Bullock's Oriole	Icterus bullockii
	Great-tailed Grackle	Quiscalus mexicanus
	Hooded Oriole	Icterus cucullatus
	Red-winged Blackbird	Agelaius phoeniceus

	Western Meadowlark	Sturnella neglecta
Mimidae		
	California Thrasher	Toxostoma redivivum
	Northern Mockingbird	Mimus polyglottos
Musicapidae		
	Western Bluebird	Sialia mexicana
Odontophoridae		
	California Quail	Callipepla californica
Pandionidae		
	Osprey	Pandion haliaetus
Parulidae		
	Common Yellowthroat	Geothlypis trichas
	Yellow Warbler	Setophaga petechia
Passerellidae		
	California Towhee	Melozone crissalis
	Dark-eyed Junco	Junco hyemalis
	Song Sparrow	Melospiza melodia
	Spotted Towhee	Pipilo maculatus
Passeridae		
	House Sparrow	Passer domesticus
Picidae		
	Northern Flicker	Colaptes auratus
	Nuttall's Woodpecker	Dryobates nuttallii
Polioptillidae		
	Blue-gray Gnatcatcher	Polioptila caerulea
Ptiliogonatidae		
	Phainopepla	Phaninopepla nitens
Scolopacidae		
	Spotted Sandpiper	Actitis macularius
Sturnidae		
	European Starling	Sturnis vulgaris
Trochilidae		
	Allen's Hummingbird	Selasphorus sasin
	Anna's Hummingbird	Calypte anna
Troglodytidae		
	Bewick's Wren	Thryomanes bewickii
	House Wren	Troglodytes aedon
Tyrannidae		
	Ash-throated Flycatcher	Myiarchus cinerascens
	Cassin's Kingbird	Tyrannus vociferans
	Black phoebe	Sayornis nigricans
	Say's Phoebe	Sayornis saya
	Western Kingbird	Tyrannus verticalis

Vieronidae		
	Least Bell's Vireo	Vireo bellii pusillus

Mammals		
Family	Common Name	Scientific Name
Cricetidae		
	Woodrat	Neotoma sp.
Leporidae		
	Black-tailed jackrabbit	Lepus californicus
	Dessert Cottontail	Sylvilagus audubonii
Sciuridae		
	California Ground Squirrel	Otospermophilus beecheyi

Amphibians		
Family	Common Name	Scientific Name
Hylidae		
	Pacific Tree Frog	Pseudacris regilla
Ranidae		
	American Bullfrog	Lithobates catesbeianus

Reptiles		
Family	Common Name	Scientific Name
Colubridae		
	California Kingsnake	Lampropeltis californiae
Phrynosomatidae		
	Western side-blotched Lizard	Ulta stanburiana elegans

Appendix B:
Crotch's Bumble Bee Survey Report (FirstCarbon Solutions)

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Memorandum

Date:	May 20, 2025
To:	Robert Paradise, Pulte Home Company, LLC
From:	Michael Tuma, PhD, Principal Biologist
Subject:	Crotch's Bumble Bee Survey Report for the Highland Grove II Development Project in Unincorporated Riverside County, California

FirstCarbon Solutions (FCS) conducted protocol surveys for Crotch's bumble bee (*Bombus crotchii*) in support of the proposed Highland Grove II Development Project (proposed project) in unincorporated Riverside County, California. The following report provides details about the proposed project, its environmental setting, methods and results of the habitat assessment, and recommendations for further action.

PROJECT SITE LOCATION AND DESCRIPTION

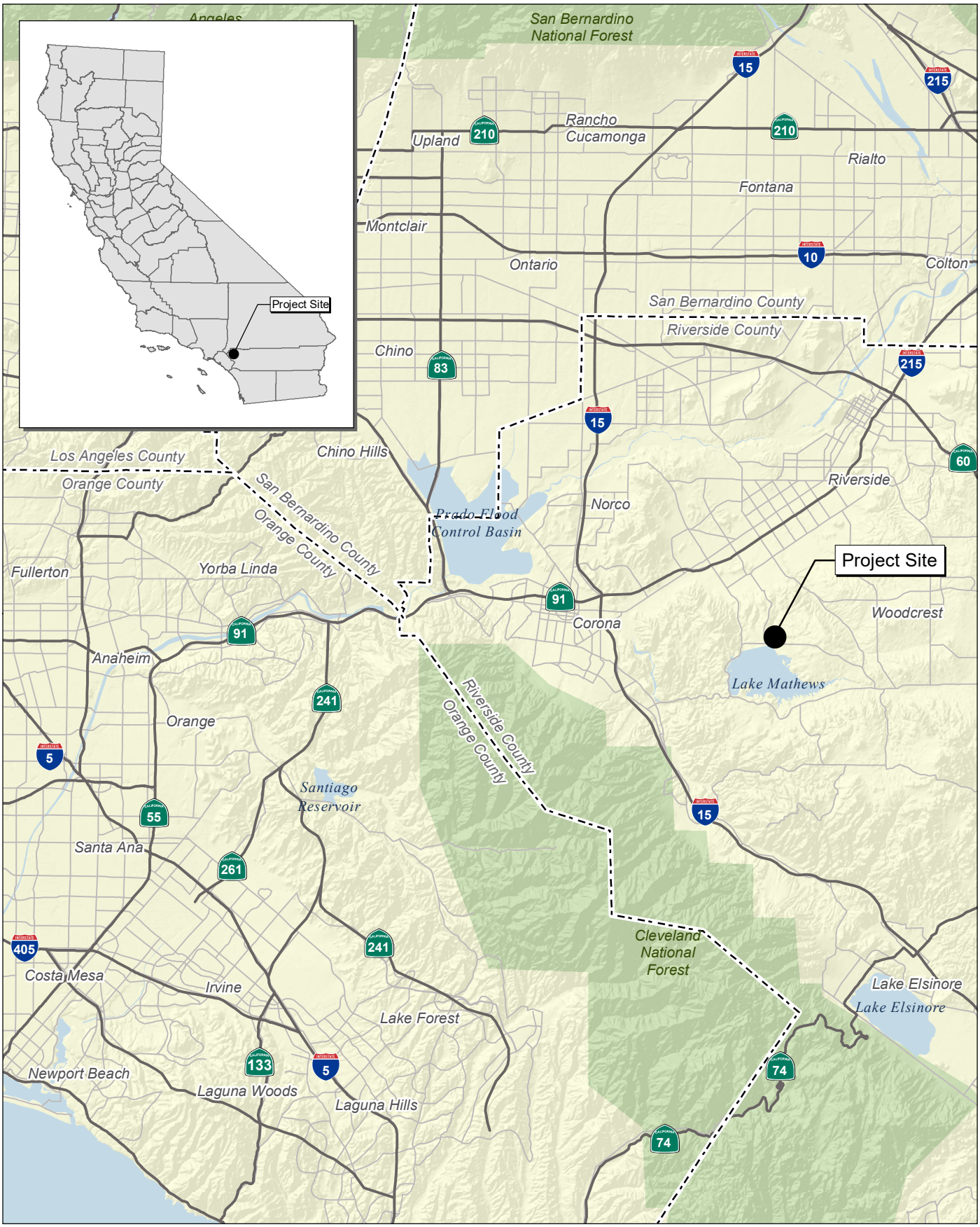
The approximately 60.68-acre project site is located in unincorporated Riverside County (County), California (Exhibit 1). The project site is surrounded by the City of Riverside to the north, the community of Woodcrest to the east, Lake Mathews to the south, and the City of Corona to the west. Regional access to the site is provided via Interstate 15 (I-15), which bisects the project vicinity north to south. Additional regional access to the site is provided via State Route (SR) 91, which bisects the project vicinity east to west. Local access to the site is provided via El Sobrante Road.

The site is located at the southwest corner of McAllister Street and El Sobrante Road on several parcels, including Assessor's Parcel Numbers (APNs) 270-160-002, -003, -018, -020, -021, -022, -023, and -024. The site is located within the *Lake Mathews, California* United States Geological Survey (USGS) 7.5-minute Topographic Quadrangle Map.

The project site is surrounded by undeveloped lands to the north and east; single-family residential developments to the west; and agricultural operations and El Sobrante Road to the south (Exhibit 2). The project site is vacant and undeveloped and has been used for hay production. Undeveloped lands directly north and east of and adjacent to the project site have also been used for agricultural production. The project site and adjacent undeveloped areas functioned as a citrus operation until the early 2000s. Evidence of operational site disturbance includes compacted soils, erosional areas, debris piles, and

various dirt roads. There is a drainage feature outside of and along the northeastern boundary of the project site between the undeveloped areas.

Pulte Home Company, LLC (project applicant) proposes a residential subdivision on the 60.68-acre project site, located at the southwest corner of McAllister Street and El Sobrante Road within unincorporated Riverside County. The proposed project consists of subdividing approximately 61.3 acres of vacant land into 128 lots to be developed with single-family detached residential dwelling units for a density of two dwelling units per acre (du/acre) (Exhibit 3). The project site would connect existing water, sewer, electrical, telephone, and gas utilities in the El Sobrante Road right-of-way. All existing power poles on the project site are to be relocated underground. The proposed project would also include improvements on El Sobrante Road, along the southern property line. Ingress/egress from proposed Street A is proposed off El Sobrante Road and associated right-of-way improvements. At the crossing, Street A would consist of 44 feet of pavement from curb face to curb face and 66 feet right-of-way.



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

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Exhibit 1
Regional Location Map



Source: USGS Lake Mathews 7.5' Quadrangles / T03S,R05W,sec32.

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Exhibit 2
Local Vicinity Map
Topographic Base

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RIVERSIDE COUNTY
HIGHLAND GROVE II PROJECT
CROTCH'S BUMBLE BEE SURVEY REPORT



Source: ESRI Aerial Imagery.

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1,000 500 0 1,000
Feet

Exhibit 3
Local Vicinity Map
Aerial Base

Crotch's Bumble Bee Description

Crotch's bumble bee is a bee in the family Apidae that occurs largely in California and primarily in southwestern California, including the Pacific Coast, the western Mojave Desert, and the southern San Joaquin Valley.[1] The species also ranges into southwest Nevada and Baja California, Mexico, though occurrences are rare. This species inhabits scrublands, grasslands, chaparral, and semi-urban settings in foothills and desert margins.[2] Crotch's bumble bee appears to tolerate a narrow range of climatic conditions in comparison to other bumble bee species and requires hotter, drier environments to survive.[3] This species nests underground, often in abandoned rodent dens, or aboveground in tufts of grass, rock piles, old bird nests, or cavities in dead trees.[4] Favored food (nectar) sources for the Crotch's bumble bee include milkweeds (*Asclepias* spp.), pincushions (*Chaenactis* spp.), lupines (*Lupinus* spp.), clovers (*Medicago* spp.), phacelias (*Phacelia* spp.), and sages (*Salvia* spp.).[5] Crotch's bumble bees are generalist foragers and have been commonly associated with plants from the Fabaceae, Apocynaceae, Asteraceae, Lamiaceae, Hydrophyllaceae, Asclepidaeceae, and Boraginaceae families.[6]

Like most bumble bees (except cuckoo bumble bees), Crotch's bumble bees are social insects that live in colonies composed of a queen, workers, and reproductives (males and new queens). The colonies have an annual cycle that begins with the emergence of a queen female from her hibernacula and her establishment of a nest where she collects pollen and nectar and lays eggs. The reproductive queen conducts all the foraging and care for the colony in early spring until the first workers emerge and take on these duties while the queen continues to lay eggs and rear young.[7] Male Crotch's bumble bees emerge after the worker bees and are generally active from May to September, with peak activity in July. This species' workers are active from April to August and queen bees from March until May. The peak of worker activity is between May and June, whereas queens are most active in April.[8] The annual colony

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1 Los Padres Forest Watch. 2013. Crotch's Bumblebee. Website: https://lpfw.org/our-region/wildlife/crotchs-bumblebee/. Accessed April 30, 2025.

2 California Department of Fish and Wildlife (CDFW). 2022. CDFW Seeks Public Comment Related to Crotch's Bumble Bee, Franklin's Bumble Bee, Suckley's Cuckoo Bumble Bee and Western Bumble Bee. Website: https://wildlife.ca.gov/News/Archive/cdfw-seeks-public-comment-related-to-crotchs-bumble-bee-franklins-bumble-bee-suckleys-cuckoo-bumble-bee-and-western-bumble-bee#gsc.tab=0. Accessed April 30, 2025.

3 NatureServe Explorer. 2025. *Bombus crotchii*. Website: https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.834085/Bombus_crotchii. Accessed April 30, 2025.

4 Hatfield, R., S. Jepsen, R. Thorp, L. Richardson, and S. Colla. 2015. Crotch's bumble bee. IUCN Red List of Threatened Species. 2015: e.T44937582A46440211. Website: https://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T44937582A46440211.en. Accessed April 30, 2025.

5 Hatfield, R., S. Jepsen, R. Thorp, L. Richardson, and S. Colla. 2015. Crotch's bumble bee. IUCN Red List of Threatened Species. 2015: e.T44937582A46440211. Website: https://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T44937582A46440211.en. Accessed April 30, 2025.

6 California Department of Fish and Wildlife (CDFW). 2018. A Petition to the State of California Fish and Game Commission. Website: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=161902&inline. Accessed April 30, 2025.

7 Koch, J., J. Strange, and P. William. 2012. Bumble Bees of the Western United States (PDF). Website: https://archive.org/details/CAT31104683. Accessed April 30, 2025.

8 Koch, J., J. Strange, and P. William. 2012. Bumble Bees of the Western United States (PDF). Website: https://archive.org/details/CAT31104683. Accessed April 30, 2025.

cycle ends with the deaths of workers and males and entry to hibernation sites by the new queens. Crotch's bumble bees are not migratory, and only mated queens overwinter.[9,10]

Crotch's bumble bee populations have experienced sharp declines over the last 10 years, particularly in northern and southern portions of the Central Valley of California.[11] Declines have been attributed to conversion of habitat for agricultural practices and urbanization.[12] Additionally, climate change and increased aridity have lowered suitable habitat for this species due to its narrow climatic specialization.[13] Pollution and competition with non-native bees have also impacted Crotch's bumble bee populations.[14,15] Because of population declines and subsequent inbreeding, genetic diversity in Crotch's bumble bee populations has also declined.[16,17,18]

2024 Habitat Assessment

FCS Biologists conducted field visits to the project site between March 19-22, 2024, to perform a habitat assessment for Crotch's bumble bee and characterize the biological conditions on-site. During the habitat assessment, FCS Biologists mapped vegetation communities and land cover, compiled a list of flowering plants, and recorded observations of threats to Crotch's bumble bees.

The information collected during the field visit was used to evaluate Crotch's bumble bee habitat and potential for occurrence using protocol presented in the Rusty Patched Bumble Bee Habitat Assessment Form and Guide published by the Xerces Society for Invertebrate Conservation.[19] The habitat assessment is a scoring system based on regional landscape features, site features, foraging habitat, nesting and overwintering habitat, pesticide practices, and management practices. FCS Biologists developed a score for the project site and compared it to the maximum possible score to evaluate the potential for occurrence of the species on-site. The guide recommends that sites managed for rusty

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[9] NatureServe Explorer. 2025. *Bombus crotchii*. Website: https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.834085/Bombus_crotchii. Accessed April 30, 2025.

[10] Hatfield, R., S. Jepsen, R. Thorp, L. Richardson, and S. Colla. 2015. Crotch's bumble bee. IUCN Red List of Threatened Species. 2015: e.T44937582A46440211. Website: https://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T44937582A46440211.en. Accessed April 30, 2025.

[11] Ibid.

[12] Ibid.

[13] NatureServe Explorer. 2025. *Bombus crotchii*. Website: https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.834085/Bombus_crotchii. Accessed April 30, 2025.

[14] Williams, P.H., S.R. Colla, and Z. Xie. 2009. Bumblebee vulnerability: Common correlates of winners and losers across three continents. Conservation Biology 23: 931–940.

[15] Williams, P.H. and J.L. Osborne. 2009. Bumble bee vulnerability and conservation worldwide. Apidologie 40: 367–387.

[16] Goulson, D. 2010. Bumblebees: Behaviour, Ecology, and Conservation. Oxford, UK: Oxford University Press.

[17] Cameron, S.A., J.D. Lozier, J.P. Strange, J.B. Koch, N. Cordes, L.F. Solter, and T.L. Griswold. 2011. Patterns of widespread decline in North American bumble bees. Proceedings of the National Academy of Science (USA) 108(2): 662–667.

[18] Lozier, J.D., J.P. Strange, I.J. Steward, and S.A. Cameron. 2011. Patterns of range-wide genetic variation in six North American bumble bee (Apidae: *Bombus*) species. Molecular Ecology 20: 4870–4888.

[19] Xerces Society for Invertebrate Conservation. 2017. Rusty Patched Bumble Bee Habitat Assessment Form and Guide. Website: https://xerces.org/publications/hags/rusty-patched-bumble-bee-habitat-assessment-form-guide. Accessed May 1, 2025.

patched bumble bees should have a minimum score of 100. FCS Biologists determined that with a score of 91, the project site did not meet the minimum score recommended for managed bumble bee habitat and reasoned that the project site provides only marginally suitable for Crotch's bumble bee.

Methods

Background Review

FCS reviewed existing environmental documentation pertaining to the habitat requirements of Crotch's bumble bee and survey protocols and species occurrence data provided by the United States Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW). An FCS Biologist compiled Crotch's bumble bee occurrences previously recorded within the project vicinity maintained in the California Natural Diversity Database (CNDDB).[20] The CNDDB Biogeographic Information and Observation System (BIOS 6) was used to determine the distance between the known occurrences of Crotch's bumble bee and the project site.[21] FCS Biologists also reviewed Crotch's bumble bee mapping and occurrence data provided by iNaturalist[22] and Bumble Bee Watch.[23] An FCS Biologist also reviewed aerial photographs to gain perspective of the current land uses, plant community distributions, and locations of potential bumble bee habitat in the project vicinity and reviewed United States Department of Agriculture (USDA) soil surveys[24] to establish if soil conditions on the project site are suitable for excavation of burrows by burrowing wildlife.

Focused Field Surveys

Per the CDFW Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species,[25] FCS Biologists conducted three surveys for Crotch's bumble bee on the project site during the colony active period for the species, which generally occurs from April through August.

During the surveys, FCS Biologists walked through suitable Crotch's bumble bee habitat, recorded floral resources available within the survey area, recorded habitat conditions in field notes and with photography, searched for bees, and noted the presence of other pollinating insects. The searches for foraging bumble bees were conducted slowly; each Biologist surveyed at a rate of approximately 3 acres per hour. When a Biologist detected a bumble bee, the Biologist would carefully follow the bee as it foraged, photographing it while it visited flowers. The Biologist would follow each observed bee to collect a sufficient number of photographs from different angles to ensure that key morphological characteristics (e.g., face, cheeks, corbicula, thorax, terga) were visible in the photographs. The Biologists also

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[20] California Department of Fish and Wildlife (CDFW). 2025. CNDDB RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed April 30, 2025.

[21] California Department of Fish and Wildlife (CDFW). 2025. Biogeographic Information and Observation System (BIOS 6). Website: https://wildlife.ca.gov/Data/BIOS. Accessed April 30, 2025.

[22] iNaturalist. 2025. Website: https://www.inaturalist.org. Accessed April 30, 2025.

[23] Bumble Bee Watch. 2025. Website: https://www.bumblebeewatch.org/. Accessed April 30, 2025.

[24] United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). 2025. Web Soil Survey (WSS). Website: https://websoilsurvey.nrcs.usda.gov/app/. Accessed April 30, 2025.

[25] California Department of Fish and Wildlife (CDFW). 2023. Survey Considerations for CESA Candidate Bumble Bee Species. Website: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=213150&inline. Accessed April 30, 2025.

attempted to follow bees from foraging areas to nest sites. No bumble bees were captured, handled, or harmed during the survey.

Common plant species observed during the field visit were identified by visual characteristics and morphology in the field and recorded in a field notebook and on field maps. Uncommon and unfamiliar plants were identified with the use of taxonomical guides, including Jepson eFlora and Calflora.[26,27] Taxonomic nomenclature used in this study follows The Jepson Manual: Vascular Plants of California.[28] Common plant names, when not available from The Jepson Manual, were taken from other regionally specific references. Vegetation community types and boundaries were noted on aerial photos, verified through field observation, and digitized using Esri ArcGIS® Field Maps. Vegetation community and land cover types used to help classify habitat types are based on the California Native Plant Society (CNPS) Manual of California Vegetation (MCV) and cross-referenced with the CDFW Natural Communities List.[29,30,31]

2025 Habitat Assessment

The information collected during the field visit was used to evaluate Crotch's bumble bee habitat and potential for occurrence using protocol presented in the Rusty Patched Bumble Bee Habitat Assessment Form and Guide published by the Xerces Society for Invertebrate Conservation.[32] The habitat assessment is a scoring system based on regional landscape features, site features, foraging habitat, nesting and overwintering habitat, pesticide practices, and management practices. FCS Biologists developed a score for the project site and compared it to the maximum possible score to evaluate the potential for occurrence of the species on-site. This evaluation was compared to the habitat assessment performed in 2024.

Results and Discussion

Topography and Hydrology

The project site has an elevation that ranges from approximately 1,260 feet above mean sea level (AMSL) near the northern portion of the project site to 1,365 AMSL near the southeast corner of the project site. The project site is situated on both open land and GoneStraw Farms property adjacent to Lake Mathews in the Riverside Region. The Riverside Region contains areas of valleys and hills bounded

[26] Jepson Flora Project (eds.) 2023. Jepson eFlora. Website: https://ucjeps.berkeley.edu/eflora/. Accessed April 30, 2025.

[27] Calflora. 2020. Calflora: Information on California plants for education, research, and conservation. Website: http://www.calflora.org/. Accessed April 30, 2025.

[28] Baldwin, B.G., D. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D. Wilken (Editors). 2012. The Jepson Manual: Vascular Plants of California. Berkeley, CA: University of California Press.

[29] Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation, Second Edition. Sacramento, CA: California Native Plant Society.

[30] California Department of Fish and Wildlife (CDFW). 2023. Natural Communities List. Website: https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities#sensitive%20natural%20communities. Accessed April 30, 2025.

[31] California Native Plant Society (CNPS). 2025. A Manual of California Vegetation Online. Website: https://vegetation.cnps.org/. Accessed April 30, 2025.

[32] Xerces Society for Invertebrate Conservation. 2017. Rusty Patched Bumble Bee Habitat Assessment Form and Guide. Website: https://xerces.org/publications/hags/rusty-patched-bumble-bee-habitat-assessment-form-guide. Accessed April 30, 2025.

by the Lake Mathews Estelle Mountain Range to the south, the Box Springs Mountains on the north, and the Santa Ana Mountains on the southwest.

Soils

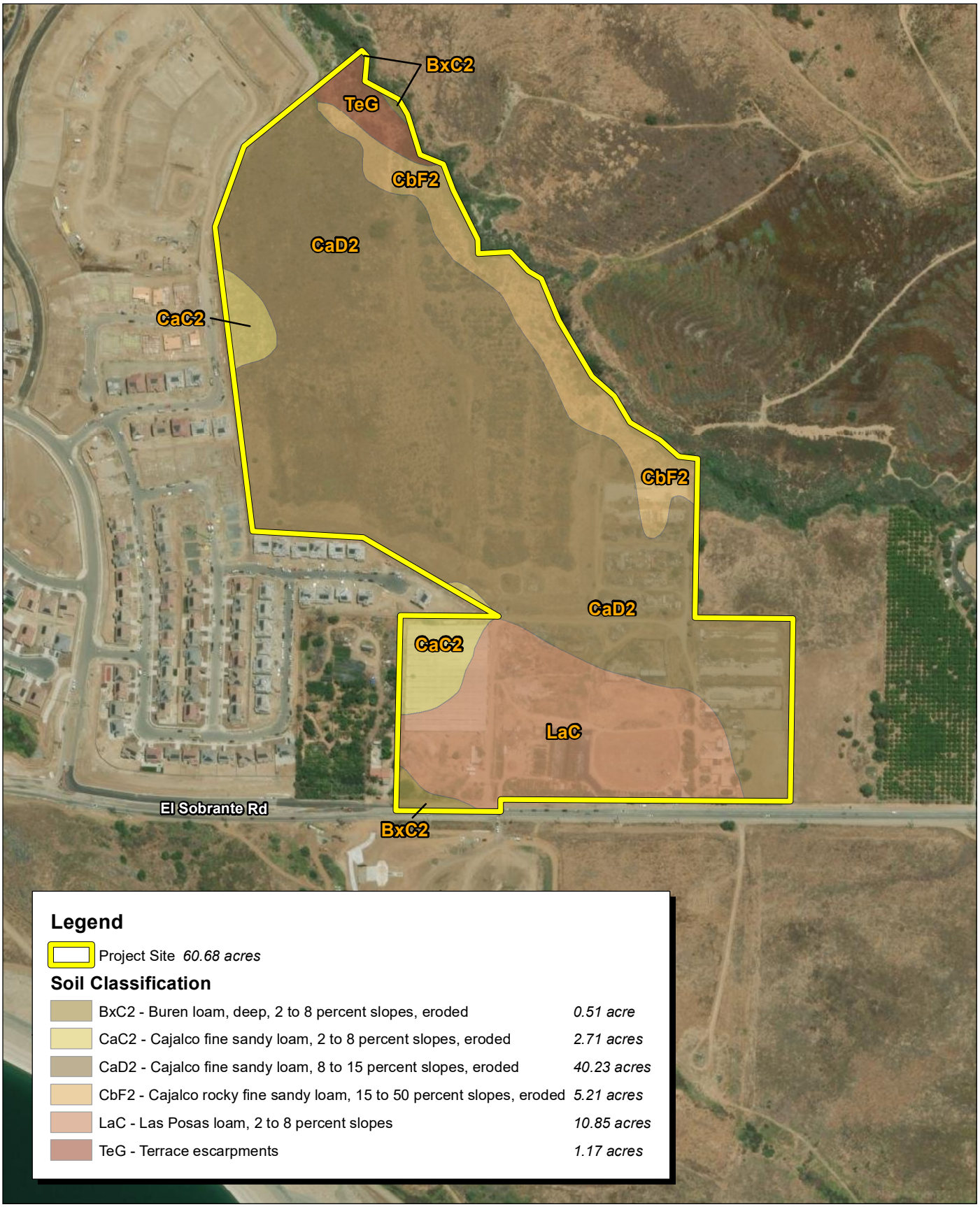
The Natural Resource Conservation Service (NRCS) Web Soil Survey (WSS) mapped six soil types on the project site, including three Cajalco soils, Las Posas loam, Buren loam, and Terrace Escarpments. (See Table 1, below, and Exhibit 4).

Table 1: Soil Types Present on the Project Site

Soil Name	Symbol	Slope	Description
Buren loam, eroded	BxC2	2–8%	Moderately well drained. Prime farmland if irrigated, alluvium derived from mixed sources. Elevation from 700 to 3,000 feet.
Cajalco fine sandy loam, eroded	CaD2	8–15%	Well drained. Not prime farmland. Residuum weathered from gabbro on side slopes and backslope. Elevation from 900 to 3,500 feet.
Cajalco find sandy loam, eroded	CaF2	15–35%	Well drained. Not prime farmland. Residuum weathered from gabbro on side slopes and backslope. Elevation from 900 to 3,500 feet.
Cajalco rocky fine sandy loam, eroded	CbF2	15–50%	Well drained. Not prime farmland. Residuum weathered from gabbro on side slopes and backslope. Elevation from 900 to 3,500 feet.
Las Posas loam, eroded	LaD2	8–15%	Well drained. Residuum weathered from gabbro on hills, side slopes, and backslope. Elevation from 200 to 3,000 feet.
Terrace escarpments	TeG	—	Shallow loamy, found on terraces. Alluvium is derived from mixed sources.

Vegetation Communities/Land Cover Types

The vegetation communities and land cover types recorded on the project site are described below. A map showing vegetation communities and land cover types is presented in Exhibit 5. A complete list of flowering plants found on the project site is presented in Appendix A. Photographs are presented in Attachment B.



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

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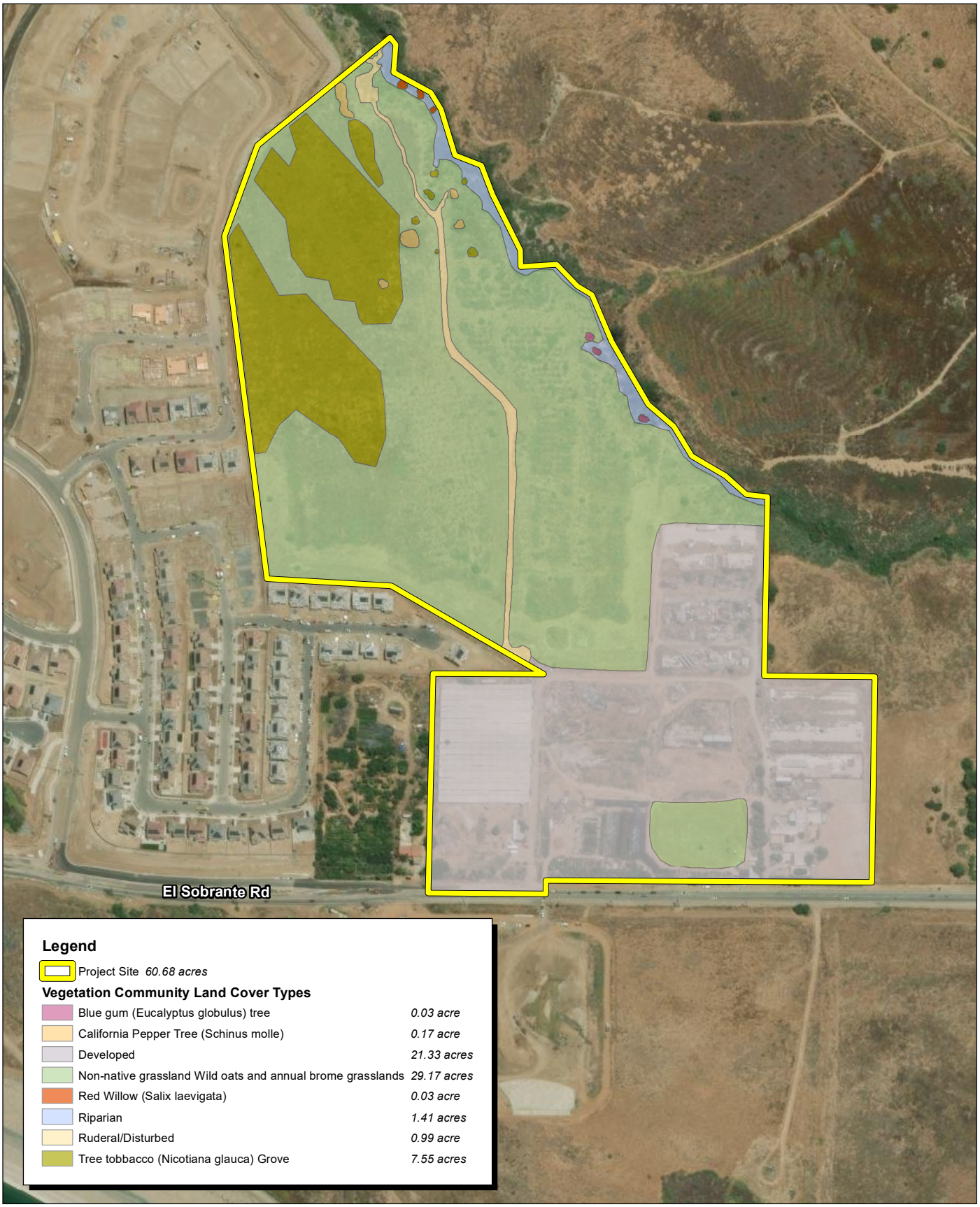
Exhibit 4
Soils Map



Source: ESRI Aerial Imagery.

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Exhibit 5
Vegetation Community Land Cover Map

Wild Oats and Annual Brome Grassland

The site contains non-native annual grassland that best matches wild oats and annual brome grassland as described in the CNPS MCV.[33] This community is found in much of the central, north, and northwestern portions of project site. Species observed within this community include red brome (*Bromus rubens*), ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum murinum*), black nightshade (*Solanum nigrum*), common fiddleneck (*Amsinckia intermedia*), white horehound (*Marrubium vulgare*), black mustard (*Brassica nigra*), and Italian thistle (*Carduus pycnocephalus*). Additionally, individual California pepper trees (*Schinus molle*) are scattered throughout the northern portion of the site in this community.

Mulefat Thickets

Drainages along the northern and eastern border of the project site support riparian vegetation best described as mulefat thickets or *Baccharis salicifolia* Shrubland Alliance as described in the CNPS MCV.[34] This community includes mulefat (*Baccharis salicifolia*), willow baccharis (*Baccharis salicina*), blue elderberry (*Sambucus nigra cerulea*), arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), and Anderson boxthorn (*Lycium andersonii*). Several emergent trees occur in scattered locations within this community, including Mexican fan palm (*Washingtonia robusta*), Canary Island date palm (*Phoenix canariensis*), and blue gum (*Eucalyptus globulus*).

Tree Tobacco Grove

A tree tobacco (*Nicotiana glauca*) grove is located within the northwestern portion of the site. This species, a native of South America, is a tree/shrub that grows to 10–20 feet tall. The tree tobacco grove, located in the western portion of the project site, is very dense, preventing the growth of other species.

Ruderal/Disturbed

Ruderal/disturbed habitat is present within northern and central portions of the project site. This land cover type is characterized by disturbed, cleared, and/or bare ground that is being invaded by native and non-native ruderal plant species. On the project site, ruderal/disturbed lands are found along a bare dirt road that traverses the site.

Developed

Developed land is characterized by areas that have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported and retains little to no soil substrate. Developed land is characterized by permanent or semi-permanent structures, pavement, or hardscape and landscaped areas that often require irrigation. Areas where no natural land is evident due to large amounts of debris or other materials having been placed upon it may also be considered developed (e.g., car recycling plant, quarry). Characteristic vegetation includes unvegetated or landscaped with a variety of ornamental (usually non-native) plants. Developed lands associated with a farming operation (GoneStraw Farms) are present throughout most of the southern portion of the project site, where there

[33] California Native Plant Society (CNPS). 2025. A Manual of California Vegetation Online. Website: https://vegetation.cnps.org/. Accessed April 30, 2025.

[34] Ibid.

are several buildings, landscaped vegetation, a nursery, and additional storage coverings. Additionally, the center of the project site contains abandoned machinery, vehicles, and storage sheds, where much of the vegetation is ruderal, heavily disturbed, and shows signs of regular moving and tilling.

Database Records for Crotch's Bumble Bee

According to the CNDDB, there is one historical record (1951) for Crotch's bumble bee within 5 miles of the project site. There are seven CNDDB records within 10 miles of the project site, and six of the recorded occurrences range from 1933 to 2020 (Exhibit 6). The most recent record is from June 2024 and is approximately 9.5 miles northwest of the project site. A review of occurrence data for Crotch's bumble bee on the iNaturalist website determined that thirteen recent observations were recorded within approximately 10 miles of the project site, including two observations approximately 9 miles northeast of the project site in March and April 2025 (Exhibit 7). One observation approximately 6 miles northwest of project site recorded in 2023; one observation approximately 9 miles northeast of project site recorded in 2021; two observations approximately 8 miles northeast of the project site, in the Riverside East area, recorded in 2020 and 2024; one observation approximately 9 miles southwest; and five observations approximately 9 miles east of the project site recorded between 2017 and 2025. A review of the Bumble Bee Watch website found one record from 2024 for a Crotch's bumble bee approximately 3 miles northeast of the project site.[35]

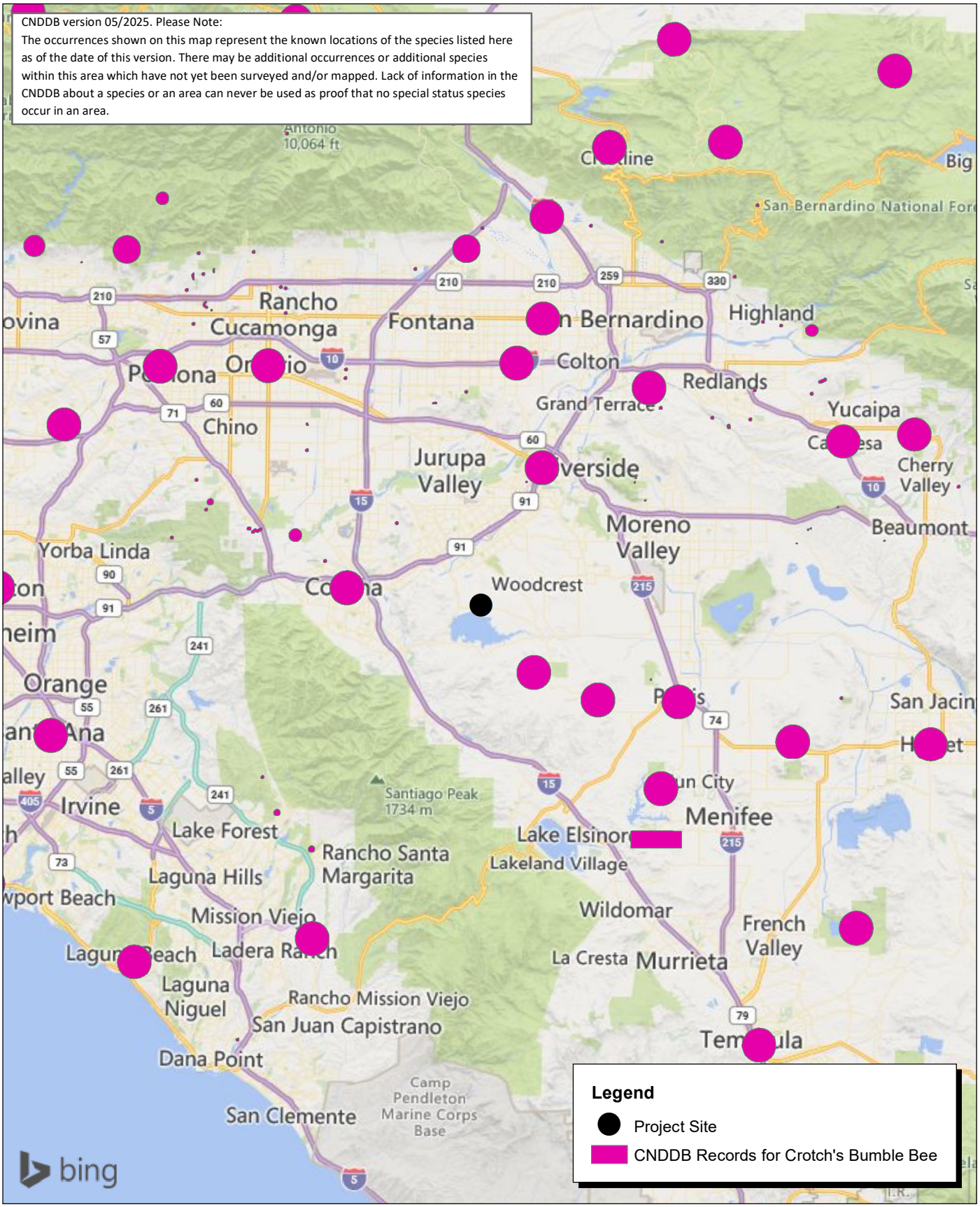
Crotch's Bumble Bee Surveys

FCS Biologists performed searches for Crotch's bumble bees on the project site on April 8, April 23, and May 9, 2025. Table 2 provides a summary of the survey dates, personnel, times, and weather conditions during the surveys.

Table 2: Dates, Surveyors, and Conditions During the Crotch's Bumble Bee Surveys Conducted on the Project Site in 2024

Date	Survey Type	Surveyor(s)	Time	Weather Conditions
04/01/2025	Crotch's bumble bee survey	Kayla Belanger, Gina Culver	12:15 p.m.–14:30 p.m.	Partly cloudy Temp: 61–63°F Wind: 14–15 mph
4/24/2025	Crotch's bumble bee survey	Kayla Belanger, Gina Culver	10:30 a.m.–1:15 p.m.	Overcast Temp: 58–67°F Wind: 5–7 mph
5/09/2025	Crotch's bumble bee survey	Kayla Belanger, Gina Culver	1:00 p.m.–2:30 p.m.	Clear, sunny Temp: 90–96°F Wind: 8 mph
°F = degrees Fahrenheit				

[35] Bumble Bee Watch. 2025. Website: https://www.bumblebeewatch.org/. Accessed May 10, 2025.



Source: Bing Maps Road Web Mapping. California Natural Diversity Database (CNDDB), May 2025.

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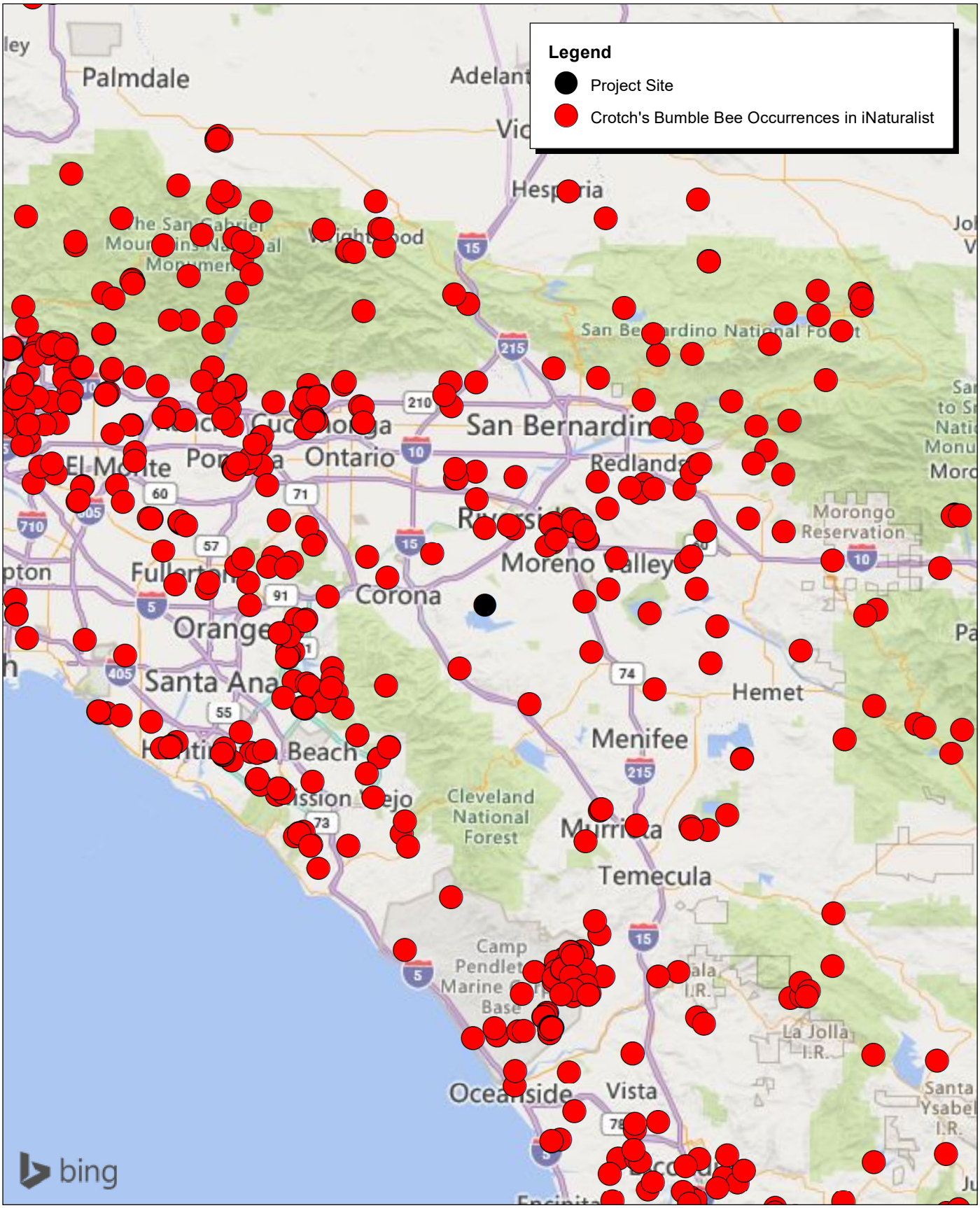
Miles

Exhibit 6
Crotch's Bumble Bee Occurrence Map (CNDDB Data)



Source: Bing Maps Road Web Mapping. iNaturalist, May 2025.

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10 5 0 10
Miles

Exhibit 7
Crotch's Bumble Bee Occurrence Map
(iNaturalist Data)

No Crotch's bumble bees were observed during the surveys conducted on the project site. Other bee species observed during the surveys included European honeybee (*Apis mellifera*). Other pollinator species observed included sunflower chimney bees (*Diadasia enavata*) and a sweat bee species (Halictidae).

2025 Habitat Assessment

Field Assessment

The field survey in 2025 included a new habitat assessment to evaluate any changes to prior 2024 Crotch's bumble bee habitat assessments. The project site remains dominated by wild oats and annual brome grassland that is characterized by dense and expansive stands of mustard and low species diversity. Some Crotch's bumble bee forage species occur on-site, including common phacelia, California buckwheat, blue elderberry, mule fat, climbing milkweed, and common fiddleneck, but individuals of these species are scattered and do not occur in high densities. Most of the grassland areas are dominated by thick stands of short podded and black mustard, both non-native, invasive species which are not favored Crotch's bumble bee forage species.

Most of the project site contains compacted soils, erosional areas, debris piles, and various dirt roads, with some scattered areas with friable soils that provide good burrowing opportunities for wildlife and potential nest sites for Crotch's bumble bees. Rodent burrows recorded on the project site could provide potential overwintering and nesting burrows. However, most of the burrows were in disturbed areas with dirt roads, compacted soils, and were not situated in areas supporting Crotch's bumble bee forage species.

Other anthropogenic threats recorded on-site include grubbed, compacted roads intersecting the site from leftover citrus and haying operations; a developed and operational farm; debris piles and trash; various dirt roads; and honeybee operations in the project vicinity.

Xerces Society Habitat Assessment Form and Guide

According to the Xerces Society for Invertebrate Conservation Rusty Patched Bumble Bee Habitat Assessment Form and Guide,[36] the project site scored 82, representing 38.1 percent of the maximum possible score of 215 (Appendix C). The guide recommends that sites managed for rusty patched bumble bees should have a minimum score of 100. With a score of 82, the project site does not appear to support habitat suitable for Crotch's bumble bee occurrence. The score in 2025 is down from a score of 91 in 2024. During the 2025 surveys, FCS Biologists detected ongoing construction adjacent to the project site, greater amounts of dumping on-site, and high densities of honeybees on-site that originated from adjacent farms. The honeybees likely outcompete bumble bees and other native pollinators on the project site. Biologists also collected additional data on agricultural operations and new construction landscaping, adjacent to the project site and concluded that pesticide, fungicide, and/or insecticide are likely used

[36] Xerces Society for Invertebrate Conservation. 2017. Rusty Patched Bumble Bee Habitat Assessment Form and Guide. Website: https://xerces.org/publications/hags/rusty-patched-bumble-bee-habitat-assessment-form-guide. Accessed May 10, 2025.

there. Due to the combination of higher anthropogenic disturbances, high densities of honeybees, and potential pesticide, fungicide, and/or insecticide use, the habitat score was depressed in 2025.

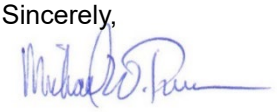
Conclusions and Recommendations

Much of the project site, approximately 35 percent, functions as a developed agricultural operation, and thus is considered unsuitable habitat for Crotch's bumble bees. Approximately 48 percent is vegetated in a wild oat and annual brome grassland community that exhibits low native species diversity and high densities of non-native annual species. Due to low forage species diversity and scattered occurrences of forage species, these areas do not support foraging habitat for Crotch's bumble bees There are burrows on-site that could potentially provide nesting and overwintering opportunities; however, most burrows are in areas impacted by anthropogenic disturbances. The site is greatly impacted by development both on-site and in the local vicinity and neighboring lands. Historical and current use of the site as an operating agricultural area and previous hay and citrus operations have resulted in current conditions observed on-site, including a diversity of non-native invasive species and generally unfavorable site conditions for Crotch's bumble bee habitat. The Xerces criteria for rusty patched bumble bees, which considers on-site conditions and its context within a wider landscape, determined that the project site likely does not contain habitat suitable for occurrences of Crotch's bumble bee.

Focused surveys for the species did not detect any bumble bee species. FCS concludes that Crotch's bumble bees are not present on the project site. It is likely that anthropogenic disturbances observed on-site, including active grubbing, trash from illegal dumping, density of invasive plants, dirt roads, presence of potential competition with honeybees from an adjacent farm, and likely use of pesticides, fungicides, and/or insecticides has degraded the habitat in a manner that makes it unfavorable for Crotch's bumble bee occupancy.

If we can be of any further assistance, or if you have any questions concerning this report, please contact me at 714.508.4100.

Sincerely,



Michael W. Tuma, PhD
Principal Biologist
FirstCarbon Solutions
967 Kendall Drive, #A-537
San Bernardino, CA 92407

Enc:
Attachment A: Plants Observed On-site
Attachment B: Site Photographs
Attachment C: Habitat Assessment Scoring

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Attachment A:

Plants Observed On-site

Table 1: Plant Species Observed on the Project Site

Family	Scientific Name	Common Name	Native/ Blooming Period	Potential Crotch's Bumble Bee Forage Species?
Monocots				
Arecaceae	*Phoenix canariensis*	Canary Island date palm	Non-native/ Oct-Apr	no
Arecaceae	*Washingtonia robusta*	Mexican fan palm	Non-native/ Apr-Jun	no
Poaceae	*Avena fatua*	wild oat	Non-native Invasive/ Apr-May	no
Poaceae	*Bromus diandrus*	ripgut brome	Non-native Invasive/ Apr-Jun	no
Poaceae	*Bromus rubens*	red brome	Non-native/Feb-Jun	no
Poaceae	*Festuca myuros*	rattail sixweeks grass	Non-native Invasive/ Feb-May	no
Poaceae	*Hordeum murinum*	farmer's foxtail	Non-native/ Apr-May	no
Poaceae	*Melica imperfecta*	smallflower melicgrass	Native/ Feb-Mar	no
Poaceae	*Schismus barbatus*	common mediterranean grass	Non-native/ Mar-Apr	no
Typhaceae	*Typha latifolia*	broadleaf cattail	Native/ May-Jun	no
Dicots				
Anacardiaceae	*Schinus molle*	Peruvian pepper tree	Non-native/ Mar-Jun	no
Apiaceae	*Bowlesia incana*	hoary bowlesia	Native/ Mar-Apr	no
Apocynaceae	*Funastrum cynanchoides* var. *hartwegii*	climbing milkweed	Native/ Apr-Jul	yes*
Asteraceae	*Baccharis salicifolia*	mule fat	Native/ Jan-Dec	yes
Asteraceae	*Baccharis salicina*	willow baccharis	Native/ Aug-Dec	yes

Family	Scientific Name	Common Name	Native/ Blooming Period	Potential Crotch's Bumble Bee Forage Species?
Asteraceae	*Centaurea melitensis*	Maltese star thistle	Non-native Invasive/ Apr-Aug	no
Asteraceae	*Encelia californica*	California brittlebush	Native/ Feb-Jun	yes
Asteraceae	*Encelia farinosa*	brittlebush	Native/ Jan-May	yes
Asteraceae	*Ericameria pinifolia*	pinebush	Native/ Apr-Jul	yes
Asteraceae	*Heterotheca grandiflora*	telegraph weed	Native/ Jan-Dec	yes
Asteraceae	*Lactuca serriola*	prickly lettuce	Non-native/ May-Sep	no
Asteraceae	*Logfia filaginoides*	California cottonrose	Native/ Mar-Jun	no
Asteraceae	*Oncosiphon piluliferum*	stinknet	Non-native Invasive/ Mar-Jul	no
Asteraceae	*Pseudognaphalium californicum*	ladies' tobacco	Native/ Jan-Jul	yes
Asteraceae	*Sonchus asper*	spiny sowthistle	Non-native/ Feb-Oct	no
Boraginaceae	*Amsinckia intermedia*	common fiddleneck	Native/ Feb-Jun	yes*
Boraginaceae	*Pectocarya penicillata*	winged comb seed	Native/ Mar-Jun	no
Brassicaceae	*Brassica nigra*	black mustard	Non-native Invasive/ Apr-Jul	no
Brassicaceae	*Cardamine hirsuta*	hairy bitter cress	Non-native/ Feb-Jul	no
Brassicaceae	*Hirschfeldia incana*	shortpod mustard	Non-native Invasive/ Jan-Dec	no
Brassicaceae	*Lepidium latifolium*	broadleaved pepperweed	Non-native Invasive/ May-Jul	no
Brassicaceae	*Nasturtium officinale*	watercress	Native/ May - Sep	no
Brassicaceae	*Sisymbrium irio*	London rocket	Non-native Invasive/ Jan-Apr	no
Cactaceae	*Cylindropuntia californica parkeri*	valley cholla	Native/Apr- Jul	no

Family	Scientific Name	Common Name	Native/ Blooming Period	Potential Crotch's Bumble Bee Forage Species?
Cactaceae	*Cylindropuntia californica*	California cholla	Native/ Apr-Jul	no
Chenopodiaceae	*Atriplex canescens*	fourwing saltbush	Native/ May-Jun	no
Chenopodiaceae	*Chenopodium californicum*	California goosefoot	Native/ Mar-Jun	no
Chenopodiaceae	*Chenopodium murale*	nettle leaf goosefoot	Non-native/ Jan-Dec	no
Chenopodiaceae	*Salsola tragus*	Russian thistle	Non-native Invasive/ Jul-Oct	no
Cucurbitaceae	*Marah macrocarpa*	chilicothe	Native/ Jan-Apr	yes
Cupressaceae	*Juniperus californica*	California Juniper	Native/ N/A	no
Euphorbiaceae	*Euphorbia albomarginata*	rattlesnake sandmat	Native/ Apr-Nov	no
Euphorbiaceae	*Ricinus communis*	castor bean	Non-native Invasive/ Jan-Dec	no
Geraniaceae	*Erodium cicutarium*	redstem filaree	Non-native Invasive/ Feb-Jun	no
Geraniaceae	*Erodium malacoides*	Mediterranean stork's bill	Non-native/ Feb-Jul	no
Hydrophyllaceae	*Eucrypta chrysanthemifolia* var. *chrysanthemifolia*	common eucrypta	Native/ Mar-Jun	no
Hydrophyllaceae	*Phacelia distans*	common phacelia	Native/ Mar-Jun	yes*
Lamiaceae	*Marrubium vulgare*	white horehound	Non-native/ May-Aug	yes
Meliaceae	*Melia azedarach*	China berry tree	Non-native/ Mar-Jul	no
Moraceae	*Broussonetia papyrifera*	paper mulberry	Non-native/ (mid-late spring)	no
Moraceae	*Ficus carica*	common fig	Non-native Invasive/ Mar-Apr	no
Myrtaceae	*Eucalyptus globulus*	blue gum	Non-native Invasive/Oct-Mar	no

Family	Scientific Name	Common Name	Native/ Blooming Period	Potential Crotch's Bumble Bee Forage Species?
Nyctaginaceae	*Mirabilis laevis var. crassifolia*	California four o'clock	Native/ Dec-Jun	no
Polygonaceae	*Eriogonum fasciculatum*	California buckwheat	Native/ Apr-Sep	yes*
Polygonaceae	*Rumex acetosella*	common sheep sorrel	Non-native Invasive/ Mar-Nov	no
Salicaceae	*Salix gooddingii*	Goodding's black willow	Native/ Feb-Mar	no
Salicaceae	*Salix lasiolepis*	arroyo willow	Native/ Feb-May	no
Solanaceae	*Datura wrightii*	Jimsonweed	Non-native/ Jun-Aug	no
Solanaceae	*Lycium andersonii*	Anderson's thornbush	Native/ Mar-May	no
Solanaceae	*Nicotiana glauca*	tree tobacco	Non-native Invasive/ Mar-Sep	no
Solanaceae	*Solanum douglasii*	Douglas' nightshade	Native/ Jan-Dec	no
Solanaceae	*Solanum nigrum*	black nightshade	Non-native/ Mar-Oct	no
Urticaceae	*Urtica dioica*	stinging nettle	Native/ May-Sep	no
Urticaceae	*Urtica urens*	dwarf nettle	Non-native/ Jan- Apr	no
Viburnaceae	*Sambucus nigra cerulea*	blue elderberry	Native/ Mar-May	yes

*known preferred forage species

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Attachment B:

Site Photographs



Photograph 1: View of an elderberry tree grove in the northwestern portion of the project site, facing east.



Photograph 2: View of wild oat and annual brome grassland in the western portion of the project site, facing north.



Photograph 3: European honeybee visiting brittlebush flowers on the project site.



Photograph 4: View of European honeybees visiting white horehound blooms.



Photograph 5: View of brittlebush in bloom in the wild oat and annual brome grassland in the eastern portion of the project site.



Photograph 6: Brush piles of cut trees and shrubs present along the central portion of the project site.

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Attachment C:

Habitat Assessment Scoring

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Habitat Assessment Scoring for Crotch's Bumble Bee

SCORING CRITERIA

Section 1: Regional and Landscape Features

1a. Percentage of the grid cell that is natural habitat: 20-30% (score=7)

1b. Dominant vegetation/land cover within ½ mile of assessment area: Mix of native, naturalized, and weedy/invasive species (score=3)

Section 2: Site Features

2a. Percentage of site that is in natural or semi-natural habitat: 25-49% (score=5)

2b. Additional site features that are present: 1 point for every 20% of area that is grass (2) (total score=2)

Section 3: Foraging Habitat

3a. Percentage of vegetative cover that is comprised of forbs, flowering shrubs, or pollinator friendly trees on site: 20-30% cover (score=5)

3b. Number of species of forbs, flowering shrubs, or pollinator-friendly trees on site that bloom in spring and support bees: 10+ species (score=10)

3c. Number of species of forbs, flowering shrubs, or pollinator-friendly trees on site that bloom in summer and support bees: 10-17 species (score=7)

3d. Number of species of forbs, flowering shrubs, or pollinator-friendly trees on site that bloom in fall and support bees: 1–4 species (score=5)

3e. Crotch's bumble bee superfoods (species most commonly used by the species): 1–4 species (score=2)

3f. Crotch's bumble bee forage species that are known to help build bumble bee immune systems: Score one point, up to 3 for each species present (score=1).

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Section 4: Nesting and Overwintering Habitat

4a. Nesting and overwintering habitat: <5% bunch grasses (score=1); ~20% rodent activity (score=3); ~10% unmowed, ungrazed (score=1); ~20% woody, rocky cover (score=3); 1 leaf litter (score=1)

Section 5: Management and Pesticide Practices

5a. Management and pesticides practices: no herbicide use (score=5); no pesticides use (score=0); no fungicide use (score=5); no insecticide use (score=8); buffers from insecticide applications (score=2); spray control (score=0). Max score=26

5b. Land management techniques: mowing (N; score=0); grazing (N; score=0); burning (N; score=0); honey bees (N; score=0)

SCORING SUMMARY

Section 1	Regional and Landscape Features (max score 20): **10**
Section 2:	Site Features (max score 35): **7**
Section 3:	Foraging Habitat (max score 50): **30**
Section 4:	Nesting and Overwintering Habitat (max score 30): **9**
Section 5a:	Pesticide Practices (max score 40): **26**
Section 5b:	Management Practices (max score 40): **0**
Total:	**82 of 215 (38.1%)**
Source: Based on Xerces Invertebrate Conservation Society. 2017. Rusty Patched Bumble Bee Habitat Assessment Form and Guide. Website: https://xerces.org/publications/hags/rusty-patched-bumble-beehabitat-assessment-form-guide. Accessed May 14, 2025.	

Appendix C:
Jurisdictional Delineation Report (FirstCarbon Solutions)

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

Prepared for:
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Mission Viejo, CA 92691

Contact: Robert Paradise

Prepared by:
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Walnut Creek, CA 94597
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Contact: Jason Brandman, Project Director
Martin Raskin, Senior Biologist

Date: June 20, 2024

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SECTION 1: INTRODUCTION

At the request of Pulte Home Company, LLC, FirstCarbon Solutions (FCS) completed a delineation of aquatic resources and proposes a jurisdictional determination for the approximate 61-acre Highland Grove II Development Project Site, referred to as the Study Area, 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 61-acre Study Area is located in unincorporated Riverside County, east of the census-designated El Sobrante and just north of Lake Mathews. The Study Area is centered around 33.8616414° latitude and -117.4308165° longitude. The location of the Study Area within the Riverside Region is shown on Exhibit 1, and the Study Area boundaries are shown on Exhibit 2 in a recent high-resolution aerial image.

2.2 - Vegetation and Land Cover Types

Vegetation of the Study Area is dominantly non-native annual grassland with coastal sage scrub in the tributaries and riparian woodland found within the drainages. The coastal sage scrub community in the Study Area is dominated by California buckwheat (*Eriogonum fasciculatum*), brittlebush (*Encelia farinosa*), California brittlebush (*Encelia californica*), and fourwing saltbush (*Atriplex canescens*), with California cholla (*Cylindropuntia californica*) and castor bean (*Ricinus communis*) occasionally present.

Riparian woodland habitat is present within the Study Area, which is dominated by arroyo willow (*Salix lasiolepis*), Mexican fan palm (*Washingtonia robusta*), Canary Island date palm (*Phoenix canariensis*), mule fat (*Baccharis salicifolia*), blue elderberry (*Sambucus nigra cerulea*), willow baccharis (*Baccharis salicina*), and Anderson thornbush (*Lycium andersonii*). Common forb species present include broadleaf cattail (*Typha latifolia*), stinging nettle (*Urtica dioica*), dwarf nettle (*Urtica urens*), hoary bowlesia (*Bowlesia incana*), common eucrypta (*Eucrypta chrysanthemifolia*), chilicothe (*Marah macrocarpa*), and ladies' tobacco (*Pseudognaphalium californicum*). Common species in the non-native grasslands include black nightshade (*Solanum nigrum*), common fiddleneck (*Amsinckia intermedia*), white horehound (*Marrubium vulgare*), black mustard (*Brassica nigra*), Italian thistle (*Carduus pycnocephalus*), red brome (*Bromus rubens*), ripgut brome (*Bromus diandrus*), and foxtail barley (*Hordeum murinum*). There was a stand of tree tobacco (*Nicotiana glauca*) on the bank along the southeast edge of the Study Area.

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

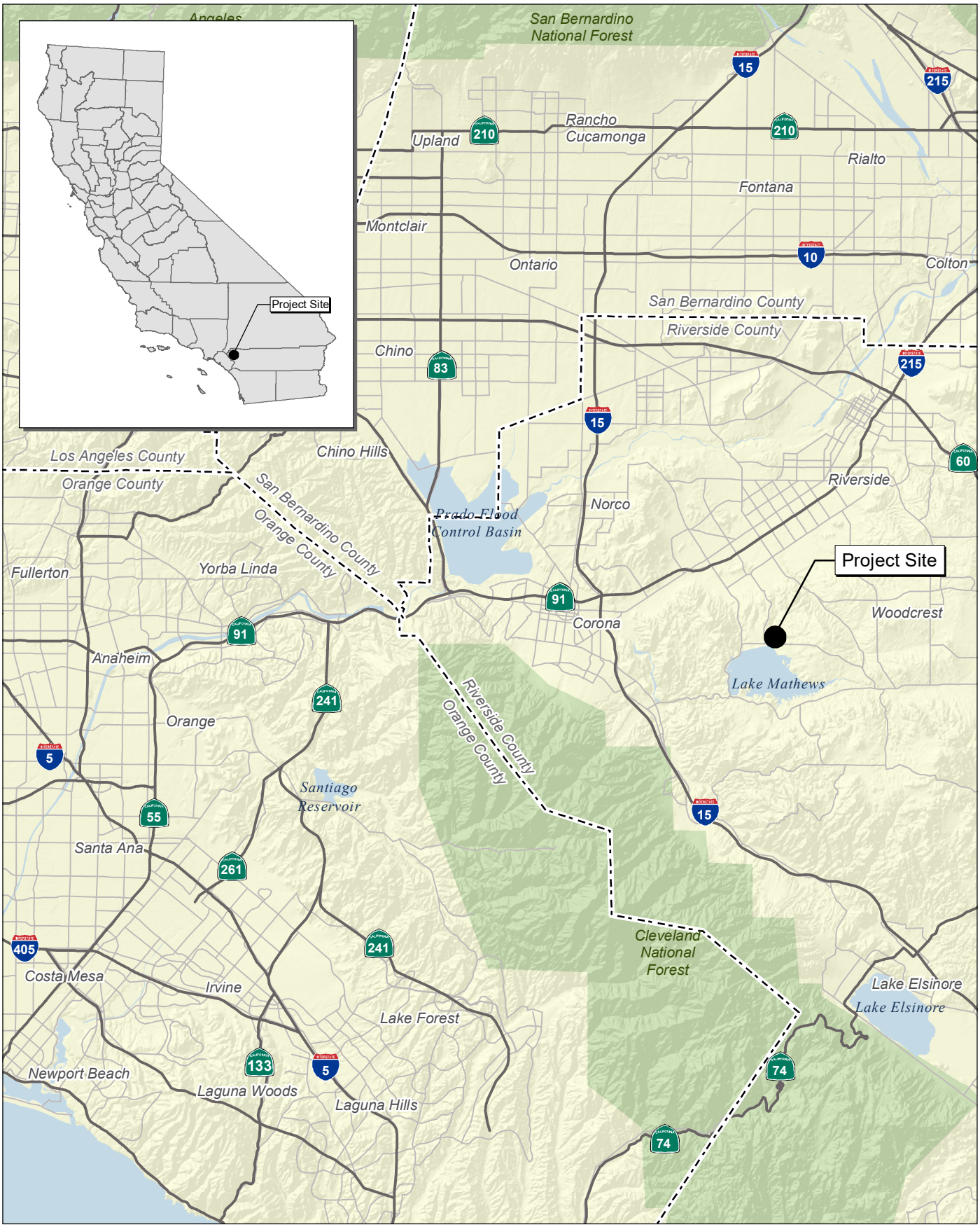
2.3 - Topography and Hydrogeomorphology

Elevation within the Study Area ranges from about 385 feet above mean sea level (MSL) on the northern boundary to 410 feet MSL along the southern boundary. Elevation on the eastern and western boundaries is 395 feet MSL. Intermittent drainage channels and ephemeral tributaries run along the northern edge of the Study Area boundary before moving off-site. Flows leaving the Study Area travel north for some distance and then discharge through two 9-foot-wide culverts under Sweet Avenue and into the Citrus Heights neighborhood. These flows eventually discharge into the Santa Ana River, which travels southwest through Orange County before ultimately discharging into the Pacific Ocean.

2.4 - Soils

The soils of 79 percent of the Study Area are mapped by Natural Resources Conservation Service (NRCS) as Cajalco soil series. Approximately 18 percent of the Study Area was mapped as Las Posas loam. Other small portions of the Study Area consist of Buren loam and 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.



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. adkan Engineers, March 2024.

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Exhibit 2
Local Vicinity Map

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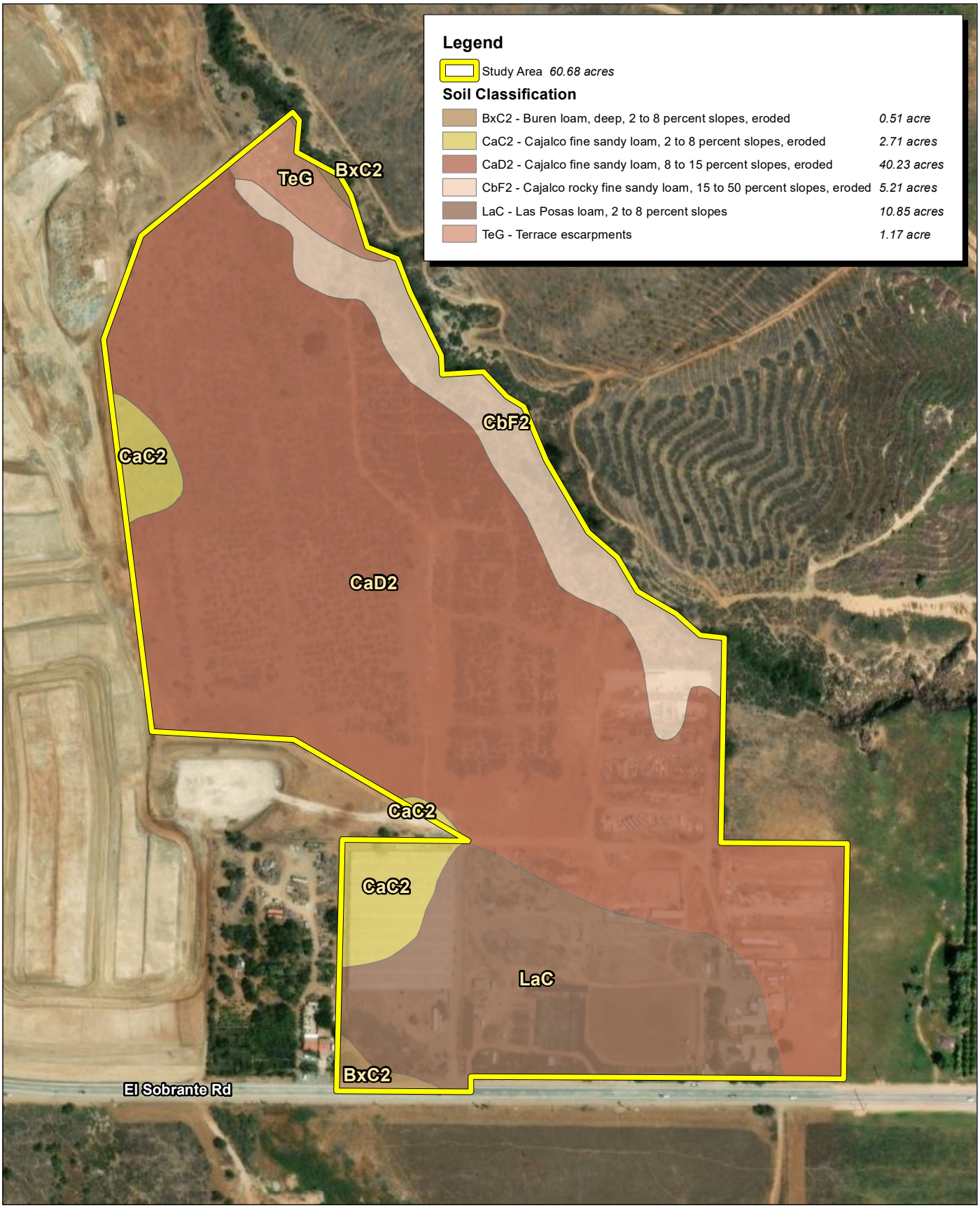

Source: ESRI Aerial Imagery. adkan Engineers, March 2024. Soils Data Mart, Western Riverside County.

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350 175 0 350
Feet

Exhibit 3
Soils Map

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SECTION 3: REGULATORY SETTING

3.1 - Federal

3.1.1 - Clean Water Act

The 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.

As of the preparation of the original version of this report on August 11, 2023, the final "Revised Definition of Waters of the United States" rule was published in the Federal Register on January 18, 2023, and took effect on March 20, 2023. However, the final rule is not currently operative in certain states and for certain parties due to litigation. Moreover, the United States Environmental Protection Agency (EPA) and USACE (hereafter known as 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* (*Sackett*). In light of this decision, the agencies will interpret the phrase "waters of the United States" consistent with the Supreme Court's decision in *Sackett*.

On August 29, 2023, the agencies issued a final ruling that amends the "Revised Definition of 'waters of the United States'" to conform key portions of the regulatory text to the U.S. Supreme Court's May 25, 2023 decision, defining "waters of the United States" as follows:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
2. The interstate waters or interstate waters.
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:
    i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    iii. Which are used or could be used for industrial purposes by industries in interstate commerce.
4. All impoundments of waters otherwise defined as waters of the United States under this definition.
5. Tributaries of waters identified in paragraphs (a) (1) through (4) of this section.
6. The territorial seas; and
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.

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

   Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the Clean Water Act (other than cooling ponds as defined in 40 Code of Federal Regulations 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

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. Additionally, 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, applicants seeking to fill waters of the United States are required to obtain a CWA Section 401 Water Quality Certification from the 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]

[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.

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.

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SECTION 4: METHODS

FCS Senior Biologist Robert Carroll, assisted by FCS Botanist Juliet Simpson, surveyed the Study Area on April 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, where applicable, 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, 7.5 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 Wetland 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 (acre)
Open Drainage Channel	1-1	1,923	10	19,230	0.44
Open Drainage Channel	1-2	116	1	116	0.002
Open Drainage Channel	1-3	89	1	89	0.001
Open Drainage Channel	2-1	303	1	303	0.007
Sum Open Drainage Channels	**–**	**2,431**	**n/a**	**19,738**	**0.45**
Sum All Potentially Jurisdictional Waters	**–**	**2,431**	**n/a**	**17,708**	**0.45**

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.

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Source: ESRI Aerial Imagery. adkan Engineers, March 2024.

FIRSTCARBON SOLUTIONS™

200 100 0 200
Feet

Exhibit 4
Aquatic Resources Delineation Map Overview

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Intermittent Drainage Segment 1-1

Intermittent Drainage Segment 1-1 is a naturally occurring first order drainage that supports riparian woodland habitat. This segment conveys flows south to north along the entire northern boundary of the Study Area before flowing north outside the Study Area. Other hydrological input includes two on-site ephemeral drainages and what appeared to be remnant culverts that discharge into this drainage. This segment appears to drain the northwestern half of the Study Area to the north. The channel is characterized by the presence of deeply incised banks. The average OHWM within this segment was approximately 10 feet wide and is characterized by scour and sediment deposits. At the time of the survey, flowing or standing water was present in some locations along this drainage but was 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 (*Nasturtium officinale*), and stinging nettle were found growing within the OHWM at various locations along this drainage segment, with common eucrypta and hoary bowlesia often present along the OHWM. The canopy layer along this drainage segment was composed of scattered arroyo willow, Mexican fan palm, Canary Island date palm, and blue elderberry, with mule fat, willow baccharis, and Anderson thornbush common throughout the drainage. Segment 1-1 provides intermittent flows outside of the Study Area to the north.

Ephemeral Drainage Segment 1-2

Ephemeral Drainage Segment 1-2 is a remnant culvert-fed second-order ephemeral tributary that runs southwest to northeast on the southwestern side of Intermittent Drainage Segment 1-1. Segment 1-2 is the northern-most tributary to Intermittent Drainage Segment 1-1. This drainage is characterized by the presence of narrow banks. There was vegetation obscuring the OHWM; however, it appeared to be a maximum of 12 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, tree tobacco, fourwing saltbush, pine bush (*Ericameria pinifolia*), California buckwheat, white horehound, chilicothe, dwarf nettle, Maltese star thistle (*Centaurea melitensis*), black mustard, and red brome. Segment 1-2 helps drain a small portion of the northern Study Area into Intermittent Drainage Segment 1-1.

Ephemeral Drainage Segment 1-3

Ephemeral Drainage Segment 1-3 is a remnant culvert-fed second-order ephemeral tributary that runs southwest to northeast on the southwestern side of Intermittent Drainage Segment 1-1. Segment 1-3 is the second northern-most tributary to Intermittent Drainage Segment 1-1, approximately 250 feet south/upstream from Ephemeral Drainage Segment 1-2. 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 12 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, arroyo willow, pine bush, California brittlebush, California cholla, white horehound, Italian thistle, dwarf nettle, miner's lettuce (*Claytonia perfoliata*), common eucrypta, common fiddleneck, black mustard, and red brome. Segment 1-3 helps drain a small portion of the northern Study Area into Intermittent Drainage Segment 1-1.

Ephemeral Drainage Segment 2-1

Ephemeral Drainage Segment 2-1 is an ephemeral erosive gulley/drainage that runs south to north where it meanders in and out of the southeastern corner of the Study Area. The inlet of what appeared to be a remnant culvert was observed approximately 100 feet south of this segment; however, the outlet of this culvert was not observed in the field. As such, it is unclear whether this culvert provides hydrological input to Segment 2-1. This drainage is characterized by the presence of shallow, eroded banks. Grass and small forbs were growing in and around the OHWM, which appeared to be a maximum of 12 inches wide. At the time of the survey, no water or soil moisture was present, indicating an ephemeral hydrological regime. Species found in this drainage segment include pepper tree (*Schinus molle*), blue elderberry, arroyo willow, tree tobacco, California brittlebush, white horehound, stinging nettle, dwarf nettle, common fiddleneck, black nightshade, Italian thistle, prickly lettuce (*Lactuca serriola*), black mustard, red brome, ripgut brome, and foxtail barley. Segment 1-3 appears to drain a small portion of the southeastern area of the Study Area to the north.

5.2.2 - Riparian Vegetation

In addition to the streambeds outlined above, the Study Area contains approximately 1.47 acres of riparian vegetation associated with Drainage Segment 1-1 (Exhibit 4).

5.3 - United States Fish and Wildlife Service National Wetland Inventory

The USFWS NWI did not depict any wetlands in the Study Area.[12] 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.

There was no evidence of hydric soils, hydrology indicators, or hydrophytic vegetation that would indicate a wetland within the Study Area; therefore, a Wetland Determination Data Form was not completed. The absence of wetland indicators was not caused by abnormally dry conditions because the delineation was conducted following a period of wetter than normal aggregate rainfall, 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 20, 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

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

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.

Per the guidance outlined above, one drainage segment (Segment 1-1) contains a continuous surface connection with a navigable water of the United States given its intermittent hydrological status. As noted in Section 2.3 and 5.2.1 above, these intermittent segments are likely to connect to Santa Ana River outside the northern Study Area boundary. The Santa Ana River travels southwest through Orange County before emptying into the Pacific Ocean, a traditionally navigable water. For these reasons, Segment 1-1 would likely 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.

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

The remaining drainage segments delineated within the Study Area would likely be exempt from USACE jurisdiction as these drainages are ephemeral streambeds that would not be subject to USACE jurisdiction pursuant to the *Sackett* decision levied by the U.S. Supreme Court. 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 four open and vegetated ephemeral and intermittent channels, for a total length of 2,431 feet, covering an aggregate area of approximately 19,738 square feet (0.45 acre), as shown on Exhibit 4.

No additional aquatic features, including wetlands, were observed within the Study Area.

The Study Area includes 19,230 square feet (0.44 acre) and 1,923 linear feet of potential waters of the United States, regulated by the USACE under Section 404 of the Clean Water Act; 19,738 square feet (0.45 acre) and 2,431 linear feet of potential waters of the State regulated by the RWQCB under Section 13260 of the California Water Code; and 83,635 square feet (1.92 acres) of aquatic features and associated riparian habitat regulated pursuant to CDFW's 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: Southeastern edge of Study Area, facing south. Northeast side of Drainage Segment 1-1.



Photograph 2: Overgrown vegetation surrounding OHWM in southern portion of Drainage Segment 1-1.



Photograph 3: Overgrown riparian woodland in northern stretches of Drainage Segment 1-1.



Photograph 4: Flowing water present in OHWM in northern portion of Drainage Segment 1-1.



Photograph 5: Tributary Segment 1-2 facing northeast, showing vegetation growing through the OHWM.



Photograph 6: Tributary Segment 1-3 facing northeast, showing vegetation growing through the OHWM.



Photograph 7: Drainage Segment 2-1 facing south, showing vegetation growing through the OHWM.



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

Appendix B:
WETS Analysis

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WETS Analysis for Highland Grove II 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:
Ordinary High Water Mark Datasheets

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Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Highland Grove II | **Date: 4/26/2024** | **Time: 2:00pm**
Project Number: 0760.0052 | **Town: Riverside** | **State: CA**
Stream: 1-1 | **Photo begin file#:** | **Photo end file#:**
Investigator(s): Robert Carroll, Juliet Simpson

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

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates: 33.864242°N, -117.431169°W

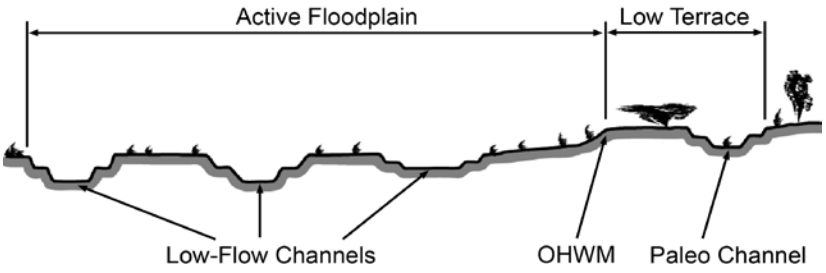
Potential anthropogenic influences on the channel system: Remnant culverts, development on west side of Drainage Segment 1-1, active culverts offsite downstream

Brief site description: Non-native grassland and sage scrub with riparian woodland in 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

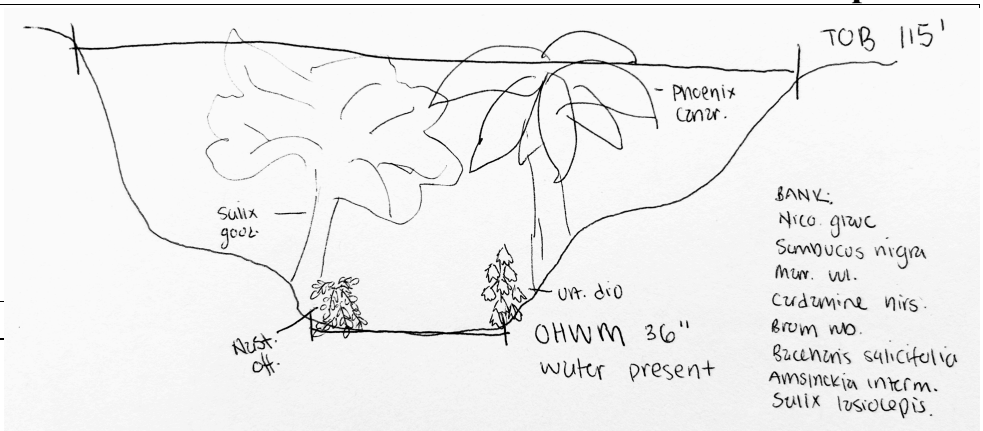


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

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
   - ☒ GPS
   - ☐ Digitized on computer
   - ☐ Other:

Project ID: 0760.0052 Cross section ID: OHWM #1 Date: 4/26/2024 Time: 2:00pm

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:

Project ID: **Cross section ID:** **Date:** **Time:**

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

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

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- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

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July 2010	Technical Note	

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Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States

5a. CONTRACT NUMBER

5b. GRANT NUMBER

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6. AUTHOR(S)

Katherine E. Curtis and Robert W. Lichvar

5d. PROJECT NUMBER

5e. TASK NUMBER

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Cold Regions Research and Engineering Laboratory
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Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The Ordinary High Water Mark (OHWM) is a method used to identify the lateral limits of non-wetland waters. Lichvar and McColley (2008) developed an OHWM delineation manual for ephemeral and intermittent streams in the Arid West. Their approach identified key hydrologic, geomorphic, and vegetation indicators useful in OHWM delineation. This technical note provides an updated datasheet to the manual. The datasheet has been simplified but still includes the overall field signatures and preliminary methods used to determine the OHWM. The datasheet now focuses on identifying the characteristics of each individual hydrogeomorphic floodplain unit and uses the differences between the floodplain units to identify the OHWM.

15. SUBJECT TERMS
Arid West, Floodplains, Ephemeral streams, Intermittent streams, Ordinary High Water Mark

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. TELEPHONE NUMBER** *(include area code)*
U	U	U	U	20	

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Highland Grove II | **Date: 4/26/2024** | **Time: 2:15pm**
Project Number: 0760.0052 | **Town: Riverside** | **State: CA**
Stream: 1-1 | **Photo begin file#:** | **Photo end file#:**
Investigator(s): Robert Carroll, Juliet Simpson

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

Y ☐ / N ☒ Is the site significantly disturbed?

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Projection: **Datum:**
Coordinates: 33.861468°N, -117.428313°W

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Checklist of resources (if available):

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  Dates:
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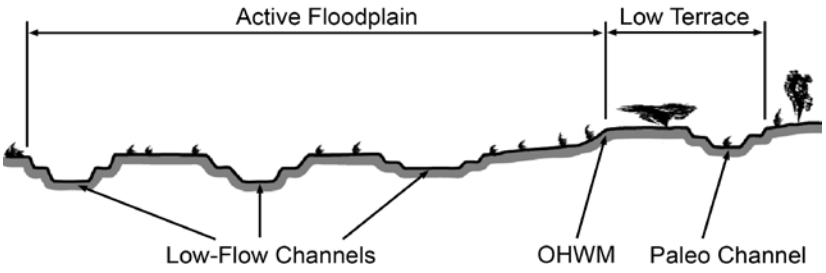
- ☐ Geologic maps
- ☐ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ 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:

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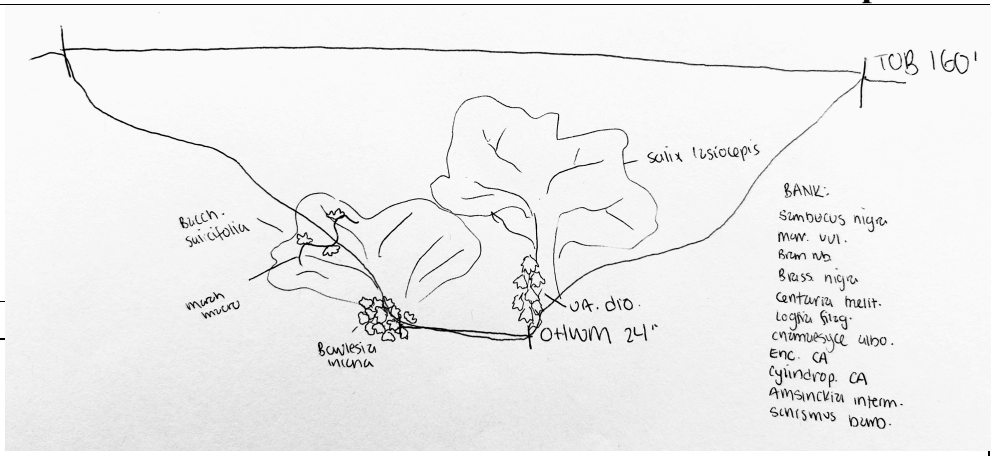
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☒ GPS
   - ☐ Digitized on computer
   - ☐ Other:

Project ID: 0760.0052 Cross section ID: OHWM #2 Date: 4/26/2024 Time: 2:15pm

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:

Project ID: **Cross section ID:** **Date:** **Time:**

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:

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:

REPORT DOCUMENTATION PAGE

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1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED** *(From - To)*
July 2010	Technical Note	

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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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5c. PROGRAM ELEMENT NUMBER

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Katherine E. Curtis and Robert W. Lichvar

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14. ABSTRACT

The Ordinary High Water Mark (OHWM) is a method used to identify the lateral limits of non-wetland waters. Lichvar and McColley (2008) developed an OHWM delineation manual for ephemeral and intermittent streams in the Arid West. Their approach identified key hydrologic, geomorphic, and vegetation indicators useful in OHWM delineation. This technical note provides an updated datasheet to the manual. The datasheet has been simplified but still includes the overall field signatures and preliminary methods used to determine the OHWM. The datasheet now focuses on identifying the characteristics of each individual hydrogeomorphic floodplain unit and uses the differences between the floodplain units to identify the OHWM.

15. SUBJECT TERMS
Arid West, Floodplains, Ephemeral streams, Intermittent streams, Ordinary High Water Mark

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. TELEPHONE NUMBER** *(include area code)*
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Appendix D:
Project Site Photographs

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Photograph 1: Southeastern boundary of project site.



Photograph 2: California ground squirrel burrow with no sign of burrowing owl detected in the western portion of project site.



Photograph 3: Riparian habitat in northern portion of Drainage Segment 1-1.



Photograph 4: Image of cholla (*Cylindropuntia sp.*) plant observed in the eastern portion of the site.



Photograph 5: Western portion of the project site, facing east. Common fiddleneck, mustard, and tree tobacco present.



Photograph 6: Central portion of the project site, facing north. Existing grubbed/graded dirt pathway bisects the project site.



Photograph 7: Southern portion of the project site, facing west. Thickets of common fiddleneck and mustard present.



Photograph 8: Western boundary of the project site, facing north. Existing construction underway for neighboring property.



Photograph 9: Southeastern portion of the project site, facing north. Thickets of common fiddleneck and mustard present.



Photograph 10: Central portion of the project site, facing north. Existing dirt pathway narrows as it approaches Drainage Segment 1-1.

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Appendix E:
Special-status Species Tables

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Table 1: Special-status Plant Species Evaluated

Scientific Name Common Name	Status			Habitat Description[4]	Potential to Occur and Rationale[5]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]	CNPS[3]			
Bryophytes						
Tortula californica California screw moss	—	—	1B.2	Moss found in sandy soils in chenopod scrub and valley and foothill grassland. Elevation: 10 –1,460 m Bloom period: NA	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Gymnosperms						
Hesperocyparis forbesii Tecate cypress	—	—	1B.1	Perennial, evergreen tree found in clay and gabbroic (sometimes) soils in closed-cone coniferous forest and chaparral communities. Elevation: 80–1,500 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Monocots						
Allium marvinii Yucaipa onion	MSHCP	—	1B.2	Perennial, bulbiferous herb found in clay soils and openings in chaparral. Bloom period: April–May Elevation: 760–1,065 m	**None:** The project site is outside of the known elevation range of this species and does not contain suitable habitat to support this species. One historical occurrence was recorded in 1966 between 5 and 10 miles of the project site, however, has since been extirpated.	No
Allium munzii Munz's onion	FE MSHCP	CT	1B.1	Perennial, bulbiferous herb found in clay and mesic soils in chaparral, cismontane woodland, coastal scrub, pinyon and juniper woodland, and valley and foothill grassland. Bloom period: March–May Elevation: 297–1,070 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There is one historic occurrence recorded within 5 miles of the project site from 1998. There are 10 occurrences within 5 and 10 miles of the project site, as recent as 2017.	No
Brodiaea filifolia thread-leaved brodiaea	FT MSHCP	CE	1B.1	Perennial, bulbiferous herb found in clay soils in chaparral (openings), cismontane	**None:** The project site does not contain suitable habitat to support occurrence of this	No

Scientific Name Common Name	Status			Habitat Description[4]	Potential to Occur and Rationale[5]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]	CNPS[3]			
				woodland, coastal scrub, playas, valley and foothill grassland, and vernal pools. Bloom period: March–June Elevation: 25–1,120 m	species. There are no previously recorded occurrences of this species within 10 miles of the project site.	
Calochortus plummerae Plummer's mariposa-lily	MSHCP	—	4.2	Perennial, bulbiferous herb found in granitic and rocky soils in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley and foothill grassland communities. Bloom period: May–July Elevation: 100– 1,700 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Calochortus weedii var. *intermedius* intermediate mariposa-lily	MSHCP	—	1B.2	Perennial, bulbiferous herb that occurs on calcareous soils on rocky sites in coastal scrub, chaparral, and valley and foothill grassland habitats. Bloom period: May–July Elevation: 105–855 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. No occurrences of this species have been recorded within 5 miles of the project site. There are nine occurrences within 5 and 10 miles of the site, as recent as 2020.	No
Hordeum intercedens vernal barley	MSHCP	—	3.2	Annual herb found in coastal dunes, coastal scrub, valley and foothill grassland in depressions and saline flats, and vernal pools. Bloom period: March–June Elevation: 5–1,000 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Lilium humboldtii ssp. *ocellatum* ocellated Humboldt lily	MSHCP	—	4.2	Perennial, bulbiferous herb found in openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland communities. Bloom period: March–July Elevation: 30–1,800 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Nolina cismontana chaparral nolina	—	—	1B.2	Perennial evergreen shrub found in chaparral and coastal scrub habitat.	**None:** The project site does not contain suitable habitat to support occurrence of this	No

Scientific Name Common Name	Status			Habitat Description[4]	Potential to Occur and Rationale[5]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]	CNPS[3]			
				Sometimes grows in gabboric or sandstone soils. Bloom Period: (March)May-July Elevation: 140-1275 m	species. There are no previously recorded occurrences of this species within 10 miles of the project site.	
Orcuttia californica California Orcutt grass	MSHCP	—	1B.1	Annual herb found in vernal pools. Bloom period: April–August Elevation: 15–660 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Dicots						
Abronia villosa var. *aurita* Chaparral (hairy) sand-verbena	—	—	1B.1	Annual herb found in sandy soils in chaparral, coastal scrub, and desert dune communities. Bloom period: March–September Elevation: 75–1,600 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no occurrences recorded within 5 miles of the project site and four recent and one historical records between 5 and 10 miles from the project site.	No
Ambrosia pumila San Diego ambrosia	MSHCP	—	1B.1	Perennial, rhizomatous herb found in chaparral, coastal scrub, valley and foothill grassland, and vernal pool communities. Bloom period: April–October Elevation: 20–415 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no occurrences recorded within 5 miles of the project site and one recent and one historical records between 5 and 10 miles from the project site.	No
Arenaria paludicola marsh sandwort	FE	SE	1B.1	Annual herb found in freshwater marshes and wetlands, and wetland-riparian habitat. Bloom Period: Elevation:	**None:** The project site does not contain suitable habitat to support occurrence of this species. No occurrences of this species have been recorded within 5 miles of the project site. There is one historical occurrence of this species between 5 and 10 miles of the site.	No
Arctostaphylos rainbowensis	MSHCP	—	1B.1	Perennial evergreen shrub found in chaparral.	**None:** The project site does not contain suitable habitat to support occurrence of this	No

Scientific Name Common Name	Status			Habitat Description[4]	Potential to Occur and Rationale[5]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]	CNPS[3]			
Rainbow manzanita				Bloom period: December–March Elevation: 205–670 m	species. There are no previously recorded occurrences of this species within 10 miles of the project site.	
Atriplex coronata var. *notatior* San Jacinto Valley crownscale	FE MSHCP	—	1B.1	Annual herb found in alkaline soils in playas, in mesic, alkaline soils in valley and foothill grassland, and in vernal pools. Bloom period: April–August Elevation: 139–500 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Berberis nevinii Nevin's barberry	FE MSHCP	SE	1B.1	Perennial, evergreen shrub found on steep, north-facing slopes or in low-grade sandy washes in coastal scrub, chaparral, cismontane woodland, and riparian scrub communities. Blooming period: March–June Elevation: 290–1,575 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Caulanthus simulans Payson's jewelflower	MSHCP	—	4.2	Annual herb found in granitic and sandy soils in chaparral and coastal scrub communities. Bloom period: March–May Elevation: 90–2,200 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Centromadia pungens ssp. *laevis* smooth tarplant	MSHCP	—	1B.1	Annual herb found in alkali meadow and alkali scrub communities, and disturbed places in valley and foothill grassland, chenopod scrub, meadows, playas, and riparian woodland communities. Bloom period: April–September Elevation: 0–640 m	**None:** The project site does not contain suitable habitat or soils to support occurrence of this species. There are two historic occurrences within 5 miles of the project site, the most recent recorded in 2003. There are five historic and three recent occurrences of this species within 5 and 10 miles of the site.	No
Chloropyron maritimum ssp. *maritimum* salt marsh bird's-beak	FE	SE	1B.2	Hemiparasitic annual herb found in coastal strand, coastal salt marsh, and wetland-riparian communities. Blooming Period: May-October(November) Elevation:	**None:** The project site does not contain suitable habitat to support occurrence of this species. No occurrences of this species have been recorded within 5 miles of the project site. There is one historical occurrence within 5 and 10 miles of the site.	No

Scientific Name Common Name	Status			Habitat Description[4]	Potential to Occur and Rationale[5]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]	CNPS[3]			
Chorizanthe leptotheca peninsular spineflower	MSHCP	—	4.2	Annual herb found in granitic soils in chaparral, coastal scrub, and lower montane coniferous forest communities. Bloom period: May–August Elevation: 300–1,900 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Chorizanthe parryi var. *parryi* Parry's spineflower	MSHCP	—	1B.1	Annual herb found in chaparral, coastal scrub, cismontane woodland, and valley and foothill grassland communities. Bloom period: April–June Elevation: 275–1,220 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are five occurrences recorded within 5 miles of the project site, three of which are recent. There are 13 occurrences within 5 and 10 miles of the site, eight of which are recent.	No
Chorizanthe polygonoides var. *longispina* long-spined spineflower	MSHCP	—	1B.2	Annual herb that occurs in valley and foothill grassland, coastal scrub, chaparral, meadows and seeps, and vernal pools. Bloom period: April–July Elevation: 30–1,530 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are 12 occurrences recorded within 5 miles of the project site, the most recent in 2010. There are 18 occurrences within 5 and 10 miles of the site.	No
Clinopodium chandleri San Miguel savory	MSHCP	—	1B.2	Perennial shrub found in chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. Sometimes in gabbroic and rocky soils. Bloom period: March–July Elevation: 120–1,075 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Comarostaphylis diversifolia ssp. *diversifolia* summer holly	—	—	1B.2	Annual herb found in coastal chaparral habitat. Bloom Period: April-June Elevation: 0-1,340 m.	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Convolvulus simulans small-flowered morning-glory	MSHCP	—	4.2	Annual herb found in clay soils, seeps, and serpentine soils in openings in chaparral,	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded	No

Scientific Name Common Name	Status			Habitat Description[4]	Potential to Occur and Rationale[5]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]	CNPS[3]			
				coastal scrub, and valley and foothill grassland. Bloom period: March–July Elevation: 30–740 m	occurrences of this species within 10 miles of the project site.	
Deinandra paniculata paniculate tarplant	—	—	4.2	Annual herb found in sandy soils (sometimes) and in vernally mesic soils (usually) in coastal scrub, valley and foothill grassland, vernal pool communities. Bloom period: April–November Elevation: 25–940 m	**Moderate:** The project site does contain suitable habitat to support occurrence of this species. Although no occurrences of this species have been recorded within 5 miles or within 5 and 10 miles of the project site, this species was observed on an adjacent site during a Rare Plant Survey and could be present on the project site, which contains similar habitat types.	Yes
Dodecahema leptoceras slender-horned spineflower	FE MSHCP	SE	1B.1	Annual herb found in sandy soils in chaparral, coastal scrub and cismontane woodland communities. Bloom period: April–June Elevation: 200–760 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. No occurrences of this species have been recorded within 5 miles of the project site. There is one recent occurrence within 5 and 10 miles of the site.	No
Dudleya cymosa ssp. *ovatifolia* Santa Monica mountains dudleya	FT	—	1B.1	Perennial rhizomatous herb found in coastal sage scrub and chaparral communities. Bloom Period: March-June Elevation: 150-1675 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Dudleya multicaulis many-stemmed dudleya	MSHCP	—	1B.2	Perennial herb found in clay soils (usually) in chaparral, coastal scrub, and valley and foothill grassland communities. Bloom Period: April–July Elevation: 15–790 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are four occurrences within 5 miles of the project site, only one of which is recent, the most recent recorded in 2010. There are five recent and seven historic occurrences within 5 and 10 miles of the site.	No

Scientific Name Common Name	Status			Habitat Description[4]	Potential to Occur and Rationale[5]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]	CNPS[3]			
Dudleya viscida sticky dudleya	—	—	1B.2	Perennial herb found in coastal bluff scrub, chaparral, cismontane woodland, and coastal scrub. Grows in rocky soils. Bloom Period: May-June Elevation: 10-550 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Eriastrum densifolium ssp. *sanctorum* Santa Ana River woollystar	FE	SE	1B.1	Perennial herb found in chaparral and alluvial fan coastal scrub. Sometimes grows in gravelly or sandy soils. Bloom Period: April-September Elevation: 91-610 m.	**None:** The project site does not contain suitable habitat to support occurrence of this species. No occurrences of this species have been recorded within 5 miles of the project site. There are two recent occurrences within 5 and 10 miles of the site, the most recent of which is from 2014.	No
Erythranthe diffusa Palomar monkeyflower	MSHCP	—	4.3	Annual herb found in gravelly and sandy soils (sometimes) in chaparral and lower montane coniferous forest communities. Bloom period: April – June Elevation: 1,220– 1,830 m	**None:** The project site is outside of the known elevation range of this species and does not contain suitable habitat to support occurrence of this species. No occurrences of this species have been recorded within 5 miles or within 5 and 10 miles of the project site.	No
Harpagonella palmeri Palmer's grapplinghook	MSHCP	—	4.2	Annual herb found in clay soils and openings in chaparral, coastal scrub, and valley and foothill grassland communities. Bloom period: March–May Elevation: 20–955 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There is one historical record within 5 miles from the project site, recorded in 1990. There are six historic occurrences within 5 and 10 miles of the site.	No
Horkelia cuneata var. *puberula* mesa horkelia	—	—	1B.1	Perennial herb found in maritime chaparral, cismontane woodland, and coastal scrub. Sometimes grows in gravelly and sandy soils. Bloom Period: February-July(September) Elevation: 70-810 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Juglans californica southern California black walnut	MSHCP	—	4.2	Perennial, deciduous tree found in chaparral, cismontane woodland, coastal scrub, and riparian woodland communities.	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded	No

Scientific Name Common Name	Status			Habitat Description[4]	Potential to Occur and Rationale[5]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]	CNPS[3]			
				Bloom period: March–August Elevation: 50–900 m	occurrences of this species within 10 miles of the project site.	
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	MSHCP	—	1B.1	Annual herb found in marshes and swamps, playas, and vernal pools. Bloom period: February–June Elevation: 1–1,220 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. No occurrences of this species have been recorded within 5 miles of the project site. There is one historic occurrence within 5 and 10 miles of the site.	No
Lepechinia cardiophylla heart-leaved pitcher sage	—	—	1B.2	Perennial shrub found in closed-cone coniferous forest, chaparral, and cismontane woodland. Bloom Period: April-July Elevation: 520-1370 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. No occurrences of this species have been recorded within 5 miles of the project site. There are three recent occurrences within 5 and 10 miles of the site, the most recent of which is from 2017.	No
Lepidium virginicum var. *robinsonii* Robinson's pepper-grass	—	—	4.3	Dicot annual herb found in dry soils in chaparral and coastal scrub communities. Bloom period: January–July Elevation: 1–855 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There is one historic occurrence recorded within 5 miles of the project. There are five historic and two recent occurrences within 5 and 10 miles of the site.	No
Microseris douglasii ssp. *platycarpha* small-flowered microseris	MSHCP	—	4.2	Annual herb found in clay soils in cismontane woodland, coastal scrub, valley and foothill grassland, and vernal pool communities. Bloom period: March–May Elevation: 15–1,070 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Monardella hypoleuca ssp. *intermedia* intermediate monardella	—	—	1B.3	Perennial rhizomatous herb that occurs in chaparral, cismontane woodland, and lower montane coniferous forest communities. Bloom period: April–September Elevation: 400–1,250 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. No occurrences of this species have been recorded within 5 miles of the project site. There is one recent occurrence within 5 and 10 miles of the site.	No

Scientific Name Common Name	Status			Habitat Description[4]	Potential to Occur and Rationale[5]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]	CNPS[3]			
Monardella macrantha ssp. *hallii* Hall's monardella	—	—	1B.3	Perennial rhizomatous herb found in broadleaf upland forest, valley and foothill grassland, cismontane woodland, and lower montane coniferous forest habitat. Bloom Period: June-October Elevation: 730-2195 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Myosurus minimus ssp. *apus* little mousetail	MSHCP	—	3.1	Annual herb found in alkaline soils in valley and foothill grassland and vernal pools. Bloom period: March – June Elevation: 20– 640 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. No occurrences of this species have been recorded within 5 miles of the project site. There is one historic occurrence within 5 and 10 miles of the site.	No
Phacelia keckii Santiago Peak phacelia	—	—	1B.3	Annual herb found in closed-cone coniferous forest, and chaparral habitat. Bloom Period: May-July Elevation: 545-1600 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Phacelia stellaris Brand's star phacelia	—	—	1B.1	Annual herb found in coastal scrub and dunes. Bloom Period: March-June Elevation: 1-400 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. No occurrences of this species have been recorded within 5 miles of the project site. There is one recent occurrence within 5 and 10 miles of the site.	No
Polygala cornuta var. *fishiae* Fish's milkwort	MSHCP	—	4.3	Perennial deciduous shrub found in chaparral, cismontane woodland, and riparian woodland communities. Bloom period: May–August Elevation: 100–1,000 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Pseudognaphalium leucocephalum white rabbit-tobacco	—	—	2B.2	Perennial herb found in gravelly and sandy soils in chaparral, cismontane woodland, coastal scrub, and riparian woodland communities. Bloom period: August–November	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are five occurrences recorded within 5 and 10 miles of the project, the most recent in 2015.	No

Scientific Name Common Name	Status			Habitat Description[4]	Potential to Occur and Rationale[5]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]	CNPS[3]			
				Elevation: 0–2,100 m		
Quercus engelmannii Engelmann oak	MSHCP	—	4.2	Perennial, deciduous tree found in chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland communities. Bloom period: March–June Elevation: 50–1,300 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Romneya coulteri Coulter's matilija poppy	MSHCP	—	4.2	Perennial, rhizomatous herb found in chaparral and coastal scrub, often in burned areas. Bloom period: March–July Elevation: 20–1,200 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Senecio aphanactis chaparral ragwort	—	—	2B.2	Annual herb found in … Bloom Period: January-April(May) Elevation:	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Sidalcea neomexicana salt spring checkerbloom	—	—	2B.2	Perennial herb found in alkaline and mesic soils in chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playas. Blooming period: March–June Elevation: 15–1,530 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No
Symphyotrichum defoliatum San Bernardino aster	—	—	1B.2	Perennial, rhizomatous herb found in banks of ditches, streams, and springs in cismontane woodlands, coastal scrub, lower montane coniferous forests, meadows and seeps, marshes and swamps, and vernally mesic valley and foothill grassland communities. Bloom period: July–November Elevation: 2–2,040 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There is one historical occurrence recorded between 5 and 10 miles of the project site.	No

Scientific Name Common Name	Status			Habitat Description[4]	Potential to Occur and Rationale[5]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]	CNPS[3]			
Viguiera laciniata San Diego County viguiera	—	—	4.3	Perennial shrub found in chaparral and coastal scrub communities. Bloom period: February–June Elevation: 60–750 m	**None:** The project site does not contain suitable habitat to support occurrence of this species. There are no previously recorded occurrences of this species within 10 miles of the project site.	No

Code Designations

[1] Federal Status: 2024 USFWS Listing

- **FE** = Listed as endangered under the Endangered Species Act.
- **FT** = Listed as threatened under the Endangered Species Act.
- **FC** = Candidate for listing (threatened or endangered) under the Endangered Species Act.
- **FD** = Delisted in accordance with the Endangered Species Act.
- **FPD** = Federally Proposed to be Delisted.
- **MSHCP** = Covered under the Western Riverside County Multiple Species Habitat Conservation Plan
- **—** = Not federally listed

[2] State Status: 2024 CDFW Listing

- **SE** = Listed as endangered under the California Endangered Species Act (CESA).
- **ST** = Listed as threatened under the CESA.
- **SC** = Listed as Candidate under the CESA.
- **CR** = Rare in California.
- **—** = Not State listed

[3] CNPS: 2024 CNPS Listing

- **Rank 1A** = Plants presumed extirpated in California and either rare or extinct elsewhere
- **Rank 1B** = Plants rare, threatened, or endangered in California and elsewhere
- **Rank 2A:** Plants presumed extirpated in California but common elsewhere
- **Rank 2B:** Plants rare, threatened, or endangered in California but more common elsewhere
- **Rank 3:** Plants about which more information is needed
- **Rank 4:** Watch List: Plants of limited distribution
- **Blooming period:** Months in parentheses are uncommon.

Notes:

[4] **Habitat Description**: Habitat description adapted from CNDDB and CNPS online inventory or other specified source.

[5] **Potential to Occur and Rationale**: Location of recorded species occurrences determined by geospatial information from BIOS 6 or other specified source.

Sources:

California Department of Fish and Wildlife (CDFW). 2024. CNDDB RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: https://map.dfg.ca.gov/rarefind/view/RareFind.aspx. Accessed January 9, 2024.

California Native Plant Society (CNPS). 2024. California Native Plant Society Rare and Endangered Plant Inventory. Website: http://www.rareplants.cnps.org/. Accessed January 9, 2024.

California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://map.dfg.ca.gov/bios/. Accessed January 9, 2024:

Table 2: Special-status Wildlife Species Evaluated

Scientific Name Common Name	Status		Habitat Description[3]	Potential to Occur and Rationale[4]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]			
Invertebrates					
Bombus crotchii Crotch's bumble bee	—	SC	This species occurs primarily in California, including coastal habitats, western Mojave Desert, San Joaquin Valley, and adjacent foothills through most of southwestern California. It inhabits arid grasslands and shrublands, and its food sources including milkweeds, pincushions, lupines, clovers, phacelias, sages, clarkias, poppies, and buckwheats.	**Low.** The wild oats and annual brome grassland community, flowering resources, and rodent burrows on the project site provide marginally suitable habitat that could potentially support occurrence of this species. There is 1 historical record within 5 miles and there is 1 recent and 3 historical records between 5 and 10 miles from the project site.	No
Euphydryas editha quino quino checkerspot butterfly	FE MSHCP	—	Occurs in grasslands, coastal sage scrub, chamise chaparral, red shank chaparral, juniper woodland, and semi-desert scrub habitats. Larval host plants are native species of plantain.	**Low.** Marginally suitable habitat for this species exists within the wild oats and annual brome grassland community present on site. There are 5 historical records within 5 miles and there are 2 historical records between 5 and 10 miles from the project site.	No
Amphibians					
Anaxyrus californicus arroyo toad	FE	SSC	Habitats used include valley-foothill and desert riparian as well as a variety of more arid habitats including desert wash, palm oasis, and Joshua tree, mixed chaparral and sagebrush. Occurs in rivers with sandy banks, willows, cottonwoods, and sycamores, and in loose, gravelly areas of streams in drier parts of range.	**None.** The riparian areas within the project site do not contain exposed sandy streamside necessary to support occurrence of this species. There are no recent or historical records of this species within 10 miles of the project site.	No
Spea hammondii western spadefoot	—	SSC	Occurs in open areas with sandy or gravelly soils in mixed woodlands, grasslands, coastal sage and Riversidean alluvial fan sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Breeds in ephemeral	**Low.** Marginally suitable habitat for this species exists in the wild oats and annual brome grassland community present on the project site. There are 5 recent and 2 historical records within 5 miles of the project site, and there are 9 recent and 16 historical records between 5 and 10 miles from the project site.	No

Scientific Name Common Name	Status		Habitat Description[3]	Potential to Occur and Rationale[4]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]			
			rain pools that do not contain bullfrogs, fish, or crayfish.		
Reptiles					
Anniella stebbinsi southern California legless lizard	—	SSC	Occurs in moist, loose soil in coastal sand dunes and a variety of interior habitats, including sandy washes and alluvial fans. Tolerant of disturbances.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There is 1 recent and 1 historical record within 5 miles, and there are 12 recent and 8 historical records between 5 and 10 miles from the project site.	No
Arizona elegans occidentalis California glossy snake	—	SSC	Occurs in areas of rocky washes and loose, sandy soils and for burrowing in desert scrub grassland, coastal sage and Riversidean alluvial fan sage scrub, and chaparral habitats. Prefers open sandy areas with scattered brush, but also found in rocky areas.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There is 1 recent and 2 historical records between 5 and 10 miles from the project site.	No
Aspidoscelis hyperythra orange-throated whiptail	MSHCP	WL	Occurs primarily on coarse soils in open coastal sage and Riversidean alluvial fan sage scrub habitat.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There is one recent and nine historical records within 5 miles and 25 historical records between 5 and 10 miles from the project site.	No
Aspidoscelis tigris stejnegeri San Diegan (coastal) tiger whiptail	—	SSC	Occurs in dry, open areas with sparse foliage in coastal sage and Riversidean alluvial fan sage scrub, chaparral, woodland, and riparian habitats.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There are 2 historical records within 5 miles, and there are 2 recent and 3 historical records between 5 and 10 miles from the project site.	No
Coleonyx variegatus abbotti San Diego banded gecko	MSHCP	SSC	Prefers rocky areas in coastal sage and chaparral.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There is 1 historical record between 5 and 10 miles from the project site.	No
Crotalus ruber red-diamond rattlesnake	MSHCP	SSC	Occurs in arid, rocky areas in creosote scrub, coastal sage and Riversidean alluvial fan sage scrub, chaparral, oak and pine woodlands, grasslands, on cultivated areas.	**Moderate.** Marginally suitable habitat for this species exists within the wild oats and annual brome grassland present on the project site. There are 12 recent and 12 historical records	Yes

Scientific Name Common Name	Status USFWS[1]	Status CDFW[2]	Habitat Description[3]	Potential to Occur and Rationale[4]	Included in Impact Analysis?
				within 5 miles of the project site, and there are 10 recent and 15 historical records between 5 and 10 miles from the project site.	
Emys marmorata western pond turtle	MSHCP PT	SSC	Found in ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches, with abundant vegetation, and either rocky or muddy bottoms, in woodland, forest, and grassland. In streams, prefers pools to shallower areas. Logs, rocks, cattail mats, and exposed banks are required for basking. May enter brackish water and even seawater.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There are no records of this species within 10 miles of the project site.	No
Phrynosoma blainvillii coast horned lizard	MSHCP	SSC	Occurs in open areas with sandy soil and low vegetation in grasslands, coniferous forests, woodlands, and chaparral.	**Low.** Marginally suitable habitat for this species exists within the wild oats and annual brome grassland on the project site. There is 1 recent and 4 historical records within 5 miles of the project site, and there are 13 historical records between 5 and 10 miles from the project site.	No
Salvadora hexalepis virgultea coast patch-nosed snake	—	SSC	Occurs in coastal chaparral, desert scrub, washes, sandy flats and rocky areas. Requires small mammal burrows for refuge and overwintering sites.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There is one historical record between 5 and 10 miles from the project site.	No
Birds					
Accipiter cooperii Cooper's hawk	MSHCP MBTA	WL FGC	Occurs and nests in deciduous and mixed forests and open woodland habitats. Year-round resident in Southern California, and tolerant of urban areas with an abundance of trees.	**Moderate.** Suitable foraging and nesting habitat for this species is present in trees adjacent to and within 500 feet of the project site. There is one recent and one historical record between 5 and 10 miles from the project site.	Yes
Agelaius tricolor tricolored blackbird	BCC; MBTA	ST; SSC; FGC	Nests in wetlands with cattails, bulrushes, and willows, also in agricultural fields, especially triticale fields. Foraging habitats include cultivated fields, feedlots associated with dairy farms, and wetlands.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There are 5 recent records within 5 and 10 miles of the site.	No

Scientific Name Common Name	Status		Habitat Description[3]	Potential to Occur and Rationale[4]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]			
Aimophila ruficeps canescens southern California rufous-crowned sparrow	MSHCP MBTA	WL FGC	Occurs and nests on steep, often rocky hillsides with grass and forb patches in coastal sage and Riversidean alluvial fan sage scrub and sparse mixed chaparral habitats. Year-round resident in southern California.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There are nine historical records within 5 miles, and there are six recent and seven historical records between 5 and 10 miles from the project site.	No
Artemisiospiza belli Bell's sparrow	MSHCP MBTA	WL FGC	Breeds in coastal sagebrush, chaparral, and other open, scrubby habitats in Southern California mountains, deserts and valleys.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There are 4 historical records within 5 miles and 1 historical record between 5 and 10 miles from the project site.	No
Asio otus long-eared owl	MSHCP MBTA	SSC FGC	Occurs in riparian bottomlands grown to tall willows and cottonwoods; also, belts of live oak paralleling stream courses. Requires adjacent open land, productive of mice and the presence of old nests of crows, hawks, or magpies for breeding.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There are two historical records between 5 and 10 miles from the project site.	No
Athene cunicularia burrowing owl	MSHCP MBTA	SSC FGC	Occurs and nests in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. A subterranean nester, dependent upon burrowing mammals, most notably the California ground squirrel. Short-distance migrant.	**Moderate.** Marginally suitable habitat exists within the non-native annual grassland present on the project site. Much of the vegetation on site is too tall and dense to support burrowing and foraging activities of this species. There are 2 historical records within 5 miles, and there are 2 recent and 11 historical records between 5 and 10 miles from the project site.	Yes
Buteo swainsoni Swainson's hawk	MSHCP MBTA	ST	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There is one historical record within 5 miles of the project site and one historical record between 5 and 10 miles from the project site.	No
Campylorhynchus brunneicapillus sandiegensis coastal cactus wren	MSHCP MBTA	SSC	Southern California coastal sage scrub. Require tall opuntia cactus for nesting and roosting.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There	No

Scientific Name Common Name	Status USFWS[1]	 CDFW[2]	Habitat Description[3]	Potential to Occur and Rationale[4]	Included in Impact Analysis?
				are no recent or historical records within 10 miles of the project site.	
Charadrius nivosus nivosus western snowy plover	FT MBTA	SSC	Sandy beaches, salt pond levees and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There are no recent or historical records within 10 miles of the project site.	No
Circus hudsonius northern harrier	MSHCP MBTA	SSC	Frequents meadows, grasslands, open rangelands, freshwater emergent wetlands; uncommon in wooded habitats.	**Low.** Though this species is frequently found near wetlands, suitable foraging habitat exists within the wild oats and annual brome grassland present on the project site. There are no records of this species within 10 miles of the project site.	No
Coccyzus americanus western yellow-billed cuckoo	FT MSHCP MBTA	SE	Inhabits wooded riparian habitats with dense cover and water nearby, including woodlands with low, scrubby, vegetation, overgrown orchards, abandoned farmland and dense thickets along streams and marshes. Nests are often placed in willows along streams and rivers, with nearby cottonwoods serving as foraging sites.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There are 4 historical records between 5 and 10 miles from the project site.	No
Coturnicops noveboracensis yellow rail	MBTA	SSC	Summer resident in eastern Sierra Nevada in Mono County. Inhabits freshwater marshlands.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There is one historical record within 5 miles of the project site	No
Elanus leucurus white-tailed kite	MSHCP MBTA	FP FGC	Grasslands and open coastal scrub in coastal and valley lowlands; rarely found away from agricultural areas. Inhabits herbaceous, open stages of most habitats mostly in cismontane California. Year-round resident in southern California.	**Moderate.** Suitable foraging habitat exists within the wild oats and annual brome grassland present on the project site. There is 1 historical record between 5 and 10 miles from the project site.	Yes
Empidonax traillii extimus southwestern willow flycatcher	FE MSHCP MBTA	SE FGC	Occurs and nests in dense riparian woodlands. Long-distance migrant.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There	No

Scientific Name Common Name	Status USFWS[1]	 CDFW[2]	Habitat Description[3]	Potential to Occur and Rationale[4]	Included in Impact Analysis?
				are no records of this species within 10 miles of the project site.	
Eremophila alpestris actia California horned lark	MSHCP MBTA	WL FGC	Occurs and nests in open areas with sparse vegetation. Year-round resident in southern California.	**Low.** Ruderal and disturbed areas of the project site may provide foraging habitat for this species. There are 3 historical records between 5 and 10 miles from the project site.	No
Haliaeetus leucocephalus bald eagle	FD BGEPA MSHCP MBTA	SE FP FGC	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water.	**None.** Though individuals have been observed at Lake Mathews which is situated 0.25 miles to the south, suitable foraging or nesting habitat for this species is not present within the project site. There are five historical records within 5 miles of the project site.	No
Icteria virens yellow-breasted chat	MSHCP MBTA	SSC FGC	Occurs and nests in riparian thickets of willow and other bushy tangles near watercourses. Long-distance migrant.	**Low.** Scattered willows present within the riparian drainage on the northeastern border of the project site may provide marginally suitable habitat for this species. There is 1 recent and 3 historical records between 5 and 10 miles from the project site.	No
Lanius ludovicianus loggerhead shrike	BCC MBTA	SSC FGC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub and washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	**Moderate.** Potentially suitable foraging habitat exists in the wild oats and annual brome grassland adjacent to the project site and marginally suitable habitat exists in fallow lands on the project site. There is one historical record between 5 and 10 miles from the project site.	Yes
Laterallus jamaicensis coturniculus California black rail	FP	ST	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There is one historical record between 5 and 10 miles from the project site.	No
Polioptila californica californica coastal California gnatcatcher	FT MSHCP MBTA	SSC FGC	Occurs and nests in arid washes, on mesas, and slopes in coastal sage scrub below 2500 ft. Year-round resident in California.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There are 33 historical records within 5 miles and 17	No

Scientific Name Common Name	Status USFWS[1]	Status CDFW[2]	Habitat Description[3]	Potential to Occur and Rationale[4]	Included in Impact Analysis?
				historical records between 5 and 10 miles from the project site.	
Setophaga petechia yellow warbler	—	SSC	Riparian plant associations in close proximity to water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	**Moderate.** Marginally suitable habitat for this species exists within the riparian areas on and adjacent to the project site. There are two recent records between 5 and 10 miles from the project site.	Yes
Vireo bellii pusillus Least Bell's vireo	FE	SE	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	**High.** Suitable habitat for this species exists within the riparian drainage that borders the project site to the northwest. Previous surveys have detected presence of least Bell's vireo within this drainage as recently as 2014.	Yes
Mammals					
Antrozous pallidus pallid bat	—	SSC	Occurs in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Species is very sensitive to disturbance of roosting sites.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There are no recent or historical records within 10 miles of the project site.	No
Chaetodipus fallax fallax northwestern San Diego pocket mouse	MSHCP	SSC	Occurs in sandy, herbaceous areas, usually in association with rocks or coarse gravel, in coastal sage and Riversidean alluvial fan sage scrub, chaparral, and grasslands.	**Low.** Marginally suitable habitat exists within the wild oats and annual brome grassland on the project site. There are 9 historical records within 5 miles of the project site and 5 historical records between 5 and 10 miles from the project site.	No
Dipodomys merriami parvus San Bernardino kangaroo rat	FE MSHCP	CE SSC	Occurs on sandy loam substrates on first terraces and floodplains of washes in Riversidean alluvial fan sage scrub habitat.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There is 1 historical record within 5 miles of the project site and 1 historical record between 5 and 10 miles from the project site.	No

Scientific Name Common Name	Status		Habitat Description[3]	Potential to Occur and Rationale[4]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]			
Dipodomys stephensi Stephens' kangaroo rat	FT MSHCP	ST	Occurs primarily annual and perennial grasslands, but also occurs in coastal scrub and sagebrush with sparse canopy cover. Prefers buckwheat, chamise, brome grass and filaree. Will burrow into firm soil.	**Moderate.** Suitable habitat for this species exists within the non-native annual grassland on the project site. There is 1 recent and 25 historical records within 5 miles of the project site, and there are 45 historical records between 5 and 10 miles from the project site.	Yes
Eumops perotis californicus western mastiff bat	—	SSC	Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral. Roosts in crevices in cliff faces, high buildings, trees, and tunnels.	**Low.** Trees on the project site may provide potential roosting habitat, and this species may forage in the wild oats and annual brome grassland. There are 2 historical records within 5 miles of the project site and 3 historical records between 5 and 10 miles from the project site.	No
Lasiurus xanthinus western yellow bat	—	SSC	Occurs in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in skirts of dead fronds in both native and non-native palm trees.	**Moderate.** Palm trees present on the project site may provide potential roosting habitat, and this species may forage in the wild oats and annual brome grassland. There is 1 historical record within 5 miles and there are 2 historical records between 5 and 10 miles from the project site.	Yes
Lepus californicus bennettii San Diego black-tailed jackrabbit	MSHCP	—	Occurs primarily in arid regions with short grass including open grasslands, agricultural fields, and sparse coastal scrub. Nests under bushes or shrubs that have shallow depressions.	**Moderate.** The wild oats and annual brome grassland community on the project site provides suitable habitat for this species. There are 2 historical records within 5 miles and there are 3 historical records between 5 and 10 miles from the project site.	Yes
Neotoma lepida intermedia San Diego desert woodrat		SSC	Coastal scrub of Southern California from San Diego County to San Luis Obispo County. Moderate to dense canopies preferred. They are particularly abundant in rock outcrops, rocky cliffs, and slopes.	**None.** Suitable habitat for this species is not present on or adjacent to the project site. There is one historical record within 5 miles of the project site.	No
Nyctinomops femorosaccus pocketed free-tailed bat	—	SSC	Occurs in a variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc. Inhabits rocky areas with high cliffs.	**Moderate.** Suitable habitat is present within the wild oats and annual grassland community and riparian areas on the project site. There are 2 historical records within 5 miles of the project	Yes

Scientific Name Common Name	Status		Habitat Description[3]	Potential to Occur and Rationale[4]	Included in Impact Analysis?
	USFWS[1]	CDFW[2]			
				site and 2 historical records 5 and 10 miles from the project site.	
Onychomys torridus ramona southern grasshopper mouse	—	SSC	Occurs in desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover. Feeds almost exclusively on arthropods, especially scorpions and orthopteran insects.	**None.** Suitable desert habitat to support this species is not present on or adjacent to the project site. There is 1 historical record between 5 and 10 miles from the project site.	No
Perognathus longimembris brevinasus Los Angeles pocket mouse	MSHCP	SSC	Occurs in open areas with fine, sandy soils in lower elevation grasslands and coastal sage and Riversidean alluvial fan sage scrub habitats.	**Low.** Marginally suitable habitat exists within the wild oats and annual brome grassland on the project site. There are 2 historical records between 5 and 10 miles from the project site.	No

Code Designations

[1] Federal Status: 2024 USFWS Listing	[2] State Status: 2024 CDFW Listing
FE = Listed as endangered under the Endangered Species Act. **FT** = Listed as threatened under the Endangered Species Act. **FC** = Candidate for listing (threatened or endangered) under the Endangered Species Act. **FD** = Delisted in accordance with the Endangered Species Act. **FPD** = Federally Proposed to be Delisted. **MBTA** = protected by the Migratory Bird Treaty Act **—** = Not federally listed **MSHCP** = Covered under the Western Riverside County Multiple Species Habitat Conservation Plan	**SE** = Listed as endangered under the California Endangered Species Act (CESA). **ST** = Listed as threatened under the CESA. **SSC** = Species of Special Concern as identified by the CDFW. **FP** = Listed as fully protected under the Fish and Game Code. **FGC** = protected by Fish and Game Code 3503-3513 **CE** = Candidate endangered under CESA. **WL** = CDFW Watch List **—** = Not State listed

Notes:
[3] **Habitat Description**: Habitat description adapted from CNDDB or other specified source.
[4] **Potential to Occur and Rationale**: Location of recorded species occurrences determined by geospatial information from BIOS 6 or other specified source.
Sources:
California Department of Fish and Wildlife (CDFW). 2024. CNDDB RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: https://map.dfg.ca.gov/rarefind/view/RareFind.aspx. Accessed January 9, 2024.
California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://map.dfg.ca.gov/bios/. Accessed January 9, 2024

Appendix F:
Invasive Plants to Be Avoided

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TABLE 1. INVASIVE PLANTS TO BE AVOIDED IN LANDSCAPING

Scientific Name	Common Name
PLANTS INVASIVE IN ORINDA UPLANDS AND WATERCOURSES	
Arundo donax	giant reed
Cortaderia jubata, C. selloana	Jubatagrass; pampas grass
Cotoneaster franchetti, C. lacteus, C. pannosus	cotoneaster
Crataegus monogyna	hawthorn
Cytisus scoparius	Scotch broom
Cytisus striatus	striated broom
Elaeagnus angustifolia	Russian olive
Eucalyptus camaldulensis	red gum
Ficus carica	edible fig
Foeniculum vulgare	wild fennel
Genista monspessulana	French broom
Ilex aquifolium	English holly
Maytenus boaria	mayten
Myosotis latifolia	common forget-me-not
Olea europaea	European olive
Pennisetum setaceum	fountain grass
Pyracantha angustifolia, crenulata, seratus, etc.	pyracantha
Ricinus communis	castor bean
Robinia pseudoacacia	black locust
Rubus armeniacus (R. discolor)	Armenian (Himalayan) blackberry
Saponaria officinalis	bouncing bet
Schinus molle	Peruvian pepper tree
Zantesdeschia aethiopica	calla lily
PLANTS INVASIVE IN THE CENTRAL COAST	
Acacia paradoxa	kangaroo thorn
Ageratina adenophora	eupatory
Allium triquetrum	three-cornered leek
Arctotheca calendula (fertile)	fertile capeweed
Asparagus asparagoides	smilax asparagus
Bellis perennis	English lawn daisy
Berberis darwinii	Darwin barberry
Cestrum parqui	willow jessamine
Cistus ladanifer	gum cistus
Digitalis purpurea	foxglove
Echium candicans	pride-of-Madeira
Iris pseudacorus	yellow water iris
Myoporum laetum	myoporum
Nothoscordum inodorum	false garlic
INVASIVE AQUATIC PLANTS	
Eichhornia crassipes	water hyacinth
Salvinia molesta	giant waterfern
INVASIVE SPECIES FOUND IN WILDLAND SEED MIXES	
Phalaris aquatica	Harding grass
Trifolium hirtum	rose clover

For more information, see info@cal-ipc.org

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C-2: Crotch's Bumble Bee Habitat Assessment

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December 30, 2024

Robert Paradise
Pulte Home Company, LLC
27401 Los Altos, Suite 400
Mission Viejo, CA 92691

Subject: **Crotch's Bumble Bee Habitat Assessment Report for the Highland Grove II Development Project, Unincorporated Riverside County, California**

Dear Mr. Paradise:

FirstCarbon Solutions (FCS) conducted a habitat assessment for Crotch's bumble bee (*Bombus crotchii*) in support of the proposed Highland Grove II Development Project (proposed project) in unincorporated Riverside County, California. The following report provides details about the proposed project, its environmental setting, methods and results of the habitat assessment, and recommendations for further action.

Project Site Location and Description

The approximately 60.68-acre project site is located in unincorporated Riverside County (County), California (Exhibit 1). The project site is surrounded by the City of Riverside to the north, the community of Woodcrest to the east, Lake Mathews to the south, and the City of Corona to the west. Regional access to the site is provided via Interstate 15 (I-15), which bisects the project vicinity north to south. Additional regional access to the site is provided via State Route (SR) 91, which bisects the project vicinity east to west. Local access to the site is provided via El Sobrante Road.

The site is located at the southwest corner of McAllister Street and El Sobrante Road on several parcels, which includes Assessor's Parcel Numbers (APNs) 270-160-002, -003, -018, -020, -021, -022, -023, and -024. The site is located within the *Lake Mathews, California* United States Geological Survey (USGS) 7.5-minute Topographic Quadrangle Map.

The project site is surrounded by undeveloped lands to the north and east; single-family residential developments to the west; and agricultural operations and El Sobrante Road to the south (Exhibit 2). The project site is vacant and undeveloped and has been used for hay production. Undeveloped lands directly north and east of and adjacent to the project site have also been used for agricultural production. The project site and adjacent undeveloped areas functioned as a citrus operation until the early 2000s. Evidence of operational site disturbance includes compacted soils, erosional areas, debris piles, and various dirt roads. There is a drainage feature outside of and along the northeastern boundary of the project site between the undeveloped areas.

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Pulte Home Company, LLC (project applicant) proposes a residential subdivision on the 60.68-acre project site, located at the southwest corner of McAllister Street and El Sobrante Road within unincorporated Riverside County. The proposed project consists of subdividing approximately 61.3 acres of vacant land into 128 lots to be developed with single-family detached residential dwelling units for a density of two dwelling units per acre (du/acre) (Exhibit 3). The project site would connect to existing water, sewer, electrical, telephone, and gas utilities in the El Sobrante Road right-of-way. All existing power poles on the project site are to be relocated underground. The proposed project would also include improvements on El Sobrante Road, along the southern property line. Ingress/egress from proposed Street A is proposed off El Sobrante Road and associated right-of-way improvements. At the crossing, Street A would consist of 44 feet of pavement from curb face to curb face and 66 feet right-of-way.

Crotch's Bumble Bee Description

Crotch's bumble bee is a bee in the family Apidae that occurs largely in California and primarily in southwestern California, including the Pacific Coast, the western Mojave Desert, and the southern San Joaquin Valley.[1] The species also ranges into southwest Nevada and Baja California, Mexico, though occurrences are rare. This species inhabits scrublands, grasslands, chaparral, and semi-urban settings in foothills and desert margins.[2] Crotch's bumble bee appears to tolerate a narrow range in climatic conditions in comparison to other bumble bee species and requires hotter, drier environments to survive.[3] This species nests underground, often in abandoned rodent dens, or aboveground in tufts of grass, rock piles, old bird nests, or cavities in dead trees.[4] Favored food (nectar) sources for the Crotch's bumble bee include milkweeds (*Asclepias* spp.), pincushions (*Chaenactis* spp.), lupines (*Lupinus* spp.), clovers (*Medicago* spp.), phacelias (*Phacelia* spp.), and sages (*Salvia* spp.).[5] Crotch's bumble bees are generalist foragers and have been commonly associated with plants from the *Fabaceae*, *Apocynaceae*, *Asteraceae*, *Lamiaceae*, *Hydrophyllaceae*, *Asclepidaeceae*, and *Boraginaceae* families.[6]

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1 Los Padres Forest Watch. 2013. Crotch's Bumblebee. Website: https://lpfw.org/our-region/wildlife/crotchs-bumblebee/. Accessed July 25, 2024.

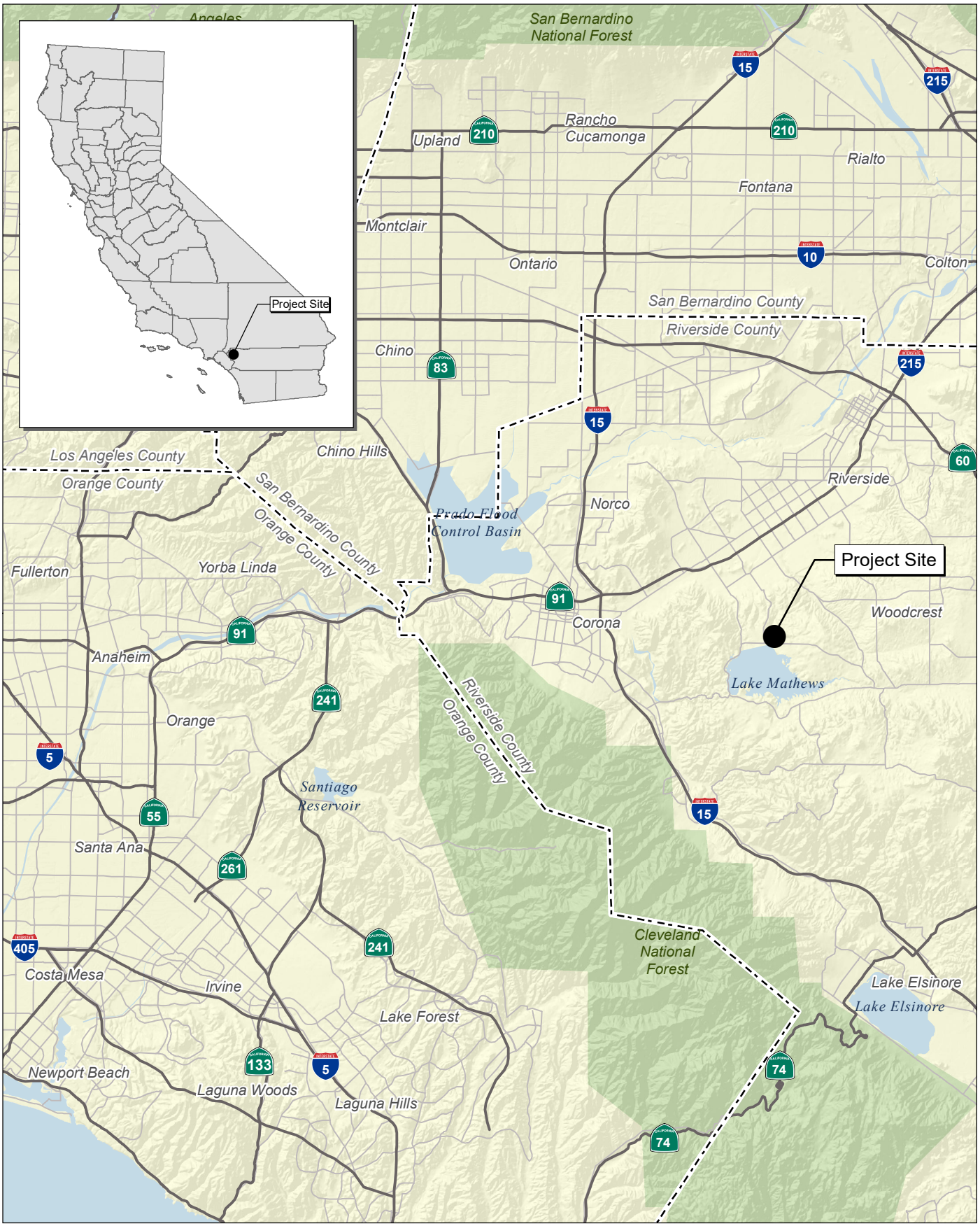
2 California Department of Fish and Wildlife (CDFW). 2022. CDFW Seeks Public Comment Related to Crotch's Bumble Bee, Franklin's Bumble Bee, Suckley's Cuckoo Bumble Bee and Western Bumble Bee. Website: https://wildlife.ca.gov/News/Archive/cdfw-seeks-public-comment-related-to-crotchs-bumble-bee-franklins-bumble-bee-suckleys-cuckoo-bumble-bee-and-western-bumble-bee#gsc.tab=0. Accessed July 25, 2024.

3 *Bombus crotchii*. NatureServe Explorer. 2024-06-20.

4 Hatfield, R., S. Jepsen, R. Thorp, L. Richardson, and S. Colla. 2015. Crotch's bumble bee. IUCN Red List of Threatened Species. 2015: e.T44937582A46440211. Website: https://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T44937582A46440211.en. Accessed July 25, 2024.

5 Ibid.

6 California Department of Fish and Wildlife (CDFW). 2018. A Petition to the State of California Fish and Game Commission. Website: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=161902&inline. Accessed October 22, 2024.



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

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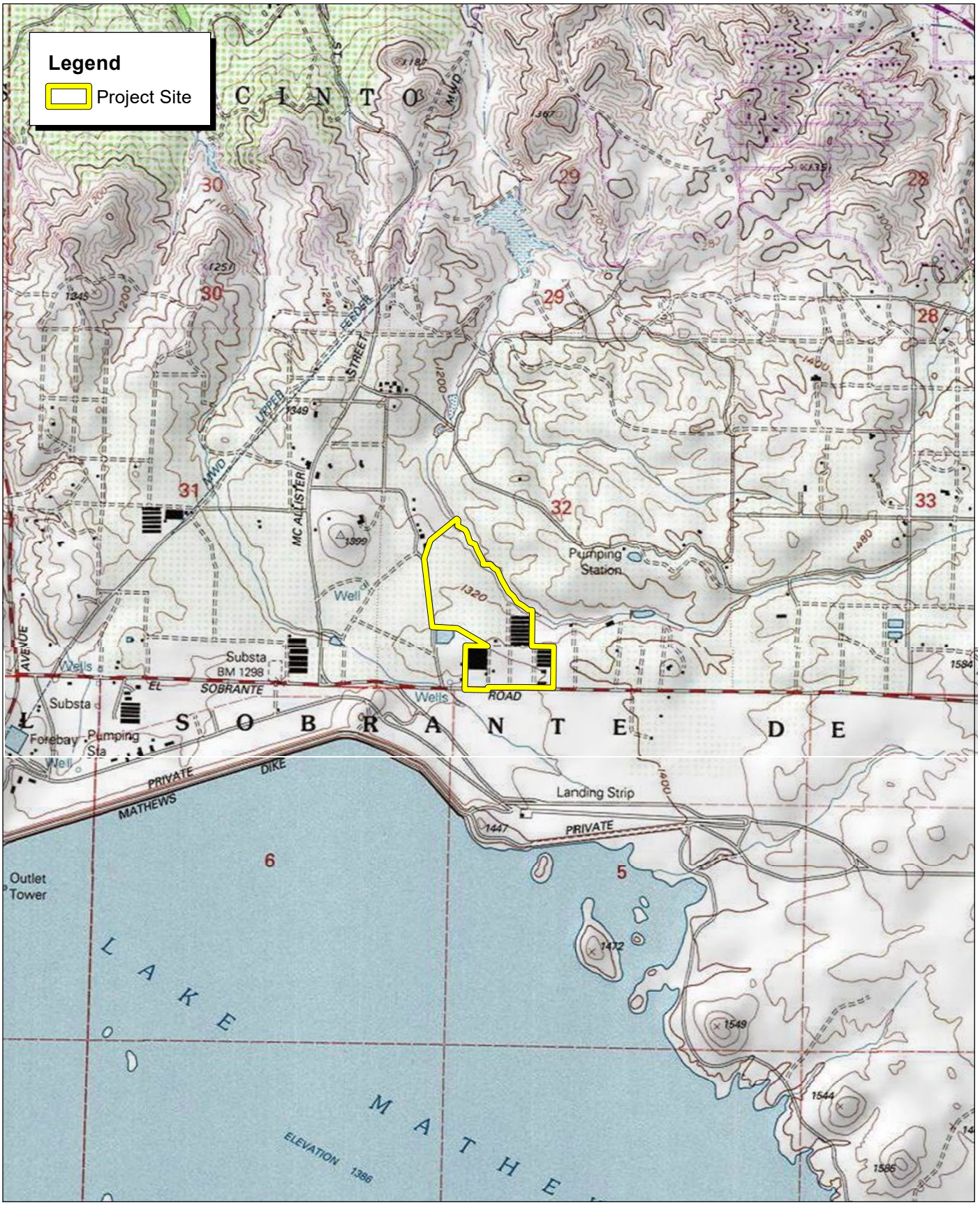
5 2.5 0 5 Miles

Exhibit 1
Regional Location Map



Source: USGS Lake Mathews 7.5' Quadrangles / T03S,R05W,sec32.

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2,000 1,000 0 2,000
Feet

Exhibit 2
Local Vicinity Map
Topographic Base

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RIVERSIDE COUNTY
HIGHLAND GROVE II PROJECT
CROTCH'S BUMBLE BEE HABITAT ASSESSMENT REPORT



Source: ESRI Aerial Imagery.

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1,000 500 0 1,000
Feet

Exhibit 3
Local Vicinity Map
Aerial Base

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RIVERSIDE COUNTY
HIGHLAND GROVE II PROJECT
CROTCH'S BUMBLE BEE HABITAT ASSESSMENT REPORT

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Like most bumble bees (except cuckoo bumble bees), Crotch's bumble bees are social insects that live in colonies composed of a queen, workers, and reproductives (males and new queens). The colonies have an annual cycle that begins with the emergence of a queen female from her hibernacula and her establishment of a nest where she collects pollen and nectar and lays eggs. The reproductive queens conduct all the foraging and care for the colony in early spring until the first workers emerge and take on these duties while the queen continues to lay eggs and rear young.[7] Male Crotch's bumble bees emerge after the worker bees and are generally active from May to September, with peak activity in July. This species' workers are active from April to August and queen bees from March until May. The peak of worker activity is between May and June, whereas queens are most active in April.[8] The annual colony cycle ends with the deaths of workers and males and entry to hibernation sites by the new queens. Crotch's bumble bees are not migratory and only mated queens overwinter.[9,10]

Crotch's bumble bee populations have experienced sharp declines over the last 10 years, particularly in northern and southern portions of the Central Valley of California.[11] Declines have been attributed to conversion of habitat for agricultural practices and urbanization.[12] Additionally, climate change and increased aridity have lowered suitable habitat for this species due to its narrow climatic specialization.[13] Pollution and competition with non-native bees have also impacted Crotch's bumble bee populations.[14,15] Because of population declines and subsequent inbreeding, genetic diversity in Crotch's bumble bee populations has also declined.[16,17,18]

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7 Koch, J., J. Strange, P. William. 2012. Bumble Bees of the Western United States. Website: https://archive.org/details/CAT31104683. Accessed July 25, 2024.

8 Ibid.

9 *Bombus crotchii*. NatureServe Explorer. Website: https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.834085/Bombus_crotchii. Accessed July 25, 2024.

10 Hatfield, R., S. Jepsen, R. Thorp, L. Richardson, and S. Colla. 2015. Crotch's bumble bee. IUCN Red List of Threatened Species. 2015: e.T44937582A46440211. Website: https://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T44937582A46440211.en. Accessed July 25, 2024.

11 Ibid.

12 Ibid.

13 NatureServe. 2014. NatureServe Explorer: An Online Encyclopedia of Life. Website: http://explorer.natureserve.org. Accessed July 25, 2024.

14 Williams, P.H., S.R. Colla, and Z. Xie, Z. 2009. Bumblebee vulnerability: common correlates of winners and losers across three continents. Conservation Biology 23: 931–940.

15 Williams, P.H. and J.L. Osborne. 2009. Bumble bee vulnerability and conservation worldwide. Apidologie 40: 367–387.

16 Goulson, D. 2010. Bumblebees: Behaviour, Ecology, and Conservation. Oxford: Oxford University Press.

17 Cameron, S.A., J.D. Lozier, J.P. Strange, J.B. Koch, N. Cordes, L.F. Solter, and T.L. Griswold. 2011. Patterns of widespread decline in North American bumble bees. Proceedings of the National Academy of Science (USA) 108(2): 662–667.

18 Lozier, J.D., J.P. Strange, I.J. Steward, and S.A. Cameron, 2011. Patterns of range-wide genetic variation in six North American bumble bee (Apidae: *Bombus*) species. Molecular Ecology 20: 4870-4888.

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Methods

Background Review

FCS reviewed existing environmental documentation pertaining to the habitat requirements of Crotch's bumble bee and survey protocols and species occurrence data provided by the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW). An FCS Biologist compiled Crotch's bumble bee occurrences previously recorded within the project vicinity maintained in the California Natural Diversity Database (CNDDB).[19] The CNDDB Biogeographic Information and Observation System (BIOS 6) was used to determine the distance between the known occurrences of Crotch's bumble bee and the project site.[20] FCS Biologists also reviewed Crotch's bumble bee mapping and occurrence data provided by iNaturalist[21] and Bumble Bee Watch.[22] An FCS Biologist also reviewed aerial photographs to gain perspective of the current land uses, plant community distributions, and locations of potential wildlife movement corridors in the project vicinity, and reviewed United States Department of Agriculture (USDA) soil surveys[23] to establish if soil conditions on the project site are suitable for excavation of burrows by burrowing wildlife.

Habitat Assessment

FCS Staff Biologists conducted field visits to the project site between March 19-22, 2024, to perform a habitat assessment for Crotch's bumble bee and characterize the biological conditions on-site. During the habitat assessment, FCS Biologists mapped vegetation communities and land cover, compiled a list of flowering plants, and recorded observations of threats to Crotch's bumble bees. Common plant species observed during the field visit were identified by visual characteristics and morphology in the field and recorded in a field notebook and on field maps. Uncommon and unfamiliar plants were identified with the use of taxonomical guides, including Jepson eFlora and Calflora.[24,25] Taxonomic nomenclature used in this study follows The Jepson Manual: Vascular Plants of California.[26] Common plant names, when not available from The Jepson Manual, were taken from other regionally specific references. Vegetation community types and boundaries were noted on aerial photos, verified through field observation, and digitized using Esri ArcGIS® Field Maps. Vegetation community and land cover types used to help classify

[19] California Department of Fish and Wildlife (CDFW). 2024. CNDDB RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed July 25, 2024.

[20] California Department of Fish and Wildlife (CDFW). 2024. Biogeographic Information and Observation System (BIOS 6). Website: https://wildlife.ca.gov/Data/BIOS. Accessed July 25, 2024.

[21] iNaturalist. 2024. Website: https://www.inaturalist.org. Accessed July 25, 2024.

[22] Bumble Bee Watch. 2024. Website: https://www.bumblebeewatch.org/. Accessed July 25, 2024.

[23] Natural Resources Conservation Service (NRCS). 2024. Web Soil Survey (WSS). United States Department of Agriculture (USDA). Website: https://websoilsurvey.nrcs.usda.gov/app/. Accessed July 25, 2024.

[24] Jepson Flora Project (eds.) 2023. Jepson eFlora. Website: https://ucjeps.berkeley.edu/eflora/. Accessed July 25, 2024.

[25] Calflora. 2020. Calflora: Information on California plants for education, research, and conservation. Website: http://www.calflora.org/. Accessed March 4, 2024.

[26] Baldwin, B., et al. 2012. The Jepson Manual: Vascular Plants of California. Berkeley, CA: University of California Press. County of San Bernardino (Bernardino). 2007 (amended 2015).

habitat types are based on the CNPS Manual of California Vegetation (MCV) and cross-referenced with the CDFW Natural Communities List.[27,28,29]

The information collected during the field visit was used to evaluate Crotch's bumble bee habitat and potential for occurrence using protocol presented in the Rusty Patched Bumble Bee Habitat Assessment Form and Guide published by the Xerces Society for Invertebrate Conservation.[30] The habitat assessment is a scoring system based on regional landscape features, site features, foraging habitat, nesting and overwintering habitat, pesticide practices, and management practices. FCS Biologists developed a score for the project site and compared it to the maximum possible score to evaluate the potential for occurrence of the species on-site.

Results and Discussion

Database Records for Crotch's Bumble Bee

According to the CNDDB, there are 16 records for Crotch's bumble bee within 18 miles of the project site. One historical record (1951) for Crotch's bumble bee was within 5 miles of the project site. There are eight CNDDB records within 10 miles of the project site, six recorded in 2020 and the remaining ranging from 1933 to 2001. A review of occurrence data for Crotch's bumble bee on the iNaturalist website determined that 10 recent observations were recorded within approximately 10 miles of the project site, including one observation approximately 6 miles southwest of project site recorded in 2023; two observations approximately 9 miles northwest of project site recorded from 2023 to 2024; three observations, in the Riverside East area, were recorded approximately 8 miles north of project site recorded in 2020 and 2024; and four observations approximately 9 miles east of the project site recorded between 2017 and 2024. A review of the Bumble Bee Watch website found a record for a Crotch's bumble bee approximately 3 miles northeast of the project site from April 2024.[31]

Topography and Hydrology

The project site has an elevation that ranges from approximately 1,260 feet above mean sea level (AMSL) near the northern portion of the project site to 1,365 AMSL near the southeast corner of the project site. The project site is situated on both open land and GoneStraw Farms property adjacent to Lake Mathews

[27] Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society, Sacramento.

[28] California Department of Fish and Wildlife (CDFW). 2022. Natural Communities List, Sacramento: California Department of Fish and Wildlife. July 5, 2022. Website: https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities#sensitive%20natural%20communities. Accessed July 25, 2024

[29] California Native Plant Society (CNPS). 2024. A Manual of California Vegetation Online. Website: https://vegetation.cnps.org/. Accessed September 4, 2024.

[30] Xerces Society for Invertebrate Conservation. 2017. Rusty Patched Bumble Bee Habitat Assessment Form and Guide. Website: https://xerces.org/publications/hags/rusty-patched-bumble-bee-habitat-assessment-form-guide. Accessed July 25, 2024.

[31] Bumble Bee Watch. 2024. Website: https://www.bumblebeewatch.org/. Accessed July 25, 2024.

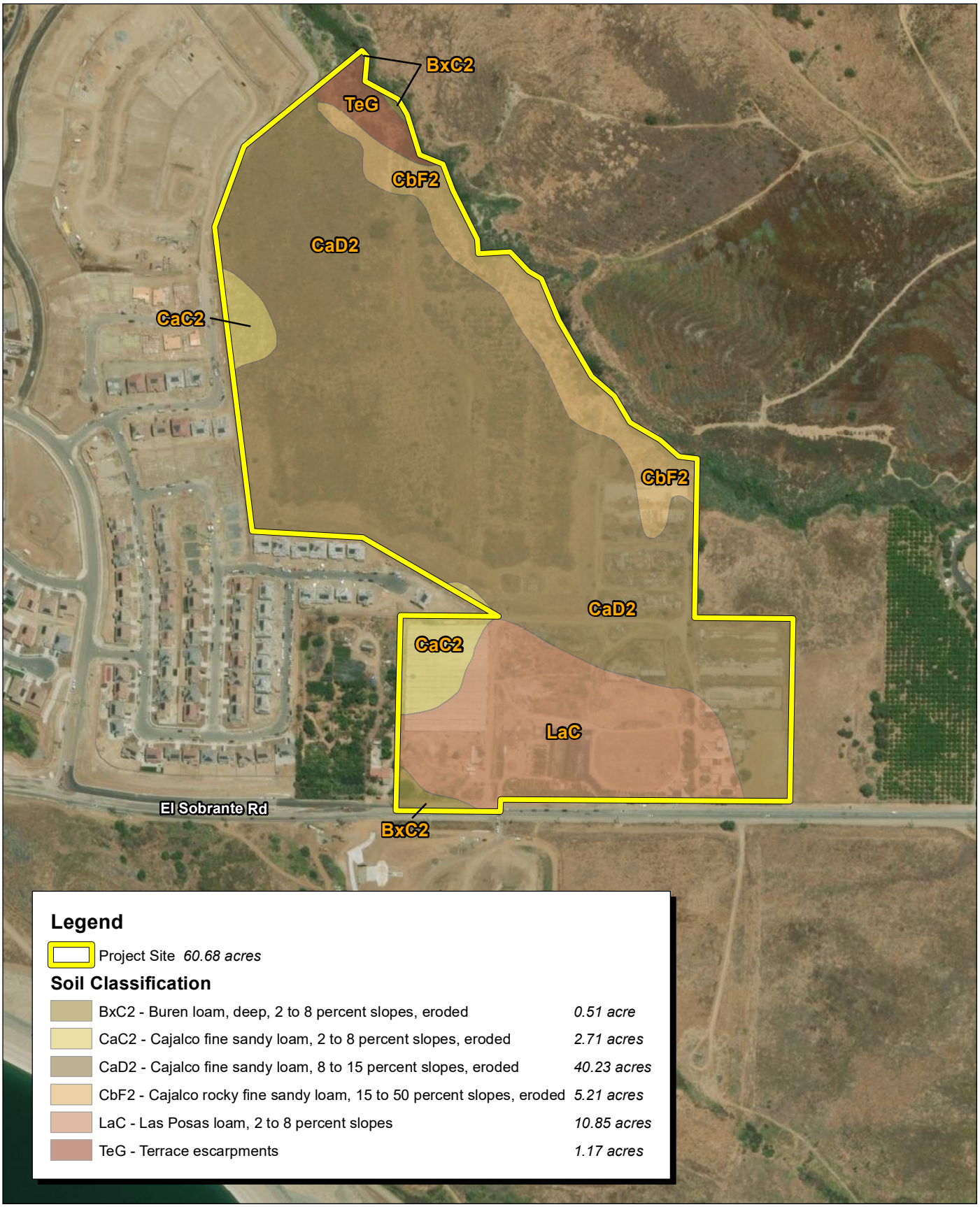
in the Riverside Region. The Riverside Region contains areas of valleys and hills bounded by the Lake Mathews Estelle Mountain Range to the south, the Box Springs Mountains on the north, and the Santa Ana Mountains on the southwest.

Soils

The Natural Resource Conservation Service (NRCS) Web Soil Survey (WSS) mapped six soil types on the project site, including three Cajalco soils, Las Posas loam, Buren loam, and Terrace Escarpments (Exhibit 4). These soils are generally friable and well drained, providing good burrowing habitat for burrowing wildlife. The presence of burrows on the project site could potentially provide nesting habitat for Crotch's bumble bees.

Table 1: Soil Types Present on the Project Site

Soil Name	Symbol	Slope	Description
Buren loam, eroded	BxC2	2-8%	Moderately well drained. Prime farmland if irrigated, alluvium derived from mixed sources. Elevation from 700 to 3,000 feet.
Cajalco fine sandy loam, eroded	CaD2	8-15%	Well drained. Not prime farmland. Residuum weathered from gabbro on side slopes and backslope. Elevation from 900 to 3,500 feet.
Cajalco find sandy loam, eroded	CaF2	15-35%	Well drained. Not prime farmland. Residuum weathered from gabbro on side slopes and backslope. Elevation from 900 to 3,500 feet.
Cajalco rocky fine sandy loam, eroded	CbF2	15-50%	Well drained. Not prime farmland. Residuum weathered from gabbro on side slopes and backslope. Elevation from 900 to 3,500 feet.
Las Posas loam, eroded	LaD2	8-15%	Well drained. Residuum weathered from gabbro on hills, side slopes, and backslope. Elevation from 200 to 3,000 feet.
Terrace escarpments	TeG	–	Shallow loamy, found on terraces. Alluvium is derived from mixed sources.



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

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450 225 0 450 Feet

Exhibit 4
Soils Map

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Vegetation Communities/Land Cover Types

The vegetation communities and land cover types recorded on the project site are described below. A map showing vegetation communities and land cover types is presented in Exhibit 5. A complete list of flowering plants found on the project site is presented in Appendix A. Photographs are presented in Appendix B.

Wild Oats and Annual Brome Grassland

The site contains non-native annual grassland that best matches wild oats and annual brome grassland as described in the CNPS MCV.[31] This community is found in much of the central, north, and northwestern portions of project site. Species observed within this community include red brome (*Bromus rubens*), ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum murinum*), black nightshade (*Solanum nigrum*), common fiddleneck (*Amsinckia intermedia*), white horehound (*Marrubium vulgare*), black mustard (*Brassica nigra*), and Italian thistle (*Carduus pycnocephalus*). Additionally, individual California pepper trees (*Schinus molle*) are scattered throughout the northern portion of the site in this community.

Mulefat Thickets

Drainages along the northern and eastern border of the project site support riparian vegetation best described as mulefat thickets or *Baccharis salicifolia* Shrubland Alliance as described in the CNPS MCV.[32] This community includes mulefat (*Baccharis salicifolia*), willow baccharis (*Baccharis salicina*), blue elderberry (*Sambucus nigra cerulea*), arroyo willow (*Salix lasiolepis*), red willow *(Salix laevigata*), and Anderson boxthorn (*Lycium andersonii*). Several emergent trees occur in scattered locations within this community, including Mexican fan palm (*Washingtonia robusta*), Canary Island date palm (*Phoenix canariensis*), and blue gum (*Eucalyptus globulus*).

Tree Tobacco Grove

A tree tobacco (*Nicotiana glauca*) grove is located within the northwestern portion of the site. This species, a native of South America, is a tree/shrub that grows to 10–20 feet tall. The tree tobacco grove, located in the western portion of the project site, is very dense, preventing the growth of other species.

Ruderal/Disturbed

Ruderal/disturbed habitat is present within northern and central portions of the project site. This land cover type is characterized by disturbed, cleared, and/or bare ground that is being invaded by native and non-native ruderal plant species. On the project site, ruderal/disturbed lands are found along a bare dirt road that traverses the site.

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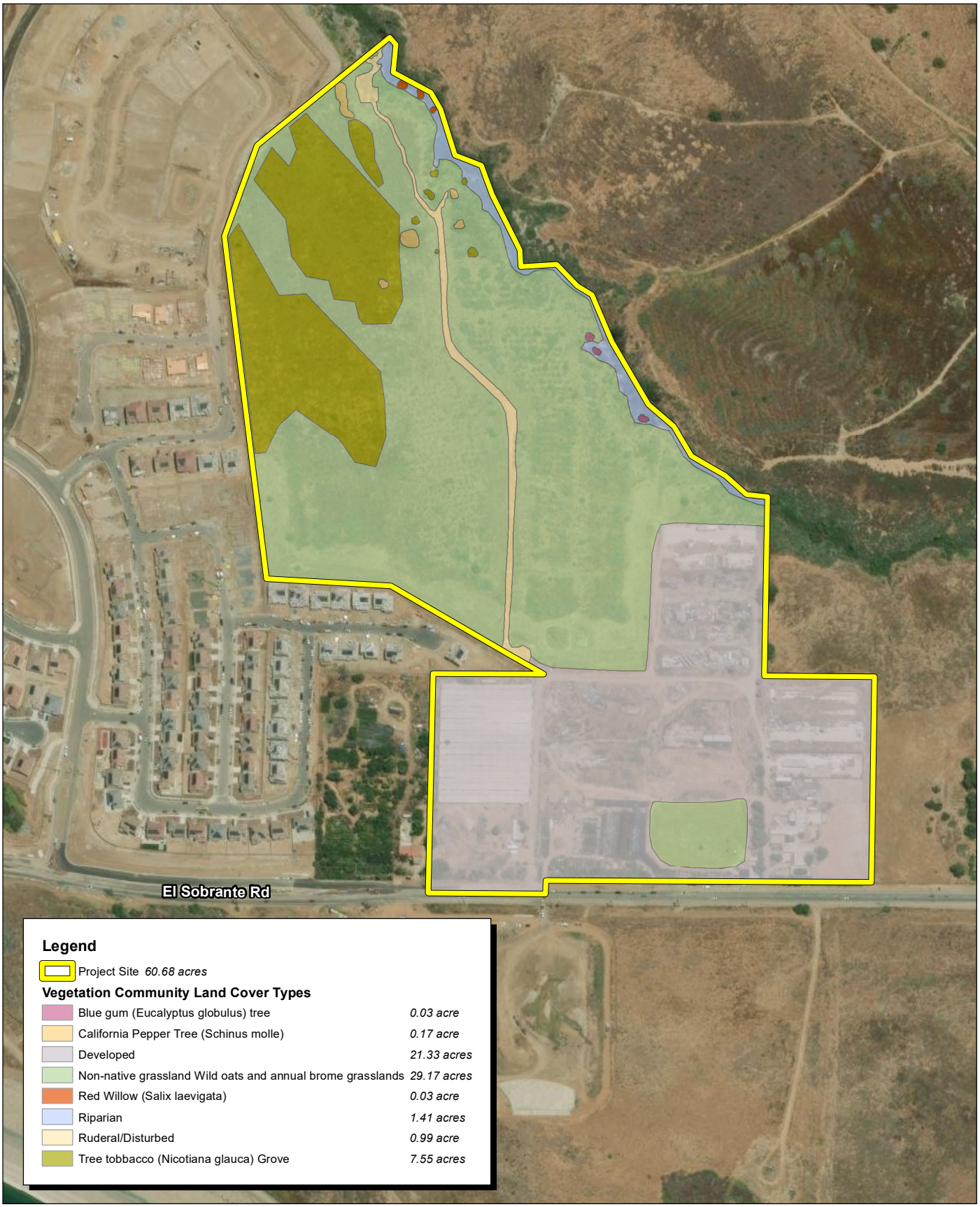
Developed

Developed land is characterized by areas that have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported and retains little to no soil substrate. Developed land is characterized by permanent or semi-permanent structures, pavement, or hardscape and landscaped areas that often require irrigation. Areas where no natural land is evident due to large amounts of debris or other materials having been placed upon it may also be considered developed (e.g., car recycling plant, quarry). Characteristic vegetation includes unvegetated or landscaped with a variety of ornamental (usually non-native) plants. Developed lands associated with a farming operation (GoneStraw Farms) are present throughout most of the southern portion of the project site, where there are several buildings, landscaped vegetation, a nursery, and additional storage coverings. Additionally, the center of the project site contains abandoned machinery, vehicles, and storage sheds, where much of the vegetation is ruderal, heavily disturbed, and shows signs of regular moving and tilling.



Source: ESRI Aerial Imagery.

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400 200 0 400 Feet

Exhibit 5
Vegetation Community Land Cover Map

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Habitat Assessment

The field survey determined that the project site is dominated by wild oats and annual brome grassland that is characterized by dense and expansive stands of black mustard and low species diversity. Most of the project site contains compacted soils, erosional areas, debris piles, and various dirt roads, with some scattered areas with friable soils that provide good burrowing opportunities for wildlife and potential nest sites for Crotch's bumble bees. Some Crotch's bumble bee forage species occur on-site, including common phacelia, California buckwheat, blue elderberry, mule fat, climbing milkweed, and common fiddleneck, but individuals of these species are scattered and do not occur in high densities on the project site. Beyond providing poor foraging opportunities, the high level of human disturbance on the project site along with the large number of non-native invasive vegetation, would likely prevent Crotch's bumble bees from utilizing this area as a nesting and overwintering habitat. Hard, compact soils and leftover disturbance from farming operations may further preclude nesting and overwintering opportunities. Rodent burrows recorded on the project site could provide potential overwintering and nesting burrows. However, most of the burrows were in disturbed areas with dirt roads, compacted soils, and were not situated in areas supporting Crotch's bumble bee forage species. Most of the grassland areas are dominated by thick stands of shortpod and black mustard, both non-native, invasive species which are not favored Crotch's bumble bee forage species. Other anthropogenic disturbances recorded on-site include grubbed, compacted roads intersecting the site from leftover citrus and haying operations; a developed and operational farm; debris piles and trash; and various dirt roads. Evidence from the field site visit indicates that foraging, nesting, and overwintering habitat is poor on the project site.

From a regional perspective, the project site is not surrounded by significant open space supporting Crotch's bumble bee habitat, though there is a mix of developed and undeveloped lands. The undeveloped lands on which the project site is situated are surrounded by undeveloped lands to the north and east; single-family residential developments to the west; and agricultural operations and El Sobrante Road to the south. Undeveloped lands around Lake Matthews likely provide significant areas of foraging and nesting habitat for Crotch's bumble bees. Though the project site is currently undeveloped, it has been used for hay production and historically functioned as a citrus operation. Some connection to undeveloped land is present but adjacent lands have also been subjected to disturbances from intense anthropogenic use. Bumble bees that occur in superior habitat on Lake Matthews lands likely only occasionally forage on the project site, if at all, given the poor foraging opportunities on-site and lack of resources in its immediate vicinity (developed areas).

When scoring the habitat value of the project site using the Xerces Society for Invertebrate Conservation Rusty Patched Bumble Bee Habitat Assessment Form and Guide,[32] the project site scored 91, representing 42.3 percent of the maximum possible score of 215 (Appendix C). The guide recommends

[32] Xerces Society for Invertebrate Conservation. 2017. Rusty Patched Bumble Bee Habitat Assessment Form and Guide. Website: https://xerces.org/publications/hags/rusty-patched-bumble-bee-habitat-assessment-form-guide. Accessed April 29, 2024.

that sites managed for rusty patched bumble bees should have a minimum score of 100. The project site does not meet the minimum score to be considered good habitat for Crotch's bumble bee using the Xerces criteria for rusty patched bumble bees.

Conclusions and Recommendations

The project site, though undeveloped, supports poor foraging habitat for Crotch's bumble bees due to low forage species diversity and scattered occurrences of forage species. There are burrows on-site that could potentially provide nesting and overwintering opportunities; however, most burrows are located in areas impacted by anthropogenic disturbances. The site is greatly impacted by development both on-site and in the local vicinity. Historical and current use of the site as an operating farm and previous hay and citrus operation, results in current conditions hosting a large variety of non-native invasive species and generally unfavorable site conditions for Crotch's bumble bee habitat. The Xerces criteria for rusty patched bumble bees determined that the project site did not meet the minimum recommended score, also suggesting poor habitat on-site. Because of the lack of good foraging, nesting, and overwintering habitat on the project site, the species is only expected to be an occasional, if at all, visitor to the project site as a forager, and is not expected to breed there. Because of poor habitat quality on-site, FCS recommends that focused surveys for the species are not warranted.

If we can be of any further assistance, or if you have any questions concerning this report, please contact me at 714.508.4100.

Sincerely,



Michael W. Tuma, PhD
Principal Biologist
FirstCarbon Solutions
250 Commerce Drive, Suite 210
Irvine, CA 92602

Enc:
Attachment A: Plants Observed On-site
Attachment B: Site Photographs
Attachment C: Habitat Assessment Scoring

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Attachment A:
Plants Observed On-Site

Table 1: Plant Species Observed on the Project Site

Family	Scientific Name	Common Name	Native/ Blooming Period	Potential Crotch's Bumble Bee Forage Species?
Monocots				
Arecaceae	*Phoenix canariensis*	Canary Island date palm	Non-native/ Oct-Apr	no
Arecaceae	*Washingtonia robusta*	Mexican fan palm	Non-native/ Apr-Jun	no
Poaceae	*Avena fatua*	Wild oat	Non-native Invasive/ Apr-May	no
Poaceae	*Bromus diandrus*	Ripgut brome	Non-native Invasive/ Apr-Jun	no
Poaceae	*Bromus rubens*	Red brome	Non-native/Feb-Jun	no
Poaceae	*Festuca myuros*	Rattail sixweeks grass	Non-native Invasive/ Feb-May	no
Poaceae	*Hordeum murinum*	Foxtail barley	Non-native/ Apr-May	no
Poaceae	*Melica imperfecta*	Smallflower melicgrass	Native/ Feb-Mar	no
Poaceae	*Schismus barbatus*	Common mediterranean grass	Non-native/ Mar-Apr	no
Typhaceae	*Typha latifolia*	Broadleaf cattail	Native/ May-Jun	no
Dicots				
Anacardiaceae	*Schinus molle*	Peruvian pepper tree	Non-native/ Mar-Jun	no
Apiaceae	*Bowlesia incana*	Hoary bowlesia	Native/ Mar-Apr	no
Apocynaceae	*Funastrum cynanchoides* var. *hartwegii*	Climbing milkweed	Native/ Apr-Jul	yes*
Asteraceae	*Anaphalis margaritaceae*	Pearly everlasting	Native/ Jun-Aug	yes
Asteraceae	*Baccharis salicifolia*	Mule fat	Native/ Jan-Dec	yes
Asteraceae	*Baccharis salicina*	Willow baccharis	Native/ Aug-Dec	yes
Asteraceae	*Centaurea melitensis*	Maltese star thistle	Non-native Invasive/ Apr-Aug	no
Asteraceae	*Encelia californica*	California brittlebush	Native/ Feb-Jun	yes
Asteraceae	*Encelia farinosa*	Brittlebush	Native/ Jan-May	yes

Family	Scientific Name	Common Name	Native/ Blooming Period	Potential Crotch's Bumble Bee Forage Species?
Asteraceae	*Ericameria pinifolia*	Pinebush	Native/ Apr-Jul	yes
Asteraceae	*Heterotheca grandiflora*	Telegraph weed	Native/ Jan-Dec	yes
Asteraceae	*Lactuca serriola*	Prickly lettuce	Non-native/ May-Sep	no
Asteraceae	*Logfia filaginoides*	California cottonrose	Native/ Mar-Jun	no
Asteraceae	*Oncosiphon piluliferum*	Stinknet	Non-native Invasive/ Mar-Jul	no
Asteraceae	*Pseudognaphalium californicum*	Ladies' tobacco	Native/ Jan-Jul	yes
Asteraceae	*Sonchus asper*	Spiny sowthistle	Non-native/ Feb-Oct	no
Boraginaceae	*Amsinckia intermedia*	Common fiddleneck	Native/ Feb-Jun	yes*
Boraginaceae	*Pectocarya penicillata*	Winged comb seed	Native/ Mar-Jun	no
Brassicaceae	*Brassica nigra*	Black mustard	Non-native Invasive/ Apr-Jul	no
Brassicaceae	*Cardamine hirsuta*	Hairy bitter cress	Non-native/ Feb-Jul	no
Brassicaceae	*Hirschfeldia incana*	Shortpod mustard	Non-native Invasive/ Jan-Dec	no
Brassicaceae	*Lepidium latifolium*	Broadleaved pepperweed	Non-native Invasive/ May-Jul	no
Brassicaceae	*Nasturtium officinale*	Watercress	Native/ May - Sep	no
Brassicaceae	*Sisymbrium irio*	London rocket	Non-native Invasive/ Jan-Apr	no
Cactaceae	*Cylindropuntia californica parkeri*	Valley cholla	Native/Apr- Jul	no
Cactaceae	*Cylindropuntia californica*	California cholla	Native/ Apr-Jul	no
Chenopodiaceae	*Atriplex canescens*	Fourwing saltbush	Native/ May-Jun	no
Chenopodiaceae	*Chenopodium californicum*	California goosefoot	Native/ Mar-Jun	no
Chenopodiaceae	*Chenopodium murale*	Nettle leaf goosefoot	Non-native/ Jan-Dec	no
Chenopodiaceae	*Salsola tragus*	Russian thistle	Non-native Invasive/ Jul-Oct	no
Cucurbitaceae	*Marah macrocarpa*	Chilicothe	Native/ Jan-Apr	yes
Cupressaceae	*Juniperus californica*	California Juniper	Native/ N/A	no

Family	Scientific Name	Common Name	Native/ Blooming Period	Potential Crotch's Bumble Bee Forage Species?
Euphorbiaceae	*Euphorbia albomarginata*	Rattlesnake sandmat	Native/ Apr-Nov	no
Euphorbiaceae	*Ricinus communis*	Castor bean	Non-native Invasive/ Jan-Dec	no
Geraniaceae	*Erodium cicutarium*	Redstem stork's bill	Non-native Invasive/ Feb-Jun	no
Geraniaceae	*Erodium malacoides*	Mediterranean stork's bill	Non-native/ Feb-Jul	no
Hydrophyllaceae	*Eucrypta chrysanthemifolia* var. *chrysanthemifolia*	Common eucrypta	Native/ Mar-Jun	no
Hydrophyllaceae	*Phacelia distans*	Common phacelia	Native/ Mar-Jun	yes*
Lamiaceae	*Marrubium vulgare*	White horehound	Non-native/ May-Aug	yes
Meliaceae	*Melia azedarach*	Persian lilac	Non-native/ Mar-Jul	no
Moraceae	*Broussonetia papyrifera*	Paper mulberry	Non-native/ (mid-late spring)	no
Moraceae	*Ficus carica*	Common fig	Non-native Invasive/ Mar-Apr	no
Myrtaceae	*Eucalyptus globulus*	Blue gum	Non-native Invasive/Oct-Mar	no
Nyctaginaceae	*Mirabilis laevis var. crassifolia*	California four o'clock	Native/ Dec-Jun	no
Polygonaceae	*Eriogonum fasciculatum*	California buckwheat	Native/ Apr-Sep	yes*
Polygonaceae	*Rumex acetosella*	Common sheep sorrel	Non-native Invasive/ Mar-Nov	no
Salicaceae	*Salix gooddingii*	Goodding's black willow	Native/ Feb-Mar	no
Salicaceae	*Salix lasiolepis*	Arroyo willow	Native/ Feb-May	no
Solanaceae	*Datura wrightii*	Jimsonweed	Non-native/ Jun-Aug	no
Solanaceae	*Lycium andersonii*	Anderson's thornbush	Native/ Mar-May	no
Solanaceae	*Nicotiana glauca*	Tree tobacco	Non-native Invasive/ Mar-Sep	no
Solanaceae	*Solanum douglasii*	Douglas' nightshade	Native/ Jan-Dec	no
Solanaceae	*Solanum nigrum*	Black nightshade	Non-native/ Mar-Oct	no
Urticaceae	*Urtica dioica*	Stinging nettle	Native/ May-Sep	no

Family	Scientific Name	Common Name	Native/ Blooming Period	Potential Crotch's Bumble Bee Forage Species?
Urticaceae	*Urtica urens*	Dwarf nettle	Non-native/ Jan- Apr	no
Viburnaceae	*Sambucus nigra cerulea*	Blue elderberry	Native/ Mar-May	yes
*known preferred forage species				

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Attachment B:
Site Photographs



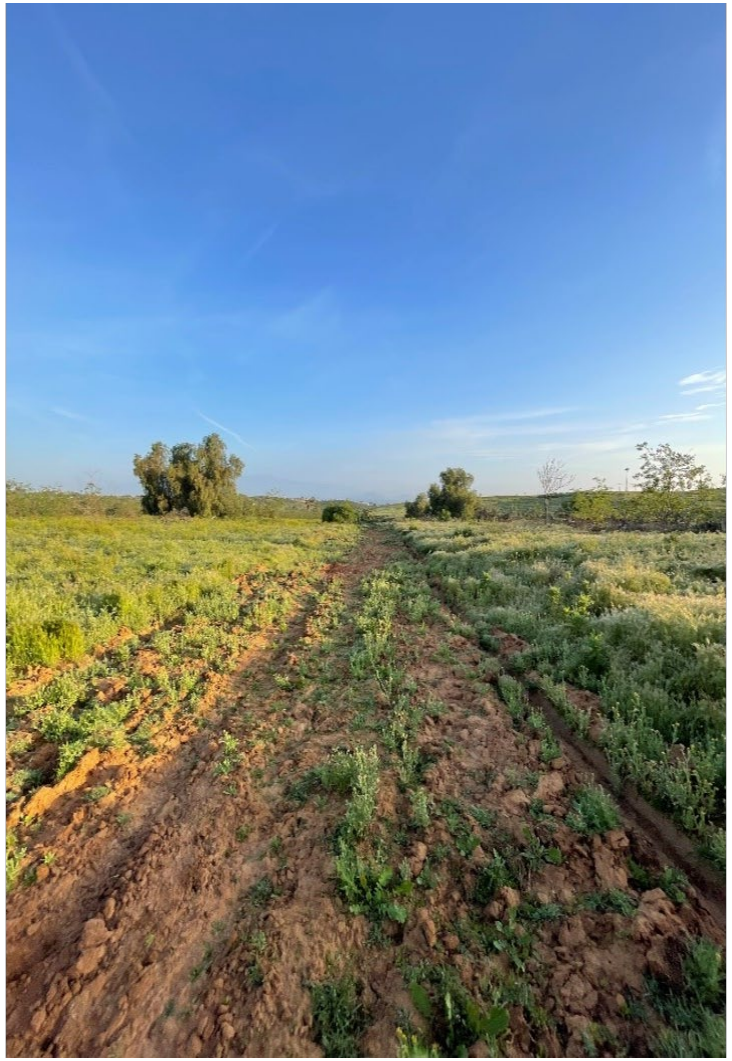
Photograph 1: Southeastern boundary of project site.



Photograph 2: California ground squirrel burrow in the western portion of project site.



Photograph 3: Riparian habitat in northern portion of Drainage Segment 1-1.



Photograph 4: Central portion of the project site, facing north. Existing grubbed/graded dirt pathway bisects the project site.



Photograph 5: Central portion of the project site, facing north. Existing dirt pathway narrows as it approaches Drainage Segment 1-1.



Photograph 6: Southeastern portion of the project site, facing north. Thickets of common fiddleneck and mustard present.

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Attachment C:
Habitat Assessment Scoring

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Habitat Assessment Scoring for Crotch's Bumble Bee

SCORING CRITERIA

Section 1: Regional and Landscape Features

1a. Percentage of the grid cell that is natural habitat: >30% (score=10)

1b. Dominant vegetation/land cover within ½ mile of assessment area: Mix of native, naturalized, and weedy/invasive species (score=3)

Section 2: Site Features

2a. Percentage of site that is in natural or semi-natural habitat: 25-49% (score=5)

2b. Additional site features that are present: 1 point for every 20% of area that is grass (2) (total score=2)

Section 3: Foraging Habitat

3a. Percentage of vegetative cover that is comprised of forbs, flowering shrubs, or pollinator friendly trees on site: 20-30% cover (score=5)

3b. Number of species of forbs, flowering shrubs, or pollinator-friendly trees on site that bloom in spring and support bees: 10+ species (score=10)

3c. Number of species of forbs, flowering shrubs, or pollinator-friendly trees on site that bloom in summer and support bees: 10-17 species (score=7)

3d. Number of species of forbs, flowering shrubs, or pollinator-friendly trees on site that bloom in fall and support bees: 1–4 species (score=5)

3e. Crotch's bumble bee superfoods (species most commonly used by the species): 1–4 species (score=2)

3f. Crotch's bumble bee forage species that are known to help build bumble bee immune systems: Score one point, up to 3 for each species present (score=1).

Section 4: Nesting and Overwintering Habitat

4a. Nesting and overwintering habitat: <5% bunch grasses (score=1); ~20% rodent activity (score=3); ~10% unmowed, ungrazed (score=1); <5% woody, rocky cover (score=1); 1 leaf litter (score=1)

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Section 5: Management and Pesticide Practices

5a. Management and pesticides practices: no herbicide use (score=5); no pesticides use (score=35); no fungicide use (score=5); no insecticide use (score=8); buffers from insecticide applications (score=0); spray control (score=0). Max score=40

5b. Land management techniques: mowing (N; score=0); grazing (N; score=0); burning (N; score=0); honey bees (N; score=0)

SCORING SUMMARY

Section 1	Regional and Landscape Features (max score 20): **13**
Section 2:	Site Features (max score 35): **7**
Section 3:	Foraging Habitat (max score 50): **30**
Section 4:	Nesting and Overwintering Habitat (max score 30): **7**
Section 5a:	Pesticide Practices (max score 40): **40**
Section 5b:	Management Practices (max score 40): **0**
Total:	**91 of 215 (42.3%)**
Source: Based on Xerces Invertebrate Conservation Society. 2017. Rusty Patched Bumble Bee Habitat Assessment Form and Guide. Website: https://xerces.org/publications/hags/rusty-patched-bumble-beehabitat-assessment-form-guide. Accessed November 25, 2024	

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C-3: Determination of Biologically Equivalent or Superior Preservation

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Determination of Biologically Equivalent or Superior Preservation
Highland Grove II Development Project
Unincorporated Riverside County, California

Assessor's Parcel Numbers (APNs) 270-160-002, -003, -018, -020, -021, -022, -023, and -024

Prepared for:
Pulte Home Company, LLC
27401 Los Altos, Suite 400
Mission Viejo, CA 92691

Contact: Robert Paradise

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250 Commerce, Suite 210
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Michael W. Tuma, PhD, Principal Biologist

Date: February 6, 2025

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SECTION 1: EXECUTIVE SUMMARY

This document presents the results of a Determination of Biologically Equivalent or Superior Preservation (DBESP) analysis conducted by FirstCarbon Solutions (FCS) for the proposed Highland Grove II Project (proposed project), as required under Section 6.1.2, Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools, of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP).

The proposed project would require the construction of 128 lots to be developed with single-family detached residential dwelling units. Construction of the proposed project would result in permanent impacts to approximately 0.07-acre of MSHCP Section 6.1.2 Riverine resources (0.05-acre of Riparian and 0.02-acre of Riverine). The following mitigation strategy is proposed to meet the criteria of a biologically equivalent or superior alternative. The applicant shall offset permanent impacts to MSHCP Section 6.1.2 Riverine resources as follows:

- The proposed project includes permanent impacts to 0.05 acre of Riparian habitat and 0.02 acre of a Riverine feature. There are no temporary impacts associated with the proposed project. To achieve biologically equivalent or superior preservation, the applicant proposes to offset permanent impacts to 0.07-acre of Riparian/Riverine resources by purchasing 0.14 acre of rehabilitation credits (2:1 ratio) at the Riverpark Mitigation Bank or other agency-approved mitigation bank or to provide applicant-sponsored mitigation located on-site or off-site. The applicant shall also obtain any needed permits from the Regional Water Quality Control Board (RWQCB) and California Department of Fish and Wildlife (CDFW) for impacts to jurisdictional areas.
- Prior to construction, the limits of the Riverine feature and Riparian habitat shall be delineated with fencing or flagging (orange plastic snow fence, orange silt fencing, or stakes and flagging) and designated as an Environmentally Sensitive Area (ESA). No construction activities and/or access would be permitted within the ESA-designated areas. If work occurs within the ESA areas, all work shall cease until the issue has been resolved through the appropriate regulatory agencies and the County of Riverside. ESA fencing and/or flagging shall be maintained in good repair by the contractor and shall be removed upon completion of project construction.
- The proposed project would comply with all applicable water quality regulations, including obtaining and complying with those conditions established in Waste Discharge Requirements (WDRs) and a National Pollutant Discharge Elimination System (NPDES) permit. Standard Best Management Practices (BMPs), which may include but are not limited to silt fencing, gravel berm, and/or fiber rolls, shall be installed to prevent any sediment and stormwater flows from entering the Riverine feature. A project-specific Water Quality Management Plan and/or a Stormwater Pollution Prevention Plan (SWPPP) shall be implemented for the proposed project and shall detail project-specific BMPs.

1.42 acres of Riparian/Riverine resources on the project site shall be avoided and shall remain undeveloped.

Construction of the proposed project would result in temporary indirect noise impact to the least Bell's vireo (*Vireo bellii pusillus*). The following mitigation strategy is proposed to meet the criteria of a biologically equivalent or superior alternative. The applicant shall offset temporary impacts to the least Bell's vireo as follows:

- If ground-disturbing or vegetation-removing project activities are initiated in Riparian habitat during the breeding season for least Bell's vireo (March 15 through September 30), the project applicant shall implement a pre-construction survey for the species. The pre-construction survey for least Bell's vireo shall be implemented by a qualified Biologist within any affected Riparian habitat on the project site, as well as in Riparian habitat (on-site or off-site) within 500 feet of the project activities. The survey shall be implemented within 7 days of the initiation of project activities. If more than 7 days passes following implementation of the survey, an additional pre-construction survey shall be implemented. If the pre-construction survey is negative for least Bell's vireo nests, no further action is necessary. If nesting least Bell's vireo are detected within 500 feet of planned project activities, the project applicant shall implement the mitigation measures below. If nesting least Bell's vireo are detected in the 0.05-acre Riparian habitat that will be permanently impacted by the proposed project, the project applicant shall implement the mitigation measures below.
- If an active least Bell's vireo nest is located during the pre-construction survey, a qualified Biologist shall establish and demarcate a 500-foot avoidance buffer using Environmentally Sensitive Area (ESA) fencing, pin flags, and or yellow caution tape. No construction activities or construction foot traffic is allowed to occur within the avoidance buffer(s). Construction personnel shall be instructed not to enter the ESAs, and the Biologist(s) shall ensure that ESA boundaries are maintained. The ESA buffer zone shall be maintained around the active nest site(s) until the young have fledged and are foraging independently.
- If an active least Bell's vireo nest is found in the 0.05-acre Riparian habitat that will be permanently impacted by the proposed project, the project applicant shall establish a 500-foot ESA around the active least Bell's vireo nest(s) until the young have fledged. The project applicant shall also prepare a Determination of Biologically Equivalent or Superior Preservation (DBESP) report that details on-site and/or off-site mitigation to offset loss of occupied least Bell's vireo habitat. The project applicant shall consult with the California Department of Fish and Wildlife (CDFW), United States Fish and Wildlife Service (USFWS), and Regional Conservation Authority (RCA) to determine appropriate mitigation for the loss of least Bell's vireo habitat due to project implementation. The outcome of the consultation shall determine the need for on-site or off-site mitigation for least Bell's vireo, including habitat area mitigation ratios, which shall be detailed in the DBESP.

SECTION 2: INTRODUCTION

This document presents the results of a DBESP analysis conducted by FCS for the proposed project as required under Section 6.1.2, Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools, of the Western Riverside County MSHCP.

2.1 - Project Area

The approximately 60.68-acre project site is located in Unincorporated Riverside County (County), California (Exhibit 1). The project site is surrounded by the City of Riverside to the north, the community of Woodcrest to the east, Lake Mathews to the south, and the City of Corona to the west. Regional access to the site is provided via Interstate 15 (I-15), which bisects the project vicinity north to south. Additional regional access to the site is provided via State Route (SR) 91, which bisects the project vicinity east to west. Local access to the site is provided via El Sobrante Road.

The project site is located at the southwest corner of McAllister Street and El Sobrante Road on several parcels, which includes Assessor's Parcel Numbers (APNs) 270-160-002, -003, -018, -020, -021, -022, -023, and -024. The project site is located within the *Lake Mathews*, *California* USGS 7.5-minute Topographic Quadrangle Map (Exhibit 2a and Exhibit 2b).

The project site is not located within Public/Quasi-Public Lands (PQP) Conserved Lands, Cellgroup, or Criteria Cell. However, the project site is adjacent to an area of PQP Conserved Lands (Exhibit 3). The adjacent PQP Land includes barren ground adjacent to Lake Mathews that has potential to house burrowing owl (*Athene cunicularia*) but is not a critical survey area for sensitive plants or animals outside of burrowing owl. The nearest Criteria Cell to the project site is Criteria Cell 2026, approximately 1 mile southwest of the project site. No adjacent PQP Lands or Criteria Cells would be permanently impacted by the proposed project. This project area is not located within any linkage.

The project site is located in MSHCP Covered Species survey areas for burrowing owl but not within the Narrow Endemic Plant Species Survey Area (NEPSSA), Criteria Area Plant Species Survey Area (CAPSSA), amphibian survey area, mammal survey area, or the Delhi sands flower-loving fly (*Rhaphiomidas terminates abdominalis*) survey area.

2.2 - Project Description

The Home Company, LLC (project applicant) proposes a residential subdivision on the 60.68-acre project site, located at the southwest corner of McAllister Street and El Sobrante Road in Unincorporated Riverside County (Exhibit 4). The proposed project would consist of up to 128 lots to be developed with single-family detached residential dwelling units for a density of 2 dwelling units per acre (du/acre). The project site would connect to existing water, sewer, electrical, telephone, and gas utilities in the El Sobrante Road right-of-way. All existing power poles on the project site are to be relocated underground.

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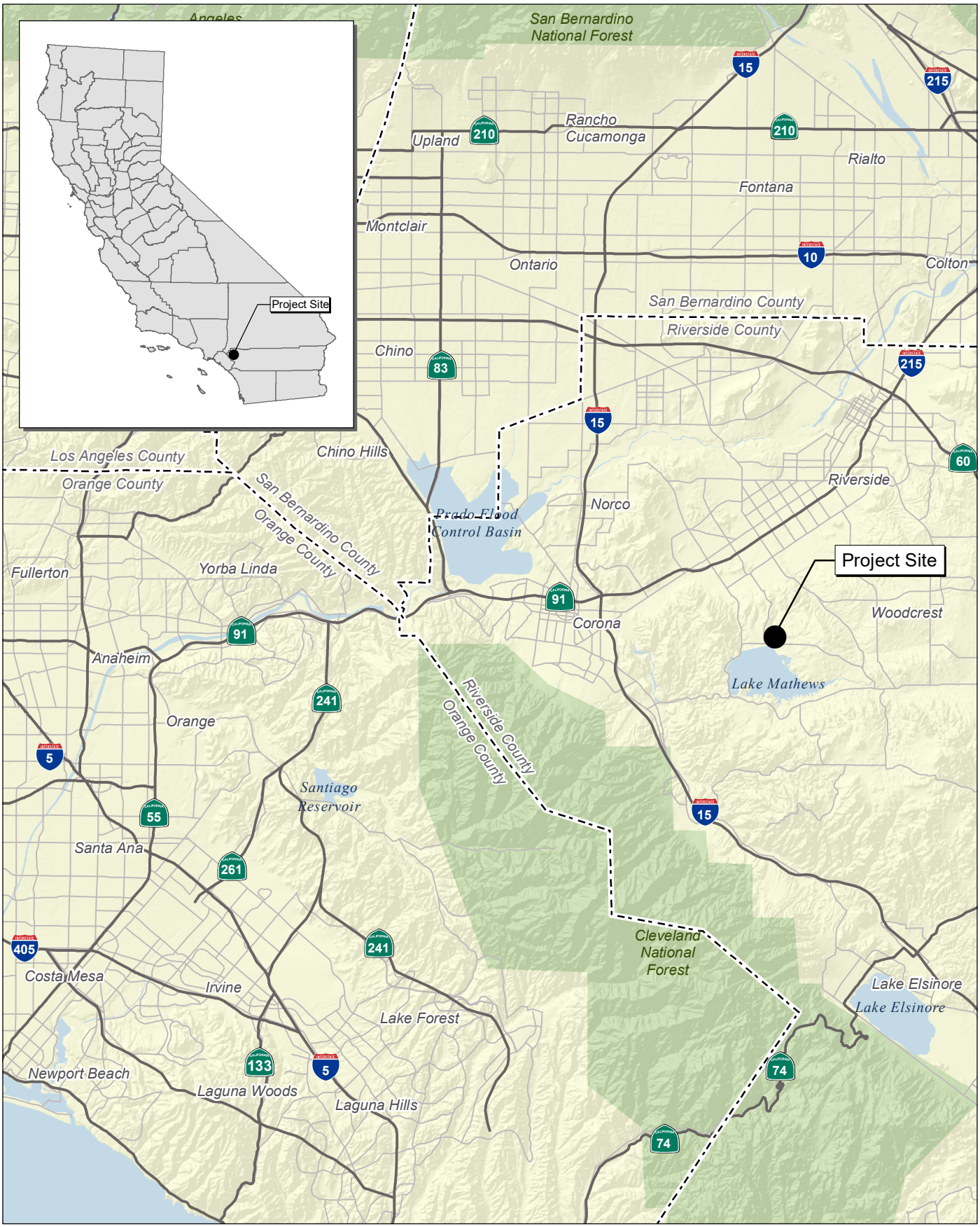

Source: Census 2000 Data, The California Spatial Information Library (CaSIL).

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Miles

Exhibit 1
Regional Location Map

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Source: USGS Lake Mathews 7.5' Quadrangles / T03S,R05W,sec32.

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2,000 1,000 0 2,000
Feet

Exhibit 2a
Local Vicinity Map
Topographic Base

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RIVERSIDE COUNTY
HIGHLAND GROVE II PROJECT
DETERMINATION OF BIOLOGICALLY EQUIVALENT OR SUPERIOR PRESERVATION

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Source: ESRI Aerial Imagery.

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1,000 500 0 1,000
Feet

Exhibit 2b
Local Vicinity Map
Aerial Base

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RIVERSIDE COUNTY
HIGHLAND GROVE II PROJECT
DETERMINATION OF BIOLOGICALLY EQUIVALENT OR SUPERIOR PRESERVATION

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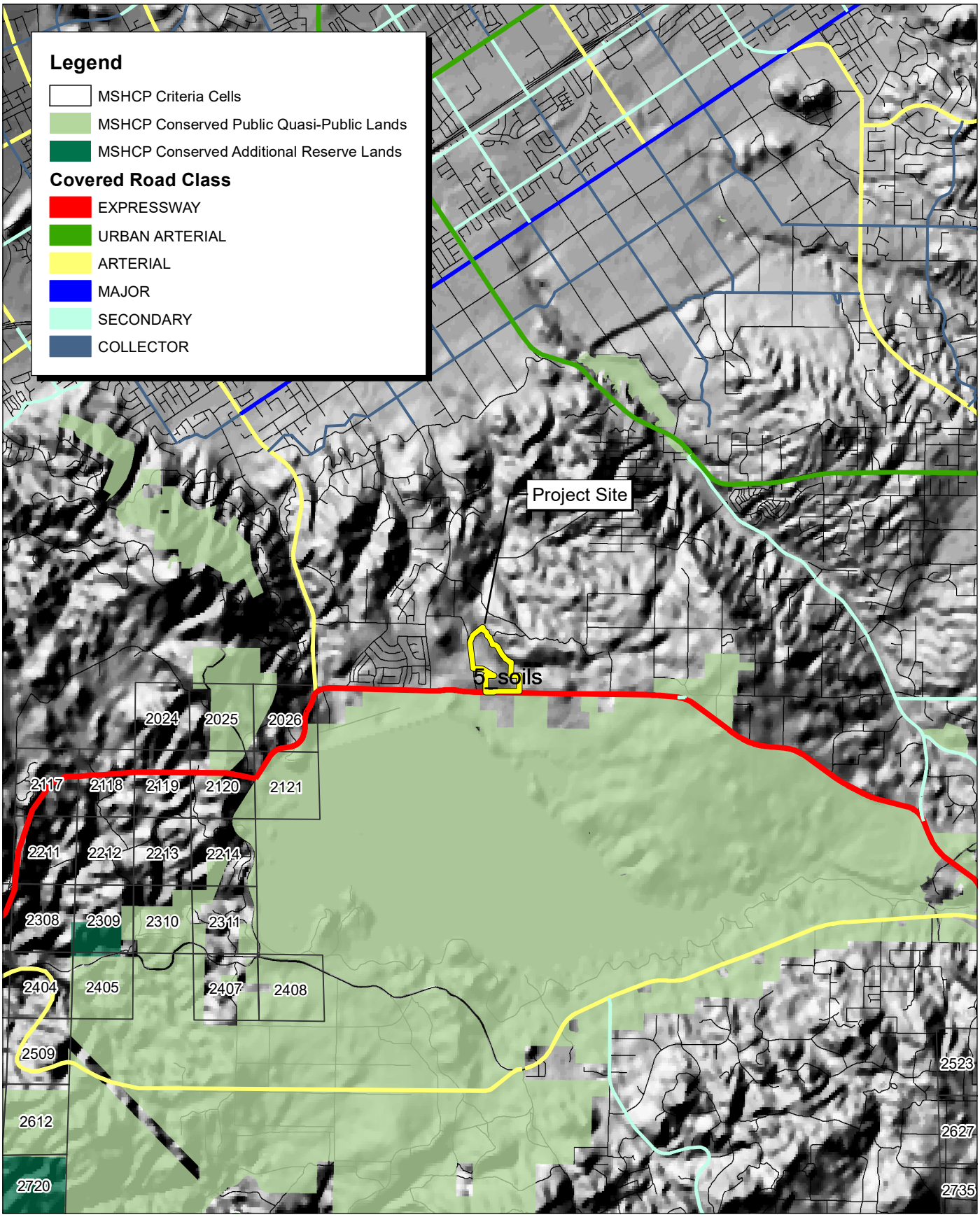

Source: USGS, Western Riverside County Regional Conservation Authority (RCA) MSHCP, Census 2000 data.

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1 0.5 0 1 Miles

Exhibit 3
MSHCP Conservation Areas

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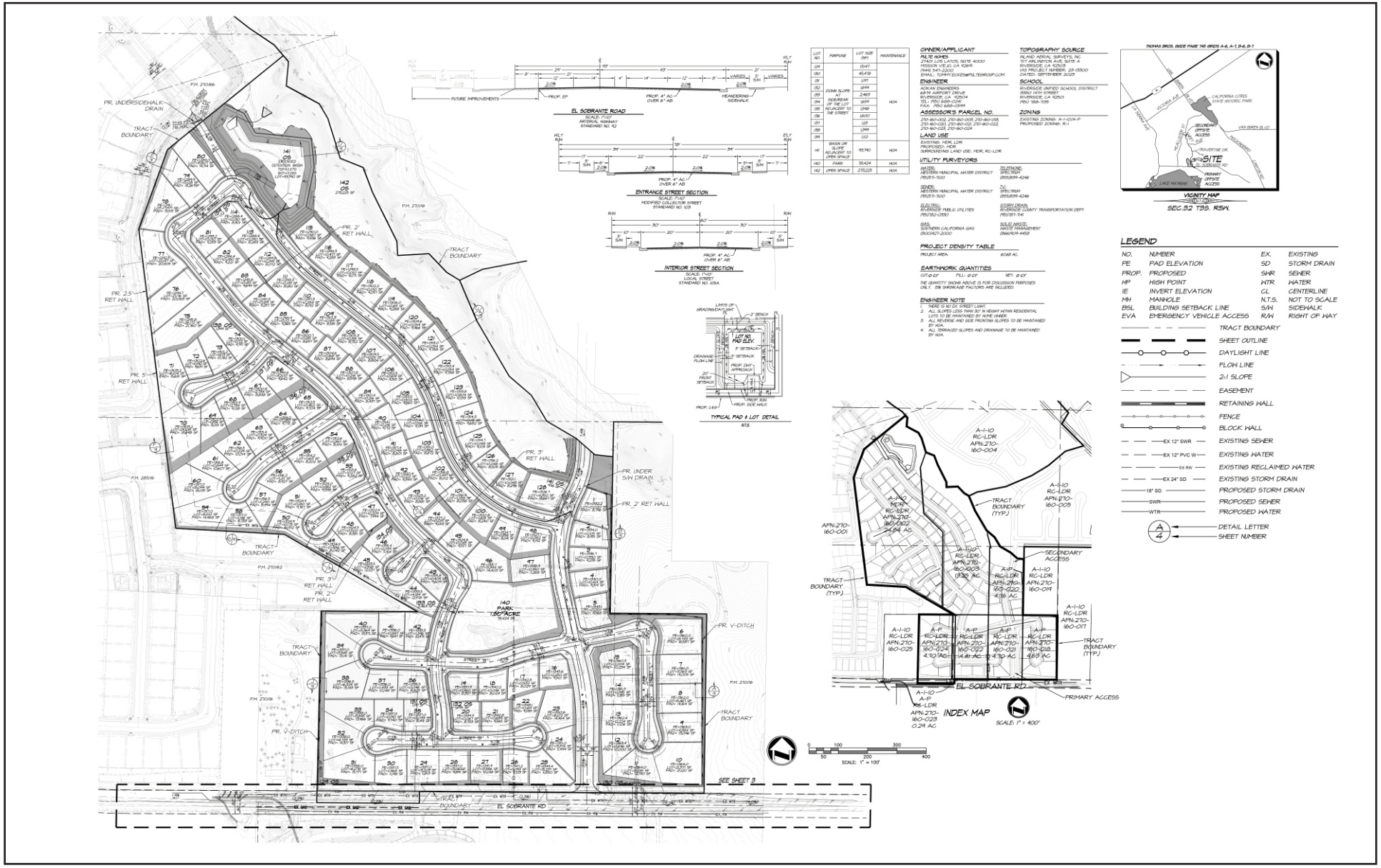

Source: Adkan Engineering, Feb 2024.

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Exhibit 4
Site Plan

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2.2.1 - Off-site Improvements

The proposed project would also include improvements on El Sobrante Road, along the southern property line. Proposed ingress/egress off the proposed Street A is from El Sobrante Road and associated right-of-way improvements. At the crossing, Street A is 44-foot pavement from curb face to curb face and 66-foot right-of-way. This section allows for parking on both sides of the road and one lane of travel in each direction. The proposed improvements would include frontage improvements along El Sobrante Road, including curb, gutter, sidewalk, and landscaping.

2.2.2 - Site Access and Circulation

Vehicular access to the project site would be provided via one access point (Street A), connecting El Sobrante Road to the internal circulation system. On-site circulation would consist of several new two-lane, two-way roadways throughout the project site with interconnecting roads (Streets A–K).

The proposed project would include on-street parking available on all public streets in the tract, in addition to private residential parking within garages.

2.2.3 - Lighting

Existing outdoor lighting at and near the project site is associated with residential and street lighting typical of suburban areas. The proposed project would generate lighting from two primary sources: lighting from building interiors that would pass through windows and lighting from exterior sources (e.g., street lighting, vehicles, security lighting, and landscape lighting). Lighting associated with the proposed project would not be directed toward adjacent properties across El Sobrante Road or toward the residential homes adjacent to the west.

2.2.4 - Storm Drainage

The proposed project has been designed to avoid and protect the drainage courses along the northerly, easterly, and westerly boundaries and a portion of the southern boundary, impacting those drainage areas only where needed to provide access and utilities as described above. The proposed project also includes three water quality and storm detention basins to treat site runoff before discharging to the pre-existing flow paths at the drainage courses along the project perimeter.

The proposed culvert crossing at El Sobrante Road and Street A would include a headwall at the upstream end collecting the drainage flows from the east side of the drainage course into a 72-inch Reinforced Concrete Pipe Culvert approximately 198 linear feet and discharging the flows downstream through a headwall to a rip-rap pad for velocity dissipation to the downstream end of the drainage course on the west side of the road. This culvert crossing has been sized for an anticipated approximately 632.91 cubic feet per second (CFS) in the 100-year rational storm event.

2.2.5 - Construction and Phasing

Construction activities would include site preparation, grading, and construction. Construction is anticipated to take approximately 22 months and would occur from May 2028 to March 2030. Construction would take place Monday through Friday between the hours of 7:00 a.m. and 7:00 p.m.

and Saturdays between the hours of 8:00 a.m. and 5:00 p.m., pursuant to the Riverside County Code of Ordinances noise standards. Construction staging would occur within the project site boundaries.

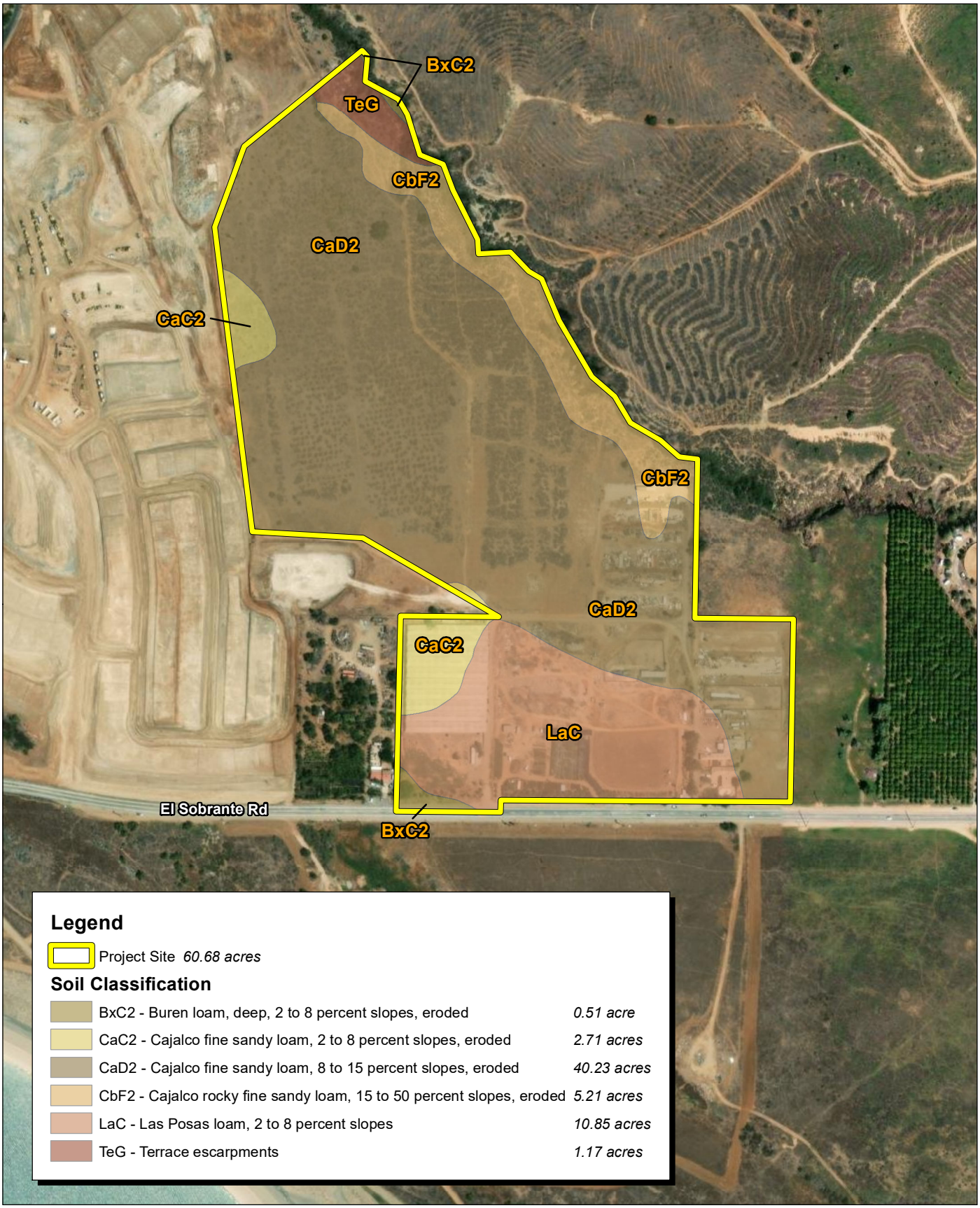
2.3 - Existing Conditions

The project site is situated on both open land and GoneStraw Farms property adjacent to Lake Mathews in the Riverside Region. The Riverside Region contains areas of valleys and hills bounded by the Lake Mathews Estelle Mountain Range to the south, the Box Springs Mountains on the north, and the Santa Ana Mountains on the southwest. The project site has an elevation that ranges from approximately 1,260 feet above mean sea level (AMSL) near the northern portion of the project site to 1,365 feet AMSL near the southeast corner of the project site.

2.3.1 - Soils

The Natural Resource Conservation Service (NRCS) Web Soil Survey (WSS) mapped six soil types on the project site (Exhibit 5):

- Buren loam, deep, 2–8 percent slopes, eroded
- Cajalco fine sandy loam, 2–8 percent slopes, eroded
- Cajalco fine sandy loam, 8–15 percent slopes, eroded
- Cajalco rocky fine sandy loam, 15–50 percent slopes, eroded
- Las Posas loam is 2–8 percent slopes, eroded
- Terrace escarpments



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

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Exhibit 5
Soils Map

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2.3.2 - Vegetation Communities and Land Use

The project site consists predominantly of agricultural fields in the southern portion of the site containing a nursery and soil piles with open, dense grassland to the north. Ephemeral and intermittent drainages that support sparse Riparian vegetation are also located within the site's northeastern reaches. The vegetation communities and land cover types are summarized in Table 1. A map showing vegetation communities and land cover types is presented in Exhibit 6. Photographs are presented in Appendix A.

Table 1: Vegetation Communities and Acreages

Vegetation Community	Project Site (acres)	Off-site (acres)	Total (acres)
Developed	21.33	0.00	21.33
Non-native grassland (wild oats and annual brome grasslands)	29.35	0.00	29.35
Mulefat thickets	1.47	0.00	1.47
Ruderal/Disturbed	0.98	0.00	0.98
Tree tobacco (*Nicotiana glauca*) grove	7.55	0.00	7.55
Total	**60.68**	**0.00**	**60.68**

2.3.3 - Wildlife

The vegetation community and land cover types on the project site provide habitat for wildlife species that are tolerant of non-native annual grassland, Riparian, and disturbed habitat types. The non-native grassland provides foraging opportunities for common invertebrates, reptiles, birds, and mammals, and potential nesting habitat for ground-nesting birds. The anthropogenic features within the southern portion of the project site (buildings and ornamental trees) could provide habitat for several wildlife species, including nesting birds. Wildlife activity during the general biological reconnaissance survey was low and almost no species were observed. No special-status wildlife species were observed during the survey and only California ground squirrels (*Otospermophilus beecheyi*) were observed on-site.

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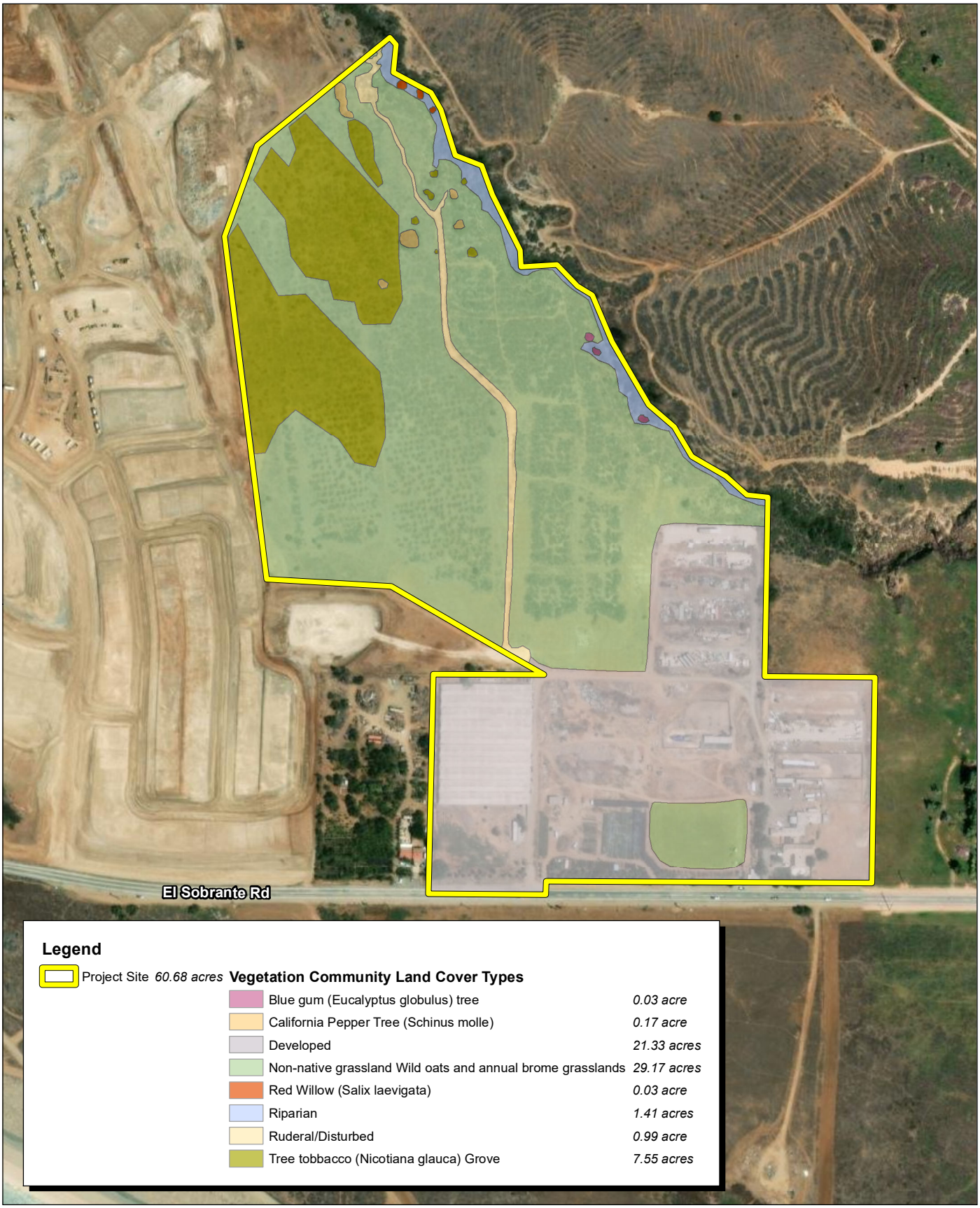

Source: ESRI Aerial Imagery.

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Exhibit 6
Vegetation Community Land Cover Map

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SECTION 3: RIPARIAN, RIVERINE, VERNAL POOL MITIGATION

3.1 - Methods

A formal jurisdictional delineation of wetlands/waters was completed by FCS in May 2024 (Appendix B). The delineation determined the boundaries or absence of potential wetland and non-wetland waters of the United States subject to the regulatory jurisdiction of the United States Army Corps of Engineers (USACE) pursuant to Clean Water Act (CWA) Section 404; wetland and non-wetland waters of the State subject to the regulatory jurisdiction of the RWQCB pursuant to CWA Section 401 and State Porter-Cologne Water Quality Control Act (Porter-Cologne); and streambed and Riparian habitat subject to the regulatory jurisdiction of the CDFW pursuant Sections 1600, *et seq.* of the California Fish and Game Code. All resources delineated as CDFW jurisdictional features were also defined as Western Riverside County MSHCP Section 6.1.2 Riverine resources.

3.2 - Results/Impacts

3.2.1 - Section 6.1.2 Riverine Impacts

Regulated activities within inland streams, wetlands and Riparian areas in Western Riverside County fall under the jurisdiction of the MSHCP 6.1.2. The MSHCP requires, among other things, assessments for Riparian/Riverine and vernal pool resources. As projects are proposed within the MSHCP Plan Area, an assessment of the potentially significant effects of those projects on Riparian/Riverine resource and vernal pools are required, as currently mandated by the California Environmental Quality Act (CEQA), using available information augmented by project-specific mapping provided to and reviewed by the permittee's Biologist(s). Riparian/Riverine areas and vernal pools are defined for this section as follows in accordance with Section 6.1.2, Vol. I, of the Final MSHCP Plan:

> "Riparian/Riverine Areas are lands 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."

It is assumed the first part of the definition defines Riparian habitat, and the second part defines Riverine areas. Vernal pools are defined as:

> ". . . seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetlands indicators of hydrology and/or vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetlands plant species are normally dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season."

Intermittent drainage channels and ephemeral tributaries run along the eastern edge of the project site boundary before moving off-site. Flows leaving the project site travel north for some distance and then discharge through two 9-foot-wide culverts under Sweet Avenue and into the Citrus Heights neighborhood. These flows eventually discharge into the Santa Ana River, part of the MSHCP Plan Area, which travels southwest through Orange County before ultimately discharging into the Pacific Ocean.

The project site supports mulefat thickets that comprise the Riparian habitat resources on the project site (Exhibit 7). The project site includes four open and vegetated ephemeral and intermittent channels that comprise the Riverine resources on the project site, for a total length of 2,431 feet (0.45 acre), covering an aggregate area of approximately 19,738 square feet (Exhibit 7). No additional aquatic features, including wetlands, were observed within the project site boundaries. No vernal pools or depressions are present in the project site that would support common or listed fairy shrimp.

The project site does not include potential waters of the United States regulated by the USACE under Section 404 of the CWA. The project site includes 19,738 square feet (0.45 acre) and 2,431 linear feet of potential waters of the State regulated by the RWQCB under Section 13260 of the California Water Code; and 83,635 square feet (1.92 acres) of aquatic features and associated Riparian habitat regulated pursuant to the CDFW Streambed Alteration Program. The vegetation community within the drainages is arroyo willow thicket; thus, the drainages would likely be considered both Riparian and Riverine features under the MSHCP.

A total of 0.07-acre of MSHCP Section 6.1.2 Riparian/Riverine resources (0.05-acre of Riparian and 0.02-acre of Riverine) within the project site would be permanently impacted as a result of the project (Exhibit 8).

3.2.2 - Section 6.1.2 Riparian Birds

Focused protocol surveys for Riparian bird species such as the least Bell's vireo, southwestern willow flycatcher (*Empidonax traillii extimus*), and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) are required under the MSHCP if suitable habitat is located on the project site.

The project site contains suitable habitat for the least Bell's vireo but not the southwestern willow flycatcher or western yellow-billed cuckoo; the project site lacked the size and stratified Riparian plant composition that would support the southwestern willow flycatcher and western yellow-billed cuckoo. Focused surveys for least Bell's vireo were performed by South Environmental Biologists between May 1 and July 24, 2024. The Survey Area included Riparian habitat along the northeastern border of the project site. The surveys were implemented according to protocols described in the USFWS 2001 Least Bell's Vireo Survey Guidelines. The surveys were initiated with a habitat assessment of the project site followed by eight least Bell's vireo surveys in areas supporting suitable habitat. The surveys were conducted during appropriate weather conditions and were timed to occur during the most active period for least Bell's vireo. Throughout the implementation of eight focused surveys, a total of five detections of least Bell's vireo were made in the Riparian habitat along the northeastern border of the project site (Appendix C).



Source: ESRI Aerial Imagery. adkan Engineers, March 2024.

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Exhibit 7
MSHCP Riparian/Riverine Resources Map

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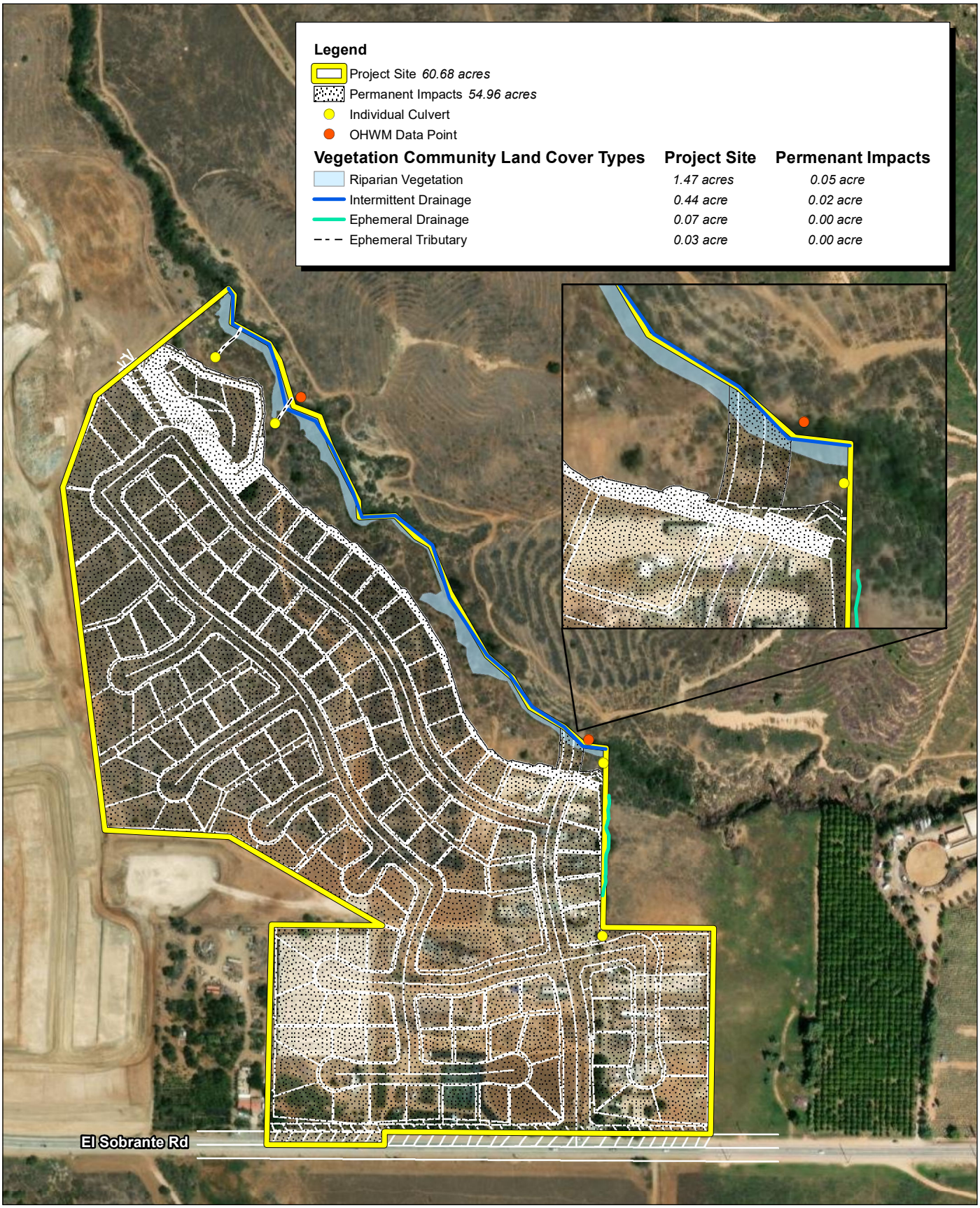

Source: ESRI Aerial Imagery. adkan Engineers, March 2024.

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Exhibit 8
MSHCP Riparian/Riverine Resources Impacts Map

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Because of the presence of Riparian habitat on the project site, it is presumed that least Bell's vireo is present within the intermittent drainage and associated Riparian habitat. Because of the number of territories and span of its presence in the drainages, all Riparian habitat on-site is considered occupied least Bell's vireo habitat.

If impacts to the Riparian habitat occurs during the least Bell's vireo nesting season (March 15 through September 30), the proposed project could potentially result in the destruction of active nests or direct mortality of individuals. Destruction of an active least Bell's vireo nest or direct mortality would be considered a violation of the federal Endangered Species Act, the California Endangered Species Act (CESA), and the Migratory Bird Treaty Act (MBTA) and Fish and Game Codes pertaining to the protection of native nesting avian species. Species Conservation Objective 3 for least Bell's vireo in the MSHCP requires that 90 percent of Riparian habitat occupied by the species shall be conserved in a manner consistent with its conservation, including conserving a buffer of 100 meters (328 feet) of undeveloped land adjacent to occupied habitat. Therefore, if the Riparian habitat that will be removed by the proposed project is determined to be occupied by nesting least Bell's vireo prior to project development, the proposed project would be required to implement this conservation measure, as mandated by the MSHCP.

3.3 - Mitigation and Equivalency

The following mitigation strategy is proposed to meet the criteria of a biologically equivalent or superior alternative and offset permanent impacts to MSHCP Section 6.1.2 Riverine resources by:

- The proposed project includes permanent impacts to 0.05 acre of Riparian habitat and 0.02 acre of a Riverine feature. There are no temporary impacts associated with the project. To achieve biologically equivalent or superior preservation, the applicant proposes to offset permanent impacts to 0.07-acre of Riparian/Riverine resources by purchasing 0.14 acre of rehabilitation credits (2:1 ratio) at the Riverpark Mitigation Bank or other agency-approved mitigation bank or to provide applicant-sponsored mitigation located on-site or off-site. The applicant shall also obtain any needed permits from the RWQCB and CDFW for impacts to jurisdictional areas as stated below.
- The proposed project would comply with all applicable water quality regulations, including obtaining and complying with those conditions established in WDRs and an NPDES permit. Standard BMPs, which may include but are not limited to silt fencing, gravel berm, fiber rolls, shall be installed to prevent any sediment and stormwater flows from entering the Riverine Area. A project-specific Water Quality Management Plan and/or a SWPPP shall be implemented for the project and detail project-specific BMPs.
- Prior to construction, the limits of the Riverine feature and Riparian habitat shall be delineated with fencing or flagging (orange plastic snow fence, orange silt fencing, or stakes and flagging) and designated as an ESA. No construction activities and/or access would be permitted within the ESA-designated areas. If work occurs within the ESA areas, all work shall cease until the issue has been resolved through the appropriate regulatory agencies and the County. ESA fencing and/or flagging shall be maintained in good repair by the contractor and shall be removed upon completion of project construction.

The following mitigation strategy is proposed to meet the criteria of a biologically equivalent or superior alternative and avoid/minimize indirect noise impacts to the least Bell's vireo:

- A qualified Biologist shall establish and demarcate a 500-foot avoidance buffer using ESA fencing, pin flags, and or yellow caution tape. No construction activities or construction foot traffic is allowed to occur within the avoidance buffer(s). Construction personnel shall be instructed not to enter the ESAs and the Biologist(s) shall ensure that ESA boundaries are maintained. The ESA buffer zone shall be maintained around the active nest site(s) until the end of least Bell's vireo nesting season or when the young have fledged and are foraging independently.
- The project applicant shall also prepare a DBESP report that details on-site and/or off-site mitigation to offset loss of occupied least Bell's vireo habitat. The project applicant shall consult with the CDFW, USFWS, and RCA to determine appropriate mitigation for the loss of least Bell's vireo habitat due to project implementation. The outcome of the consultation shall determine the need for on-site or off-site mitigation for least Bell's vireo, including habitat area mitigation ratios, which shall be detailed in the DBESP.

3.3.1 - Direct Effects

Direct impacts are considered to be those that involve the loss, modification, or disturbance of natural resources or habitats (i.e., vegetative communities or substrate) that, in turn, directly affect plant and wildlife species dependent on that habitat. Direct impacts include the destruction of individual plants or wildlife of low mobility (i.e., plants, amphibians, reptiles, and small mammals). The collective loss of individuals may also directly affect area-wide population numbers or result in the physical isolation of populations thereby reducing genetic diversity and population stability.

The proposed project includes permanent impacts to 0.05 acre of Riparian habitat and 0.02 acre of a Riverine feature.

3.3.2 - Indirect Effects

Indirect impacts are considered to be those impacts associated with the proposed project that involve the effects of alteration of the existing habitat and an increase in human population and or land use within the project site. These impacts are commonly referred to as "edge effects" and may result in changes in the behavioral patterns of wildlife and reduced wildlife diversity and abundance in habitats adjacent to the project site.

Indirect impacts also include the effects of increases in ambient levels of sensory stimuli (e.g., noise and light), unnatural predators (e.g., domestic cats and other non-native animals), competitors (e.g., exotic plants and non-native animals), and trampling and unauthorized recreational use due to the increase in human population. Other permanent indirect effects may occur that are related to water quality and stormwater management, including trash/debris, toxic materials, and dust.

The construction of the proposed project may result in indirect effects on MSHCP Riparian/Riverine resources. To reduce indirect effects to on-site and downstream Riparian/Riverine resources, the proposed project shall implement the following Standard BMPs of the MSCHP Volume 1, Appendix C:

1. A condition shall be placed on grading permits requiring a qualified Biologist to conduct Worker Environmental Awareness Program (WEAP) training for project personnel prior to grading. The training shall include a description of the species of concern and its habitats, the general provisions of the Endangered Species Act and the MSHCP, the need to adhere to the provisions of the Endangered Species Act and the MSHCP, the penalties associated with violating the provisions of the Endangered Species Act, the general measures that are being implemented to conserve the species of concern as they relate to the proposed project, and the access routes to and project site boundaries within which the proposed project activities must be accomplished.
2. The footprint of disturbance shall be minimized to the maximum extent feasible. Access to sites shall be via pre-existing access routes to the greatest extent possible.
3. Equipment storage, fueling, and staging areas shall be located on upland sites with minimal risks of direct drainage into Riparian areas or other sensitive habitats. These designated areas shall be located in such a manner as to prevent any runoff from entering sensitive habitat.
4. Necessary precautions shall be taken to prevent the release of cement or other toxic substances into surface waters. Project-related spills of hazardous materials shall be reported to appropriate entities, including but not limited to the City, USFWS, CDFW, and/or RWQCB, as applicable, and shall be cleaned up immediately and contaminated soils removed to approved disposal areas.
5. Erodible fill material shall not be deposited into water courses. Brush, loose soils, or other similar debris material shall not be stockpiled within the stream channel or on its banks.
6. The qualified project Biologist shall monitor construction activities for the duration of the proposed project to ensure that practicable measures are being employed to avoid incidental disturbance of habitat and species of concern outside the project footprint.
7. The removal of native vegetation shall be avoided and minimized to the maximum extent practicable. Temporary impacts shall be returned to pre-existing contours and revegetated with appropriate native species.
8. Exotic species that prey upon or displace target species of concern should be permanently removed from the site to the extent feasible.
9. To avoid attracting predators of the species of concern, the project site shall be kept as clean of debris as possible. All food related trash items shall be enclosed in sealed containers and regularly removed from the site(s).
10. Construction employees shall strictly limit their activities, vehicles, equipment, and construction materials to the proposed project footprint and designated staging areas and routes of travel. The construction area(s) shall be the minimal area necessary to complete the proposed project and shall be specified in the construction plans. Construction limits will be fenced with orange snow screens. Exclusion fencing should be maintained until the completion of all construction activities. Employees shall be instructed that their activities are restricted to the construction areas.

11. The City shall have the right to access and inspect the project site to determine its compliance with project approval conditions, including these BMPs.

Water Quality/Hydrology

The proposed project would comply with all applicable water quality regulations, including obtaining and complying with those conditions established in WDRs and an NPDES permit. Both of these permits include the treatment of all surface runoff from paved and developed areas, the implementation of applicable BMPs during construction activities, and the installation and proper maintenance of structural BMPs to ensure adequate long-term treatment of water before entering into any stream course.

Toxics

Stormwater treatment systems would be designed to prevent the release of toxins, chemicals, petroleum products, exotic plant material, or other elements that could degrade or harm downstream biological or aquatic resources. Toxic sources within the project site would be limited to those commonly associated with warehouse development, such as pesticides, insecticides, herbicides, fertilizers, and vehicle emissions. In order to mitigate the potential effects of these toxics, the proposed project would incorporate structural BMPs, as required, in association with compliance with WDRs and the NPDES permit system in order to reduce or prevent the level of toxins introduced into the surrounding drainages.

Lighting

Night lighting shall be directed away from the surrounding drainages protect species within this MSHCP Conservation Area from direct night lighting. Shielding shall be incorporated in project designs to ensure ambient lighting in the surrounding drainages is not increased.

Noise

Because the proposed project would not result in noise levels that exceed residential, commercial or mixed-use noise standards established for Riverside County, wildlife within open space habitats within the project site would not be subject to noise that exceeds these established standards. Short-term construction-related noise impacts will be reduced by the implementation of the following:

- During all project site excavation and grading on-site, the construction contractor shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards.
- The construction contractor shall limit all construction-related activities that would result in high noise levels according to the construction hours to be determined by County of Riverside staff.
- The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment. To the extent feasible, haul routes shall not pass sensitive land uses or residential dwellings.

Invasive Species

Invasive species shall not be used in landscaping in the open space area planned for the southern portion of the project site. Invasive species that shall not be used in landscaping are listed in the MSHCP Final Plan, Volume 1, Table 6-2. Exotic species that prey upon or displace target species of concern should be permanently removed from the site to the extent feasible.

Barriers

The proposed project would incorporate barriers along the southern border to minimize unauthorized public access, illegal trespass, or dumping into the surrounding drainages. Such barriers may include native landscaping, rocks/boulders, fencing, walls, signage, and/or other appropriate mechanisms.

Implementation of all Urban/Wildlands Interface guidelines will minimize adverse project indirect impacts and ensure consistency with MSHCP Section 6.1.4 guidelines.

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SECTION 4: NARROW ENDEMIC PLANT SPECIES MITIGATION

The MSHCP has determined that all of the sensitive species potentially occurring on-site or within the off-site project site have been adequately covered. Additional surveys may be required for NEPSSA plants if suitable habitat is documented, and the assessment area is located within a predetermined Survey Area.

The project site does not occur within a MSHCP NEPSSA Survey Area. As such, there are no MSHCP requirements for NEPSSA species applicable to the proposed project, including focused plant surveys and avoidance/mitigation.

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SECTION 5: ADDITIONAL SURVEY NEEDS

5.1 - Criteria Area Species Survey Area-Plants

The MSHCP has determined that all of the sensitive species potentially occurring on-site or within the off-site project area have been adequately covered. Additional surveys may be required for CAPSSA plants if suitable habitat is documented, and the assessment area is located within a predetermined Survey Area.

The project site does not occur within a MSHCP CAPSSA Survey Area. As such, there are no MSHCP requirements for CAPSSA species applicable to the proposed project, including focused plant surveys and avoidance/mitigation.

5.2 - Criteria Area Species Survey Area–Burrowing Owl

MSHCP has determined that all of the sensitive species potentially occurring on-site have been adequately covered. Additional surveys may be required for wildlife species if suitable habitat is documented on-site and/or if the property is located within a predetermined Survey Area.

The project site does occur within a predetermined Survey Area for the burrowing owl. Compliance with Section 6.3.2 respective of MSHCP burrow owl is applicable to the project site.

5.2.1 - Methods

Following 2006 MSHCP Burrowing Owl Survey Instructions, focused burrowing owl surveys were conducted for the proposed project by FCS Biologists Jeremy Reinhard and Hannah Carney between March 26 and April 18, 2024.

5.2.2 - Results/Impacts

The wild oats and annual brome grassland on the project site support suitable foraging habitat for burrowing owls. There are numerous small mammal burrows on-site, including those of California ground squirrels, that could become occupied by burrowing owls and potentially be used for nesting. The California Natural Diversity Database (CNDDB) shows two historical records within 5 miles, and there are 11 recent and two historical records between 5 and 10 miles from the project site. This species is covered under the MSHCP and protected by the MBTA and Fish and Game Codes.

No burrowing owls or characteristic sign such as white-wash, feathers, tracks, or pellets were detected within or immediately adjacent to the project site during the 2024 surveys. Therefore, the burrowing owl is absent from the project site. It may be possible, however, because of the presence of suitable burrowing owl habitat, that individuals could occupy the site before construction begins. Construction of the proposed project could potentially impact burrowing owls if ground-disturbing or vegetation-removing construction activities are initiated or conducted during the burrowing owl breeding season (February 1 through August 31). Ground-disturbing and vegetation-removing construction activities could destroy burrows inhabited by burrowing owls, causing destruction of occupied burrows, including nesting burrows. Construction activities could also impact burrowing

owls that occupy or nest on lands within 500 meters (1,640 feet) of the project site. A measure is provided below to avoid any impacts to the burrowing owl.

5.2.3 - Mitigation and Equivalency

To be consistent with Objective 6 of the MSHCP for the burrowing owl, a qualified Biologist shall conduct a pre-construction burrowing owls survey prior to initiation of construction activities (grading, vegetation removal, staging, etc.). The pre-construction burrowing owl survey shall include the following:

- The project applicant shall retain a qualified Biologist to perform a pre-construction burrowing owl survey to determine whether burrowing owls are present on-site within 30 days prior to construction activities, according to the CDFW guidelines and MSHCP protocol. If construction is delayed or suspended for more than 30 days after the survey, the area shall be resurveyed. The pre-construction survey shall be completed on the project site and areas within 500 feet from the project boundary (where possible and appropriate based on habitat). All occupied burrows shall be mapped on an aerial photo. The applicant shall provide a burrowing owl survey report and mapping to the City no more than 30 days prior to the expected start of any project-related ground disturbance activities or restart of activities. If the survey is positive for burrowing owls, the project applicant shall implement a Burrowing Owl Mitigation Plan in coordination with the City, the CDFW, the USFWS, and the RCA (if coordination with the RCA is necessary). If no burrowing owls are detected during the pre-construction survey, no further action is necessary.

If the pre-construction survey is positive for burrowing owl, the project proponent shall retain a qualified Biologist to develop and implement a Burrowing Owl Mitigation Plan. The Burrowing Owl Mitigation Plan shall contain the following elements (as outlined in the CDFW 2012 guidelines) at a minimum:

- Avoidance of burrowing owls during construction, including establishment of a 160-foot radius around occupied burrows during the nonbreeding season (September 1 through January 31) or a 200 to 500 meter (656–1640 feet) radius around occupied burrows during the breeding season (February 1 through August 31), within which construction activities may not occur until a qualified Biologist has determined that (1) nonbreeding season owls have dispersed from the area; or (2) breeding season owls have fledged their juveniles from the occupied burrows and the juveniles are foraging independently and are capable of independent survival or have dispersed from the area.
- A plan for implementing a passive relocation program for nonbreeding owls, should it be needed. The passive relocation techniques should be consistent with CDFW guidelines, including installation of artificial burrows at an off-site location and use of one-way exclusion doors to ensure owls have left the burrow(s).

5.3 - Criteria Area Species Survey Area–Mammals

The MSHCP has determined that all of the sensitive species potentially occurring on-site or within the off-site project site have been adequately covered. However, additional surveys may be required if suitable habitat for mammals is documented on-site and the property is located within a predetermined Survey Area.

The project site does not occur within a predetermined Survey Area for mammal species. Compliance with Section 6.3.2 respective of MSHCP mammals is not applicable to the project site.

5.4 - Criteria Area Species Survey Area–Amphibians

The MSHCP has determined that all of the sensitive species potentially occurring on-site or within the off-site project area have been adequately covered. However, additional surveys may be required if suitable habitat for amphibians is documented on-site and the property is located within a predetermined Survey Area.

The project site does not occur within a predetermined Survey Area for amphibian species. Compliance with Section 6.3.2 respective of MSHCP amphibians is not applicable to the project site.

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SECTION 6: DELHI SANDS FLOWER-LOVING FLY

The project site does not occur within a predetermined Survey Area for Delhi sands flower-loving fly nor are there any Delhi soils mapped within the project site. Compliance with MSHCP Delhi sands flower-loving fly is not applicable to the project site.

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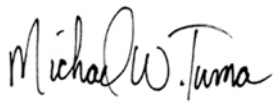
SECTION 7: CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this Determination of Biologically Equivalent or Superior Preservation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: February 6, 2025 Signed: 

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Appendix A:
Site Photographs

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Photograph 1: Southeastern boundary of project site.



Photograph 2: California ground squirrel burrow with no sign of burrowing owl detected in the western portion of project site.



Photograph 3: Riparian habitat in northern portion of Drainage Segment 1-1.



Photograph 4: Image of cholla (*Cylindropuntia sp.*) plant observed in the eastern portion of the site.



Photograph 5: Western portion of the project site, facing east. Common fiddleneck, mustard, and tree tobacco present.



Photograph 6: Central portion of the project site, facing north. Existing grubbed/graded dirt pathway bisects the project site.



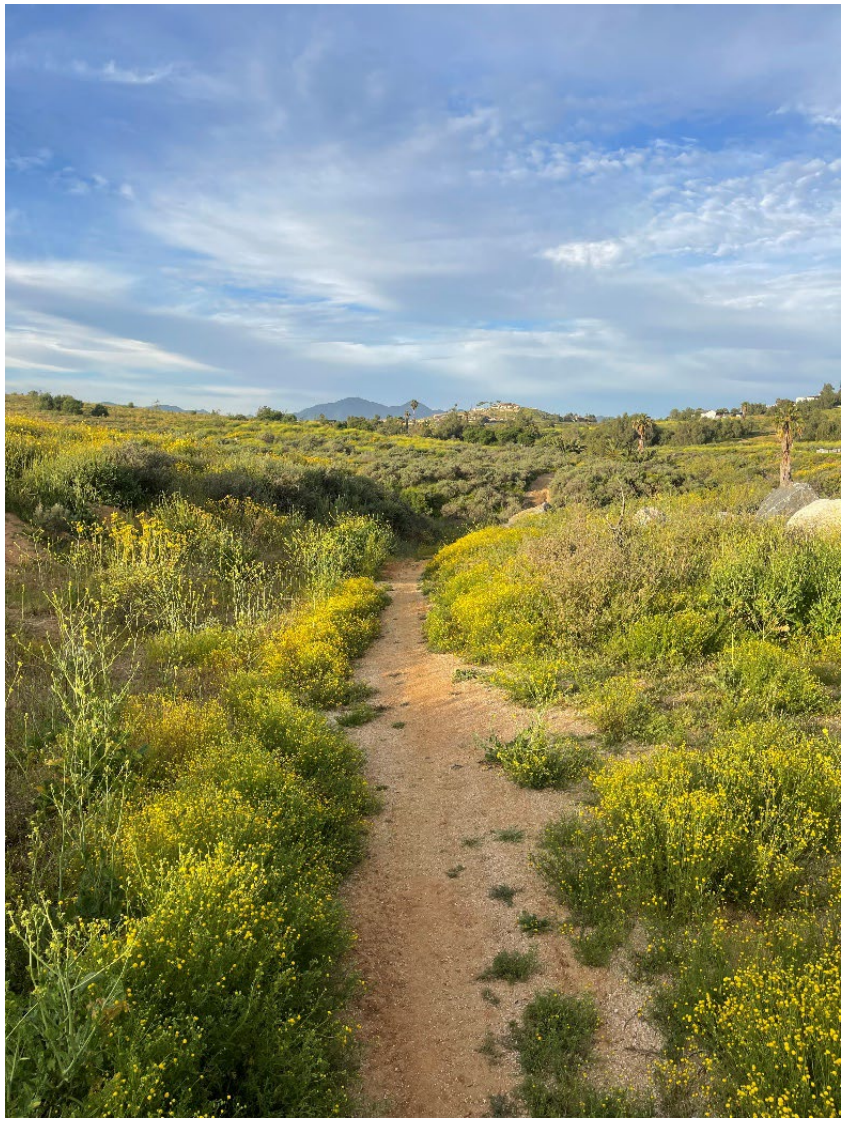
Photograph 7: Southern portion of the project site, facing west. Thickets of common fiddleneck and mustard present.



Photograph 8: Western boundary of the project site, facing north. Existing construction underway for neighboring property.



Photograph 9: Southeastern portion of the project site, facing north. Thickets of common fiddleneck and mustard present.



Photograph 10: Central portion of the project site, facing north. Existing dirt pathway narrows as it approaches Drainage Segment 1-1.

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Appendix B:
Jurisdictional Delineation Report

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FIRSTCARBONSOLUTIONS™

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

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Martin Raskin, Senior Biologist

Date: June 20, 2024

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SECTION 1: INTRODUCTION

At the request of Pulte Home Company, LLC, FirstCarbon Solutions (FCS) completed a delineation of aquatic resources and proposes a jurisdictional determination for the approximate 61-acre Highland Grove II Development Project Site, referred to as the Study Area, 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 61-acre Study Area is located in unincorporated Riverside County, east of the census-designated El Sobrante and just north of Lake Mathews. The Study Area is centered around 33.8616414° latitude and -117.4308165° longitude. The location of the Study Area within the Riverside Region is shown on Exhibit 1, and the Study Area boundaries are shown on Exhibit 2 in a recent high-resolution aerial image.

2.2 - Vegetation and Land Cover Types

Vegetation of the Study Area is dominantly non-native annual grassland with coastal sage scrub in the tributaries and riparian woodland found within the drainages. The coastal sage scrub community in the Study Area is dominated by California buckwheat (*Eriogonum fasciculatum*), brittlebush (*Encelia farinosa*), California brittlebush (*Encelia californica*), and fourwing saltbush (*Atriplex canescens*), with California cholla (*Cylindropuntia californica*) and castor bean (*Ricinus communis*) occasionally present.

Riparian woodland habitat is present within the Study Area, which is dominated by arroyo willow (*Salix lasiolepis*), Mexican fan palm (*Washingtonia robusta*), Canary Island date palm (*Phoenix canariensis*), mule fat (*Baccharis salicifolia*), blue elderberry (*Sambucus nigra cerulea*), willow baccharis (*Baccharis salicina*), and Anderson thornbush (*Lycium andersonii*). Common forb species present include broadleaf cattail (*Typha latifolia*), stinging nettle (*Urtica dioica*), dwarf nettle (*Urtica urens*), hoary bowlesia (*Bowlesia incana*), common eucrypta (*Eucrypta chrysanthemifolia*), chilicothe (*Marah macrocarpa*), and ladies' tobacco (*Pseudognaphalium californicum*). Common species in the non-native grasslands include black nightshade (*Solanum nigrum*), common fiddleneck (*Amsinckia intermedia*), white horehound (*Marrubium vulgare*), black mustard (*Brassica nigra*), Italian thistle (*Carduus pycnocephalus*), red brome (*Bromus rubens*), ripgut brome (*Bromus diandrus*), and foxtail barley (*Hordeum murinum*). There was a stand of tree tobacco (*Nicotiana glauca*) on the bank along the southeast edge of the Study Area.

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

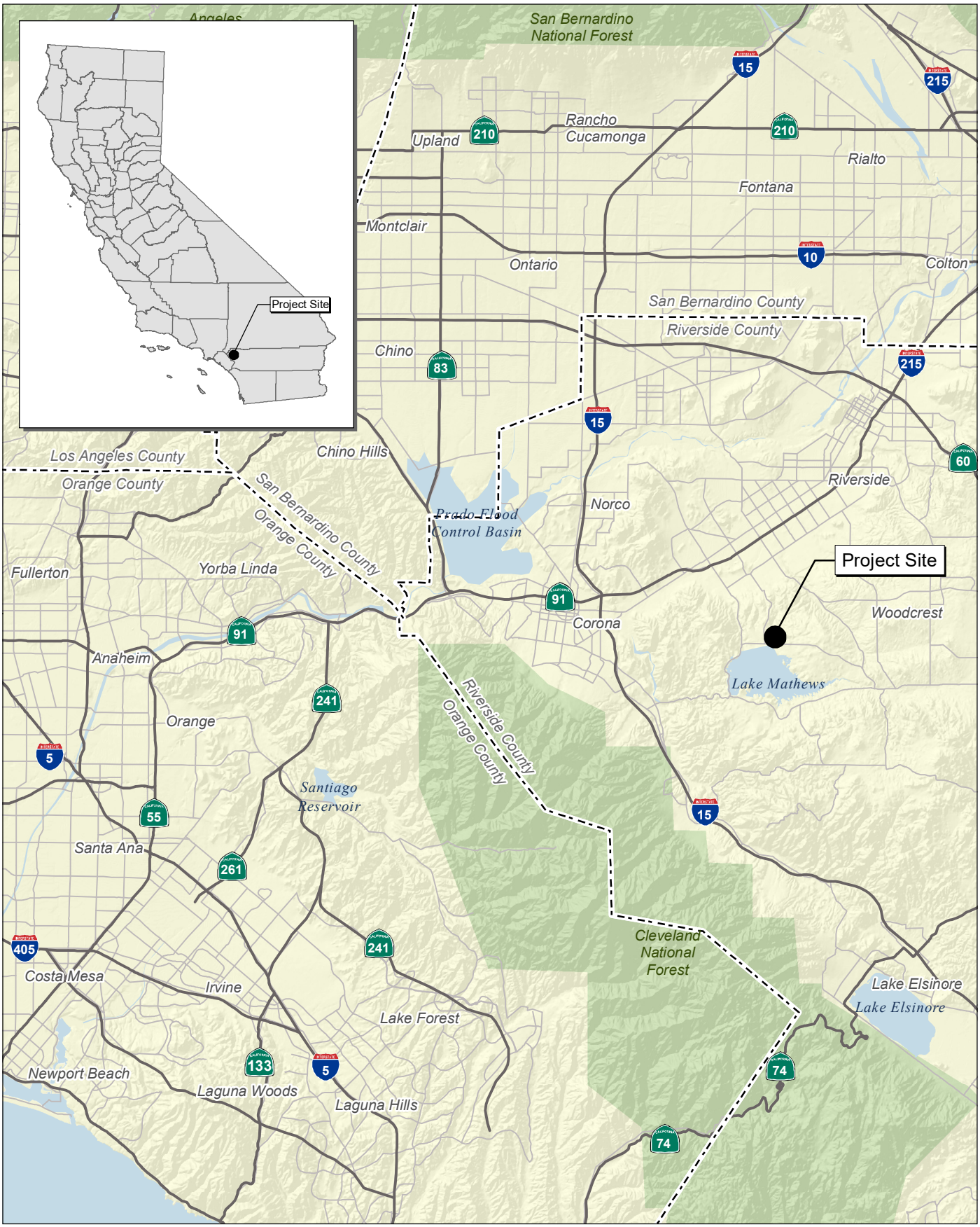
2.3 - Topography and Hydrogeomorphology

Elevation within the Study Area ranges from about 385 feet above mean sea level (MSL) on the northern boundary to 410 feet MSL along the southern boundary. Elevation on the eastern and western boundaries is 395 feet MSL. Intermittent drainage channels and ephemeral tributaries run along the northern edge of the Study Area boundary before moving off-site. Flows leaving the Study Area travel north for some distance and then discharge through two 9-foot-wide culverts under Sweet Avenue and into the Citrus Heights neighborhood. These flows eventually discharge into the Santa Ana River, which travels southwest through Orange County before ultimately discharging into the Pacific Ocean.

2.4 - Soils

The soils of 79 percent of the Study Area are mapped by Natural Resources Conservation Service (NRCS) as Cajalco soil series. Approximately 18 percent of the Study Area was mapped as Las Posas loam. Other small portions of the Study Area consist of Buren loam and 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.



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. adkan Engineers, March 2024.

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1,000 500 0 1,000 Feet

Exhibit 2
Local Vicinity Map

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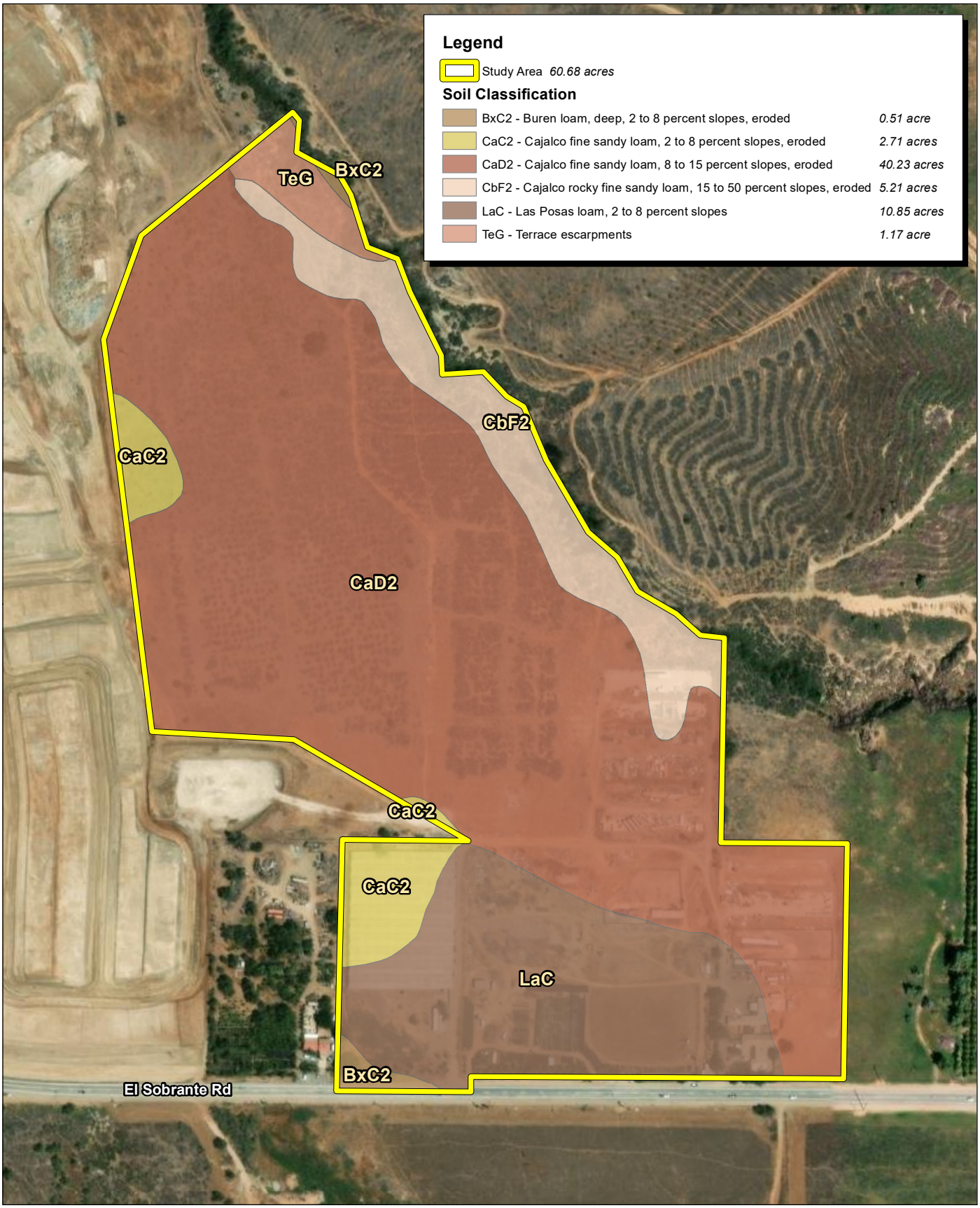

Source: ESRI Aerial Imagery. adkan Engineers, March 2024. Soils Data Mart, Western Riverside County.

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Feet

Exhibit 3
Soils Map

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SECTION 3: REGULATORY SETTING

3.1 - Federal

3.1.1 - Clean Water Act

The 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.

As of the preparation of the original version of this report on August 11, 2023, the final "Revised Definition of Waters of the United States" rule was published in the Federal Register on January 18, 2023, and took effect on March 20, 2023. However, the final rule is not currently operative in certain states and for certain parties due to litigation. Moreover, the United States Environmental Protection Agency (EPA) and USACE (hereafter known as 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* (*Sackett*). In light of this decision, the agencies will interpret the phrase "waters of the United States" consistent with the Supreme Court's decision in *Sackett*.

On August 29, 2023, the agencies issued a final ruling that amends the "Revised Definition of 'waters of the United States'" to conform key portions of the regulatory text to the U.S. Supreme Court's May 25, 2023 decision, defining "waters of the United States" as follows:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
2. The interstate waters or interstate waters.
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:
    i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    iii. Which are used or could be used for industrial purposes by industries in interstate commerce.
4. All impoundments of waters otherwise defined as waters of the United States under this definition.
5. Tributaries of waters identified in paragraphs (a) (1) through (4) of this section.
6. The territorial seas; and
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.

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

   Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the Clean Water Act (other than cooling ponds as defined in 40 Code of Federal Regulations 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

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. Additionally, 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, applicants seeking to fill waters of the United States are required to obtain a CWA Section 401 Water Quality Certification from the 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]

[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.

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.

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SECTION 4: METHODS

FCS Senior Biologist Robert Carroll, assisted by FCS Botanist Juliet Simpson, surveyed the Study Area on April 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, where applicable, 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, 7.5 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 Wetland 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 (acre)
Open Drainage Channel	1-1	1,923	10	19,230	0.44
Open Drainage Channel	1-2	116	1	116	0.002
Open Drainage Channel	1-3	89	1	89	0.001
Open Drainage Channel	2-1	303	1	303	0.007
Sum Open Drainage Channels	**–**	**2,431**	**n/a**	**19,738**	**0.45**
Sum All Potentially Jurisdictional Waters	**–**	**2,431**	**n/a**	**17,708**	**0.45**

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.

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Source: ESRI Aerial Imagery. adkan Engineers, March 2024.

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200 100 0 200
Feet

Exhibit 4
Aquatic Resources Delineation Map Overview

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Intermittent Drainage Segment 1-1

Intermittent Drainage Segment 1-1 is a naturally occurring first order drainage that supports riparian woodland habitat. This segment conveys flows south to north along the entire northern boundary of the Study Area before flowing north outside the Study Area. Other hydrological input includes two on-site ephemeral drainages and what appeared to be remnant culverts that discharge into this drainage. This segment appears to drain the northwestern half of the Study Area to the north. The channel is characterized by the presence of deeply incised banks. The average OHWM within this segment was approximately 10 feet wide and is characterized by scour and sediment deposits. At the time of the survey, flowing or standing water was present in some locations along this drainage but was 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 (*Nasturtium officinale*), and stinging nettle were found growing within the OHWM at various locations along this drainage segment, with common eucrypta and hoary bowlesia often present along the OHWM. The canopy layer along this drainage segment was composed of scattered arroyo willow, Mexican fan palm, Canary Island date palm, and blue elderberry, with mule fat, willow baccharis, and Anderson thornbush common throughout the drainage. Segment 1-1 provides intermittent flows outside of the Study Area to the north.

Ephemeral Drainage Segment 1-2

Ephemeral Drainage Segment 1-2 is a remnant culvert-fed second-order ephemeral tributary that runs southwest to northeast on the southwestern side of Intermittent Drainage Segment 1-1. Segment 1-2 is the northern-most tributary to Intermittent Drainage Segment 1-1. This drainage is characterized by the presence of narrow banks. There was vegetation obscuring the OHWM; however, it appeared to be a maximum of 12 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, tree tobacco, fourwing saltbush, pine bush (*Ericameria pinifolia*), California buckwheat, white horehound, chilicothe, dwarf nettle, Maltese star thistle (*Centaurea melitensis*), black mustard, and red brome. Segment 1-2 helps drain a small portion of the northern Study Area into Intermittent Drainage Segment 1-1.

Ephemeral Drainage Segment 1-3

Ephemeral Drainage Segment 1-3 is a remnant culvert-fed second-order ephemeral tributary that runs southwest to northeast on the southwestern side of Intermittent Drainage Segment 1-1. Segment 1-3 is the second northern-most tributary to Intermittent Drainage Segment 1-1, approximately 250 feet south/upstream from Ephemeral Drainage Segment 1-2. 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 12 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, arroyo willow, pine bush, California brittlebush, California cholla, white horehound, Italian thistle, dwarf nettle, miner's lettuce (*Claytonia perfoliata*), common eucrypta, common fiddleneck, black mustard, and red brome. Segment 1-3 helps drain a small portion of the northern Study Area into Intermittent Drainage Segment 1-1.

Ephemeral Drainage Segment 2-1

Ephemeral Drainage Segment 2-1 is an ephemeral erosive gulley/drainage that runs south to north where it meanders in and out of the southeastern corner of the Study Area. The inlet of what appeared to be a remnant culvert was observed approximately 100 feet south of this segment; however, the outlet of this culvert was not observed in the field. As such, it is unclear whether this culvert provides hydrological input to Segment 2-1. This drainage is characterized by the presence of shallow, eroded banks. Grass and small forbs were growing in and around the OHWM, which appeared to be a maximum of 12 inches wide. At the time of the survey, no water or soil moisture was present, indicating an ephemeral hydrological regime. Species found in this drainage segment include pepper tree (*Schinus molle*), blue elderberry, arroyo willow, tree tobacco, California brittlebush, white horehound, stinging nettle, dwarf nettle, common fiddleneck, black nightshade, Italian thistle, prickly lettuce (*Lactuca serriola*), black mustard, red brome, ripgut brome, and foxtail barley. Segment 1-3 appears to drain a small portion of the southeastern area of the Study Area to the north.

5.2.2 - Riparian Vegetation

In addition to the streambeds outlined above, the Study Area contains approximately 1.47 acres of riparian vegetation associated with Drainage Segment 1-1 (Exhibit 4).

5.3 - United States Fish and Wildlife Service National Wetland Inventory

The USFWS NWI did not depict any wetlands in the Study Area.[12] 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.

There was no evidence of hydric soils, hydrology indicators, or hydrophytic vegetation that would indicate a wetland within the Study Area; therefore, a Wetland Determination Data Form was not completed. The absence of wetland indicators was not caused by abnormally dry conditions because the delineation was conducted following a period of wetter than normal aggregate rainfall, 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 20, 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

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

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.

Per the guidance outlined above, one drainage segment (Segment 1-1) contains a continuous surface connection with a navigable water of the United States given its intermittent hydrological status. As noted in Section 2.3 and 5.2.1 above, these intermittent segments are likely to connect to Santa Ana River outside the northern Study Area boundary. The Santa Ana River travels southwest through Orange County before emptying into the Pacific Ocean, a traditionally navigable water. For these reasons, Segment 1-1 would likely 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.

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

The remaining drainage segments delineated within the Study Area would likely be exempt from USACE jurisdiction as these drainages are ephemeral streambeds that would not be subject to USACE jurisdiction pursuant to the *Sackett* decision levied by the U.S. Supreme Court. 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 four open and vegetated ephemeral and intermittent channels, for a total length of 2,431 feet, covering an aggregate area of approximately 19,738 square feet (0.45 acre), as shown on Exhibit 4.

No additional aquatic features, including wetlands, were observed within the Study Area.

The Study Area includes 19,230 square feet (0.44 acre) and 1,923 linear feet of potential waters of the United States, regulated by the USACE under Section 404 of the Clean Water Act; 19,738 square feet (0.45 acre) and 2,431 linear feet of potential waters of the State regulated by the RWQCB under Section 13260 of the California Water Code; and 83,635 square feet (1.92 acres) of aquatic features and associated riparian habitat regulated pursuant to CDFW's 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: Southeastern edge of Study Area, facing south. Northeast side of Drainage Segment 1-1.



Photograph 2: Overgrown vegetation surrounding OHWM in southern portion of Drainage Segment 1-1.



Photograph 3: Overgrown riparian woodland in northern stretches of Drainage Segment 1-1.



Photograph 4: Flowing water present in OHWM in northern portion of Drainage Segment 1-1.



Photograph 5: Tributary Segment 1-2 facing northeast, showing vegetation growing through the OHWM.



Photograph 6: Tributary Segment 1-3 facing northeast, showing vegetation growing through the OHWM.



Photograph 7: Drainage Segment 2-1 facing south, showing vegetation growing through the OHWM.



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

Appendix B:
WETS Analysis

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WETS Analysis for Highland Grove II 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:
Ordinary High Water Mark Datasheets

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Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Highland Grove II | **Date: 4/26/2024** | **Time: 2:00pm**
Project Number: 0760.0052 | **Town: Riverside** | **State: CA**
Stream: 1-1 | **Photo begin file#:** | **Photo end file#:**
Investigator(s): Robert Carroll, Juliet Simpson

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

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates: 33.864242°N, -117.431169°W

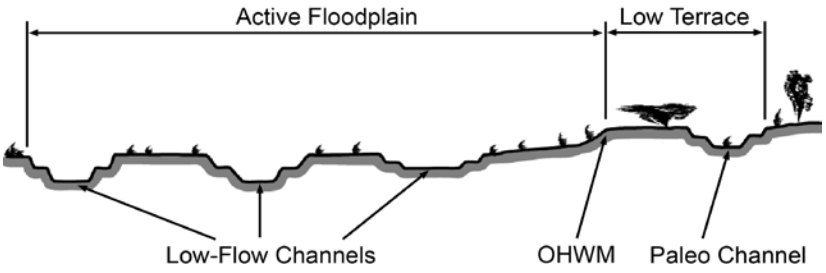
Potential anthropogenic influences on the channel system: Remnant culverts, development on west side of Drainage Segment 1-1, active culverts offsite downstream

Brief site description: Non-native grassland and sage scrub with riparian woodland in 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.
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   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
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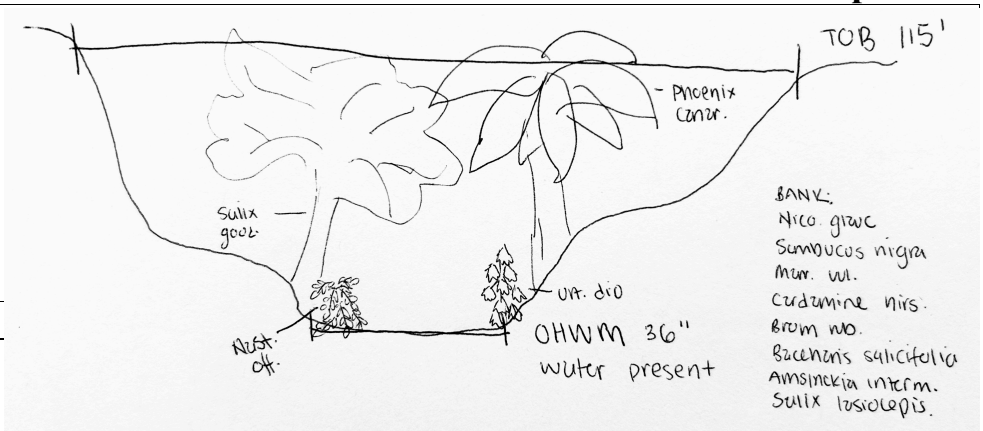
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☒ GPS
   - ☐ Digitized on computer
   - ☐ Other:

Project ID: 0760.0052 Cross section ID: OHWM #1 Date: 4/26/2024 Time: 2:00pm

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:

Project ID: **Cross section ID:** **Date:** **Time:**

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

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

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Community successional stage:

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July 2010	Technical Note	

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5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

Katherine E. Curtis and Robert W. Lichvar

5d. PROJECT NUMBER

5e. TASK NUMBER

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Cold Regions Research and Engineering Laboratory
72 Lyme Road
Hanover, NH 03755-1290

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The Ordinary High Water Mark (OHWM) is a method used to identify the lateral limits of non-wetland waters. Lichvar and McColley (2008) developed an OHWM delineation manual for ephemeral and intermittent streams in the Arid West. Their approach identified key hydrologic, geomorphic, and vegetation indicators useful in OHWM delineation. This technical note provides an updated datasheet to the manual. The datasheet has been simplified but still includes the overall field signatures and preliminary methods used to determine the OHWM. The datasheet now focuses on identifying the characteristics of each individual hydrogeomorphic floodplain unit and uses the differences between the floodplain units to identify the OHWM.

15. SUBJECT TERMS
Arid West, Floodplains, Ephemeral streams, Intermittent streams, Ordinary High Water Mark

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
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Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Highland Grove II | **Date: 4/26/2024** | **Time: 2:15pm**
Project Number: 0760.0052 | **Town: Riverside** | **State: CA**
Stream: 1-1 | **Photo begin file#:** | **Photo end file#:**
Investigator(s): Robert Carroll, Juliet Simpson

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

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates: 33.861468°N, -117.428313°W

Potential anthropogenic influences on the channel system: Remnant culverts, development on west side of Drainage Segment 1-1, active culverts offsite downstream

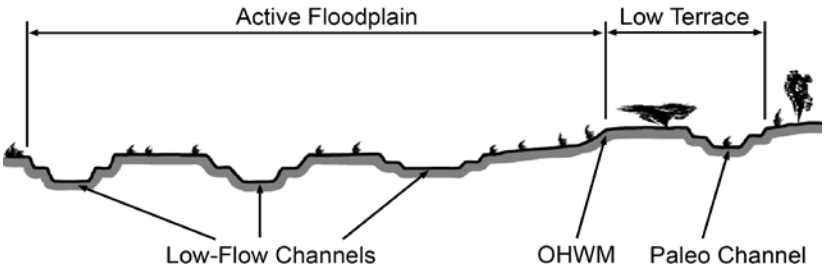
Brief site description: Non-native grassland and sage scrub with riparian woodland in drainages

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.
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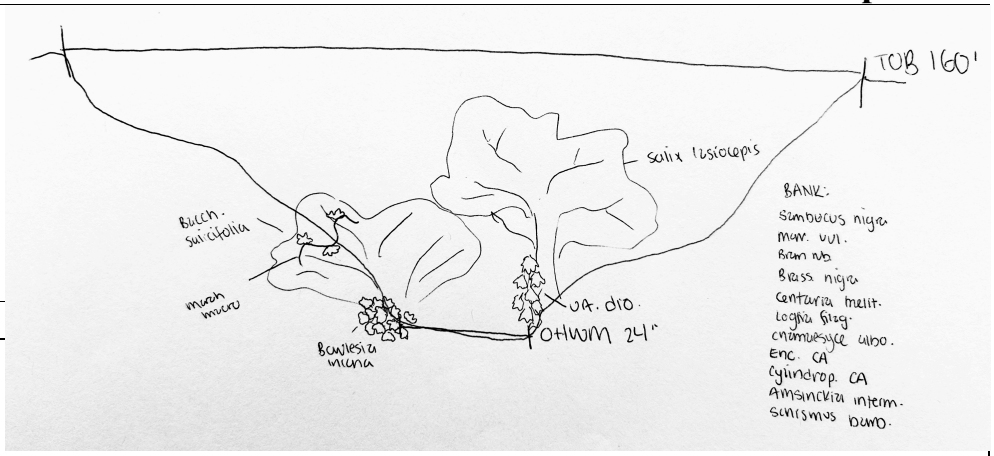
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☒ GPS
   - ☐ Digitized on computer
   - ☐ Other:

Project ID: 0760.0052 Cross section ID: OHWM #2 Date: 4/26/2024 Time: 2:15pm

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: _____
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Appendix C:
Least Bell's Vireo Survey Report

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2061 N. Los Robles Avenue, Ste. 205 Pasadena, California 91104 / www.southenvironmental.com

September 5, 2024

Michael Tuma
Senior Biologist
FirstCarbon Solutions
Email: mtuma@fcs-intl.com
Phone: 626-390-5717

RE: Least Bell`s Vireo Survey Report for Highland Grove 2 Project in Riverside, California

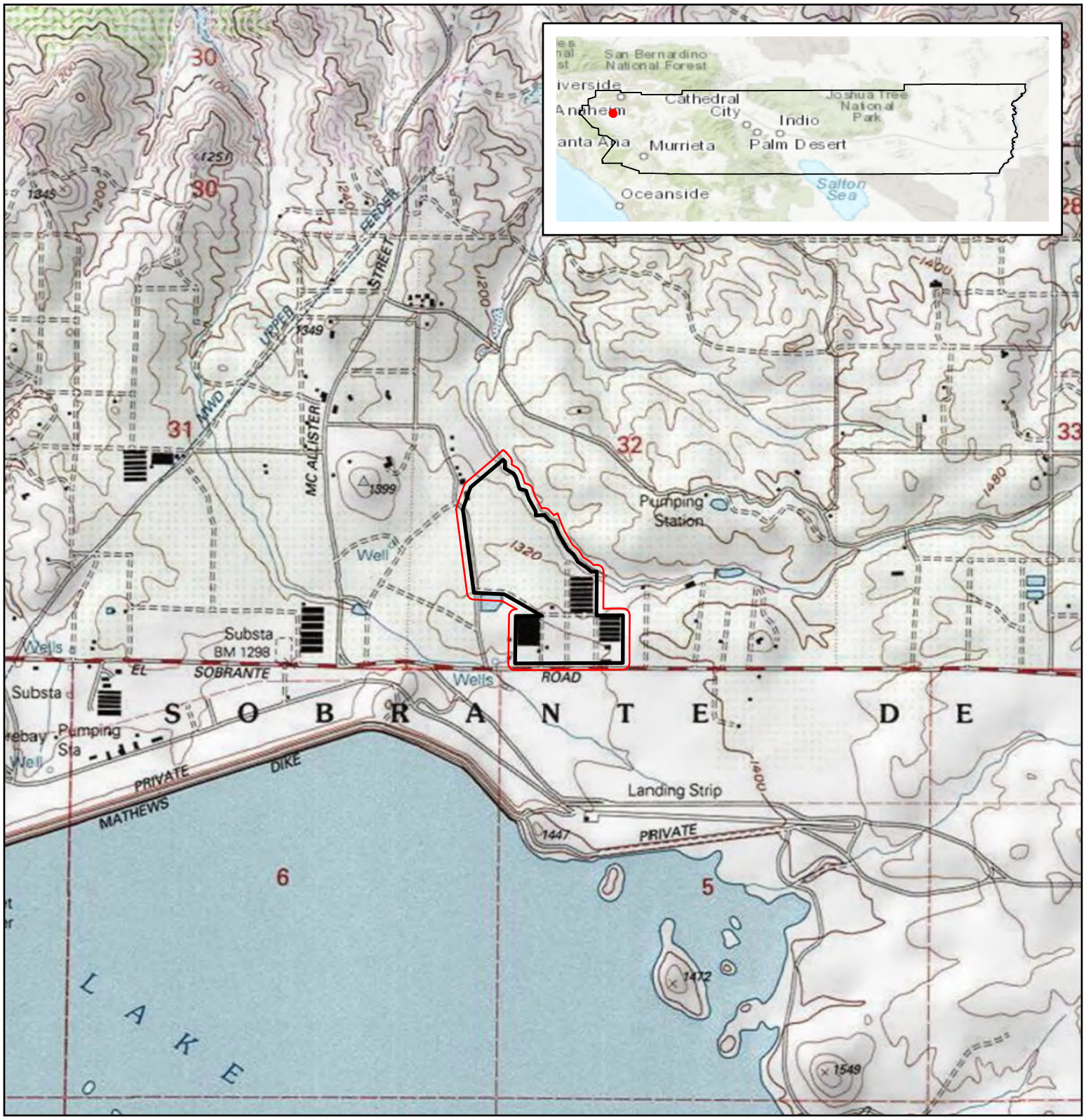
Dear Dr. Tuma,

This least bell`s vireo survey report has been prepared by South Environmental for use by the City of Riverside for the 58.79-acre Highland Grove 2 Project in Riverside, California. The scope of this report includes a description of the project, biological setting, vegetation communities, survey methodology, and survey results. Photographs of the survey area and surveyors' qualifications are included as attachments to this report.

Project Description

Project Location

As shown in Figure 1 below, the survey area is located along Travertine Drive in Riverside, California. The project is within the U.S. Geological Survey (USGS) Lake Mathews 7.5" topographical map, and within Sections 00 of Township 03 South (03S) and Range 5 West (5W). As shown in Figure 2 below, the survey can be accessed from Travertine Drive at a point that is approximately 3-miles south of Highway 91 and approximately 7-miles east of Highway 15. The survey area is north of El Sobrante Road, south of Sweet Avenue, west of Travertine Street, East of Blackburn Road, and Lake Mathews is located south of the project site. Photographs of the survey area are in Attachment A.



Source: ESRI USA Topo Maps and World Topo Map 2024

Highland Grove 2 Project

Figure 1. Regional Location

Project Boundary

Survey Area (100-ft buffer)



0 1,000 2,000 Feet

Scale: 1:24,000

N

SOUTH ENVIRONMENTAL



Source: BING Aerial Map 2024

Highland Grove 2 Project

Figure 2. Site Vicinity

0 262.5 525 Feet

N

Scale: 1:5,242

Project Boundary

Survey Area (100-ft buffer)

SOUTH ENVIRONMENTAL

Proposed Activities

The project site in total is a 58.79-acres, and the entire project site includes proposed construction of new neighborhoods, including new paved streets as well as new single-family homes.

Vegetation Communities

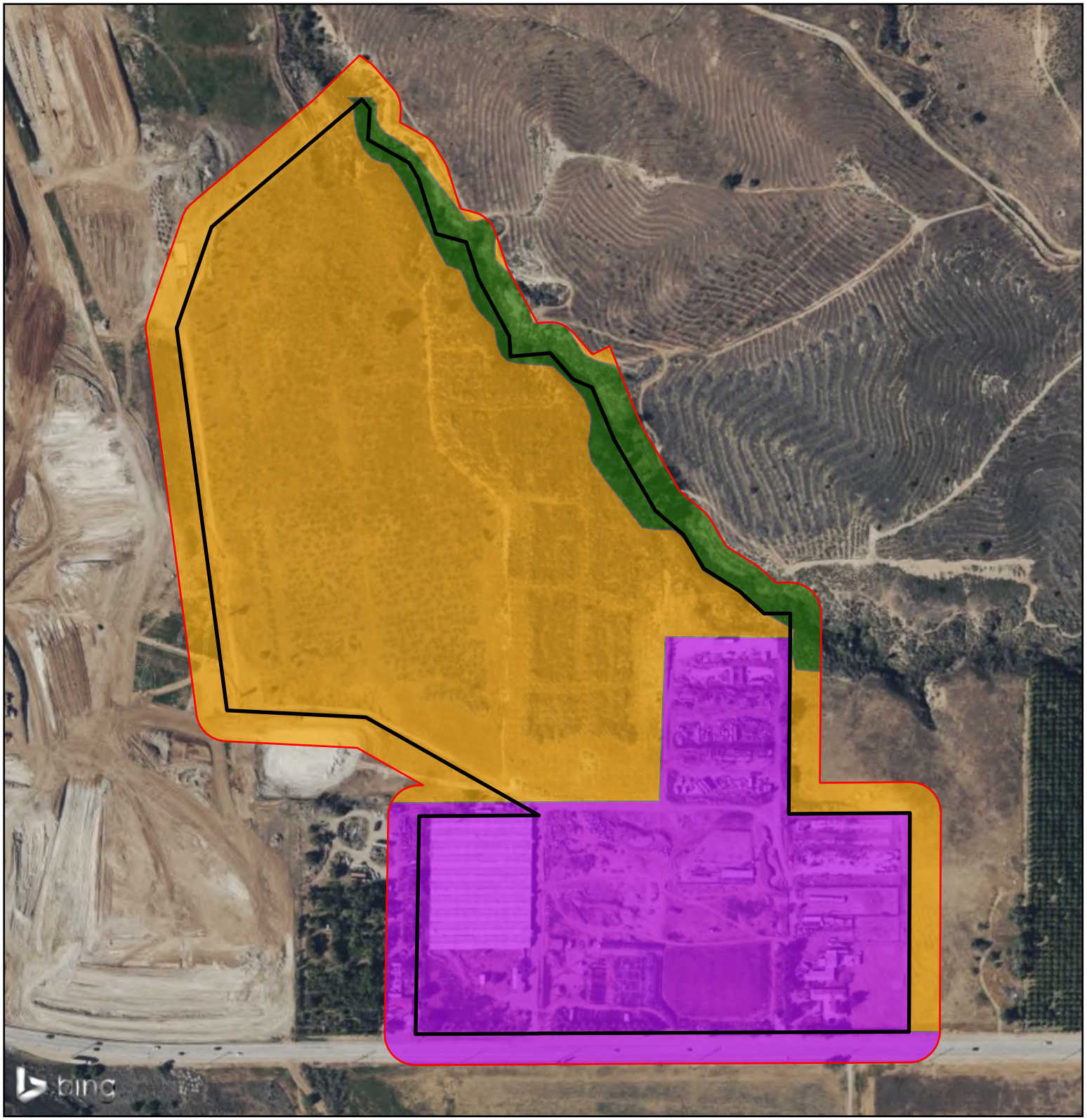
As shown in Figure 3, there are three plant communities mapped within the survey area (CNPS 2022):

- **Wild oats and annual brome grasslands** (*Avena spp.-Bromus spp.* Herbaceous Semi-Natural Alliance) is found in the study area. This area is on the northwest and central area of the project area as well as on the eastern most side of the developed area. This community is co-dominated by wall barley (*Hordeum murinum)* and shortpod mustard (*Hirschfeldia incana)*.
- **Goodding' s Willow-Red Willow Riparian Woodland and Forest** (*Salix gooddingii-Salix laevigata* Forest and Woodland Alliance) is found on the study area on the northeast side of the project area. This community is dominated by black willow (*Salix goodingii),* also present is Freemont cottonwood (*Populus fremontii*), mule fat (*Baccharis salicifolia),* pepper tree (*Schinus molle),* and tree tobacco (*Nicotiana glauca)*.
- **Developed** area occurs on southern region of the project site. The developed area is along El Sobrante Road and has businesses and single-family homes that include garages, patios, driveways, fences, fenced-in areas, and ornamental landscaping.

Least bell`s vireos utilize riparian willow and mule fat dominated habitat during breeding season and during migration. Therefore, the Gooding`s Willow-Red Willow Riparian Woodland and Forest habitat found on the project site was the focus spot for surveying for the presence/absence of the least bell`s vireo. The habitat was found along the northeast region of the project area.

Natural History

According to the U.S Fish and Wildlife service the least bell`s vireo is a migratory songbird that breeds in southern California to northern Baja California, Mexico. The least bell`s vireo will winter in the southern region of Baja California, Mexico from the September to March. They prefer breeding grounds that are willow-dominated riparian woodlands but will also forage and sometimes nest in mulefat scrub, oak woodlands, and chaparral, if it is nearby.



Source: BING Aerial Map 2024

Highland Grove 2 Project

Figure 3. Plant Communities and Land Cover

0 262.5 525 Feet

N

Scale: 1:5,242

- Project Boundary
- Survey Area (100-ft buffer)
- Bromus Ruderal Grassland
- Developing / Developed
- Goodding's Willow - Red Willow Riparian Woodland and Forest

SOUTH ENVIRONMENTAL

They begin migrating from southern Baja California, Mexico in mid-March to early April to Southern California and northern Baja California, Mexico.

Least bell`s vireo`s have two habitat characteristics that they require for breeding: the presence of dense cover within 3-6 feet, where nests are placed and a dense stratified canopy layer for foraging. Their nests are built using plant fibers and spiderweb silk, which can be found a few feet from the ground. Habitat loss has caused their population to decrease as well as decreased nesting productivity due to parasitism by brown-headed cowbirds (*Molothus ater*). Cowbirds will lay their eggs in nests of other birds so their young can be raised by the host species which in turn the host species young to not survive. Although least bell`s vireos numbers have increased since conservation efforts, a large part of their historical range is still unoccupied by them.

Methodology

Prior to conducting surveys, South Environmental referenced the *2001 Least Bell`s Vireo Survey Guidelines* regarding the survey methods proposed, timing of the survey, and potential strategies for avoiding impacts. It was determined that 8 total surveys would be sufficient. Coverage with a start date on May 1st and the final survey on July 24th, with 10 days minimum between each survey.

Least Bell`s Vireo Surveys

South Environmental biologists conducted a habitat assessment and eight total least bell`s vireo surveys in areas of suitable habitat throughout the entire project site. Suitable habitat was found on the northeast border of the project area, this area was surveyed on the east side of the riparian habitat due to access issues on the west side. The west side of the riparian habitat was surveyed by using binoculars. The surveys were conducted according to Appendix D of the *2001 Least Bell`s Vireo Survey Guidelines*, and took place on May 1st (Survey #1), May 13th (Survey #2), May 24th (Survey #3), June 6th (Survey #4), June 14th (Survey #5), June 24th (Survey #6), July 5th (Survey #7), and July 24th (Survey #8). The habitat assessment was conducted concurrently with Survey #1. The surveys were conducted during appropriate weather conditions and were timed to occur during the most active period for least bell`s vireos. Table 1 below provides a summary of the surveys.

Table 1. Least Bell`s Vireo Survey Summary

Survey #	Date - Time	Conditions (Temp, Wind Speed, Cloud cover, precipitation)	Surveyors
Habitat Assessment - Survey #1	5/1/2024 7:00 – 11:00	60-67F, 0-5mph, 100% cloud cover, no precip.	Philip Samples
Survey #2	5/13/2024 7:00 – 11:00	56-60F, 0-5mph, 100-75% cloud cover, no precip.	Philip Samples
Survey #3	5/24/2024 7:00-11:00	57-61F, 0-5mph, 25-100% cloud cover, no precip.	Philip Samples
Survey #4	6/4/2024 8:00-11:00	60-73F, 0-5mph, 100-25% cloud cover, no precip.	Philip Samples, Meagan Najera
Survey #5	6/14/2024 8:00-10:00	64-74F, 0-5mph, 0% cloud cover, no precip.	Meagan Najera
Survey #6	6/24/2024 8:00-10:30	76-85F, 0-5mph, 0% cloud cover, no precip.	Meagan Najera
Survey #7	7/5/2024 7:30-9:30	73-84F, 0-5mph, 0% cloud cover, no precip.	Meagan Najera
Survey #8	7/24/2024 8:15-10:00	77-83F, 0-5mph, 5% cloud cover, no precip.	Meagan Najera

The biologist performed the survey by walking alongside the suitable habitat where they would be able to hear and/or see if the least bell`s vireo if present without being too close and potentially harassing the species. Biologists would periodically scan the area for the least bell's vireo using binoculars to observe the surrounding. During the surveys, biologists recorded sightings or sound identifications. Locations of vireos were recorded in the field using ArcGIS FieldMaps mobile application. Also recorded were brown-headed cowbirds and other incidental threatened or endangered species.

Survey Results

Least Bell`s Vireo Survey Results

The survey results are shown in Figure 4 and summarized in Table 2 below. There was a total of 5 detections of Least Bell`s Vireo (LBVI) by sound and/or visual identification during the survey period, starting on May 1st through July 24th. During Survey #2 there was a pair of LBVI recorded together but all other detections were of a singular species. The LBVI were recorded in the riparian habitat on the northeastern side of the project area.



Source: BING Aerial Map 2024

Highland Grove 2 Project

Figure 4. Survey Results

0 262.5 525 Feet

N

Scale: 1:5,242

- Least Bell's Vireo
- Brown Headed Cowbird
- Coastal California Gnatcatcher
- Survey Area (100-ft buffer)
- Project Boundary

SOUTH ENVIRONMENTAL

Table 2 –Survey Results Summary

Survey #	LBVI Observations	BHCO Observation	CAGN Observations
Survey #1	1	1	0
Survey #2	2	0	0
Survey #3	1	0	0
Survey #4	0	0	0
Survey #5	0	0	0
Survey #6	1	0	0
Survey #7	0	0	0
Survey #8	0	0	0

Incidental Species Survey Results

The incidental species survey results are summarized in Figure 2. There was one brown-headed cowbird (BHCO) detected throughout all eight surveys. No other threatened or endangered species were recorded.

Conclusion

Throughout all eight of the focused, protocol-level least bell`s vireo surveys conducted at the Highland Grove 2 project site, there were a total of 5 least bell`s vireo detections, with either 1 or 2 vireos being detected on only 4 of the survey days and vireo not being detected during the other 4 surveys. Also detected within the survey area was one brown-headed cowbird, which is known to parasitize least bell' s vireo nests. There was one instance of a pair of least bell's vireo recorded in the northern region of the riparian habitat.

If you have any questions regarding the information in this report, please contact Matthew South by email: msouth@southenvironmental.com or by mobile phone: 303.818-3632.

Sincerely,



Matthew R. South

List of Attachments

1. **Attachment A**. Photograph Exhibit
2. **Attachment B**. List of Species Observed

Bibliography

Fish and Wildlife Service. (1998). *Draft recovery plan for the least bell vireo*. U.S Fish and Wildlife Service.

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Attachment A

Photograph Exhibit



Photo 1. Depicts the western region of the project area, facing west.



Photo 2. Depicts the riparian area on the project site, Facing southeast



Photo 3. Depicts the riparian area with the developed area behind it, facing southeast



Photo 4. Depicts the southeast region of riparian area, facing south.

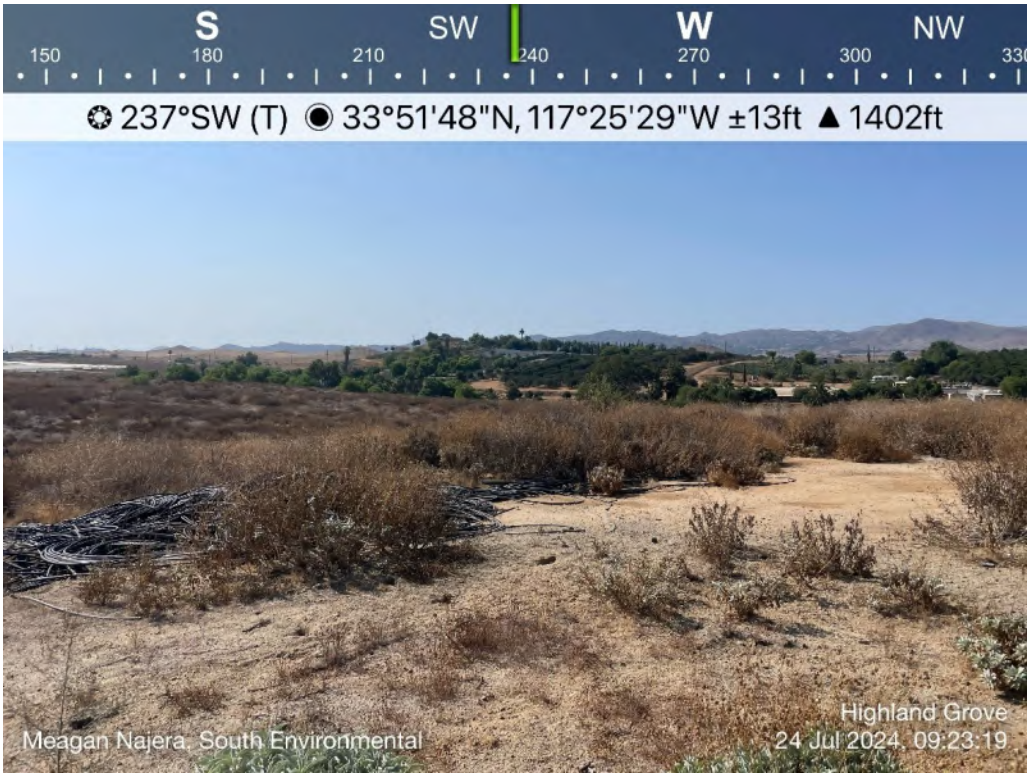

Photo 5. Depicts the developed area on the project site, facing southwest.



Photo 6. Depicts the eastern region of the study area, facing southwest

Attachment B

List of Species Observed

List of Species Observed

Birds		
Family	Common Name	Scientific Name
Accipitridae		
	Red Shouldered Hawk	Buteo linatus
	Red-tailed Hawk	Buteo jamaicensis
Aegithalidae		
	Bushtit	Psaltriparus minimus
Ardeidae		
	Great Blue Heron	Ardea herodias
Apodidae		
	White-throated Swift	Aeronautes saxatails
Bombycillidae		
	Cedar Waxwing	Bombycilla cedrorum
Cathartidae		
	Turley Vulture	Cathartes aura
Charadriidae		
	Killdeer	Charadrius vociferus
Columbidae		
	Eurasian Collared-dove	Streptopelia decaocto
	Mourning Dove	Zenaida macroura
Corvidae		
	California Scrub-jay	Aphelocoma californica
	Common Raven	Corvus corax
	American Crow	Corvus brachyrhyncus
Cuculidae		
	Greater Roadrunner	Geococcyx californianus
Fringillidae		
	American Goldfinch	Spinus tristis
	House Finch	Carpodacus mexicanus
	Lesser Goldfinch	Careuelis psaltria
Hirundinidae		
	Cliff Swallow	Petrochelidon pyrrhonota
	Northern Rough-winged Swallow	Stelgidopteryx serripennis
Icteridae		
	Brown-headed Cowbird	Molothrus ater
	Bullock's Oriole	Icterus bullockii
	Great-tailed Grackle	Quiscalus mexicanus
	Hooded Oriole	Icterus cucullatus
	Red-winged Blackbird	Agelaius phoeniceus

	Western Meadowlark	Sturnella neglecta
Mimidae		
	California Thrasher	Toxostoma redivivum
	Northern Mockingbird	Mimus polyglottos
Musicapidae		
	Western Bluebird	Sialia mexicana
Odontophoridae		
	California Quail	Callipepla californica
Pandionidae		
	Osprey	Pandion haliaetus
Parulidae		
	Common Yellowthroat	Geothlypis trichas
	Yellow Warbler	Setophaga petechia
Passerellidae		
	California Towhee	Melozone crissalis
	Dark-eyed Junco	Junco hyemalis
	Song Sparrow	Melospiza melodia
	Spotted Towhee	Pipilo maculatus
Passeridae		
	House Sparrow	Passer domesticus
Picidae		
	Northern Flicker	Colaptes auratus
	Nuttall's Woodpecker	Dryobates nuttallii
Polioptillidae		
	Blue-gray Gnatcatcher	Polioptila caerulea
Ptiliogonatidae		
	Phainopepla	Phaninopepla nitens
Scolopacidae		
	Spotted Sandpiper	Actitis macularius
Sturnidae		
	European Starling	Sturnis vulgaris
Trochilidae		
	Allen's Hummingbird	Selasphorus sasin
	Anna's Hummingbird	Calypte anna
Troglodytidae		
	Bewick's Wren	Thryomanes bewickii
	House Wren	Troglodytes aedon
Tyrannidae		
	Ash-throated Flycatcher	Myiarchus cinerascens
	Cassin's Kingbird	Tyrannus vociferans
	Black phoebe	Sayornis nigricans
	Say's Phoebe	Sayornis saya
	Western Kingbird	Tyrannus verticalis

Vieronidae		
	Least Bell's Vireo	Vireo bellii pusillus

Mammals		
Family	Common Name	Scientific Name
Cricetidae		
	Woodrat	Neotoma sp.
Leporidae		
	Black-tailed jackrabbit	Lepus californicus
	Dessert Cottontail	Sylvilagus audubonii
Sciuridae		
	California Ground Squirrel	Otospermophilus beecheyi

Amphibians		
Family	Common Name	Scientific Name
Hylidae		
	Pacific Tree Frog	Pseudacris regilla
Ranidae		
	American Bullfrog	Lithobates catesbeianus

Reptiles		
Family	Common Name	Scientific Name
Colubridae		
	California Kingsnake	Lampropeltis californiae
Phrynosomatidae		
	Western side-blotched Lizard	Ulta stanburiana elegans

C-4: Aquatic Resources Delineation

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FCS
An ADEC Innovation

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

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Date: February 6, 2025

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SECTION 1: INTRODUCTION

At the request of Pulte Home Company, LLC (project applicant), FirstCarbon Solutions (FCS) completed a delineation of aquatic resources and proposes a jurisdictional determination for the approximate 61-acre Highland Grove II Development Project Site, referred to as the Study Area, 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 61-acre Study Area is located in unincorporated Riverside County, California, east of the census-designated El Sobrante and just north of Lake Mathews. The Study Area is centered around 33.8616414° latitude and -117.4308165° longitude. The location of the Study Area within the Riverside Region is shown on Exhibit 1, and the Study Area boundaries are shown on Exhibit 2 in a recent high-resolution aerial image.

2.2 - Vegetation and Land Cover Types

Vegetation of the Study Area is predominantly non-native annual grassland with coastal sage scrub in the tributaries and riparian woodland found within the drainages. The coastal sage scrub community in the Study Area is dominated by California buckwheat (*Eriogonum fasciculatum*), brittlebush (*Encelia farinosa*), California brittlebush (*Encelia californica*), and fourwing saltbush (*Atriplex canescens*), with California cholla (*Cylindropuntia californica*) and castor bean (*Ricinus communis*) occasionally present.

Riparian woodland habitat is present within the Study Area, which is dominated by arroyo willow (*Salix lasiolepis*), Mexican fan palm (*Washingtonia robusta*), Canary Island date palm (*Phoenix canariensis*), mule fat (*Baccharis salicifolia*), blue elderberry (*Sambucus nigra cerulea*), willow baccharis (*Baccharis salicina*), and Anderson thornbush (*Lycium andersonii*). Common forb species present include broadleaf cattail (*Typha latifolia*), stinging nettle (*Urtica dioica*), dwarf nettle (*Urtica urens*), hoary bowlesia (*Bowlesia incana*), common eucrypta (*Eucrypta chrysanthemifolia*), chilicothe (*Marah macrocarpa*), and ladies' tobacco (*Pseudognaphalium californicum*). Common species in the non-native grasslands include black nightshade (*Solanum nigrum*), common fiddleneck (*Amsinckia intermedia*), white horehound (*Marrubium vulgare*), black mustard (*Brassica nigra*), Italian thistle (*Carduus pycnocephalus*), red brome (*Bromus rubens*), ripgut brome (*Bromus diandrus*), and foxtail barley (*Hordeum murinum*). A stand of tree tobacco (*Nicotiana glauca*) is present on the bank along the southeast edge of the Study Area.

Vegetation associated with drainage channels is described for each feature in more detail in Section 5.

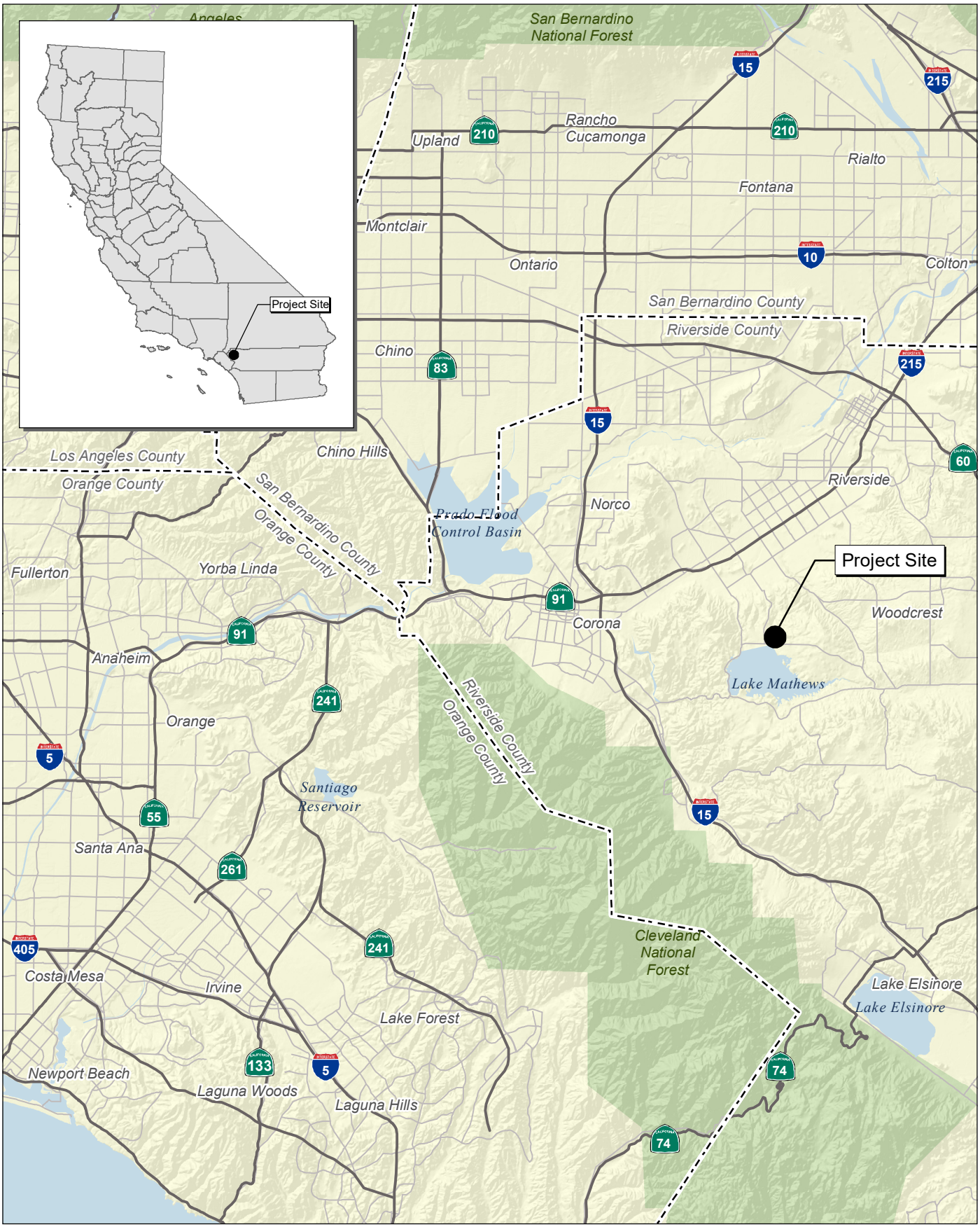
2.3 - Topography and Hydrogeomorphology

Elevation within the Study Area rangesranges ranges from approximately 1,260 feet above mean sea level (AMSL) near the northern portion of the project site to 1,365 feet AMSL near the southeast corner of the project site. Intermittent drainage channels and ephemeral tributaries run along the northern edge of the Study Area boundary before moving off-site. Flows leaving the Study Area travel north for some distance and then discharge through two 9-foot-wide culverts under Sweet Avenue and toward Citrus Heights Drive; flows are then conveyed under the Gage Canal, which then terminates 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 79 percent of the Study Area are mapped by Natural Resources Conservation Service (NRCS) as Cajalco soil series. Approximately 18 percent of the Study Area was mapped as Las Posas loam. Other small portions of the Study Area consist of Buren loam and 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 (NRCS). 2023. Web Soil Survey 3.3.2. Website: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed May 2024.



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. adkan Engineers, March 2024.

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1,000 500 0 1,000 Feet

Exhibit 2
Local Vicinity Map

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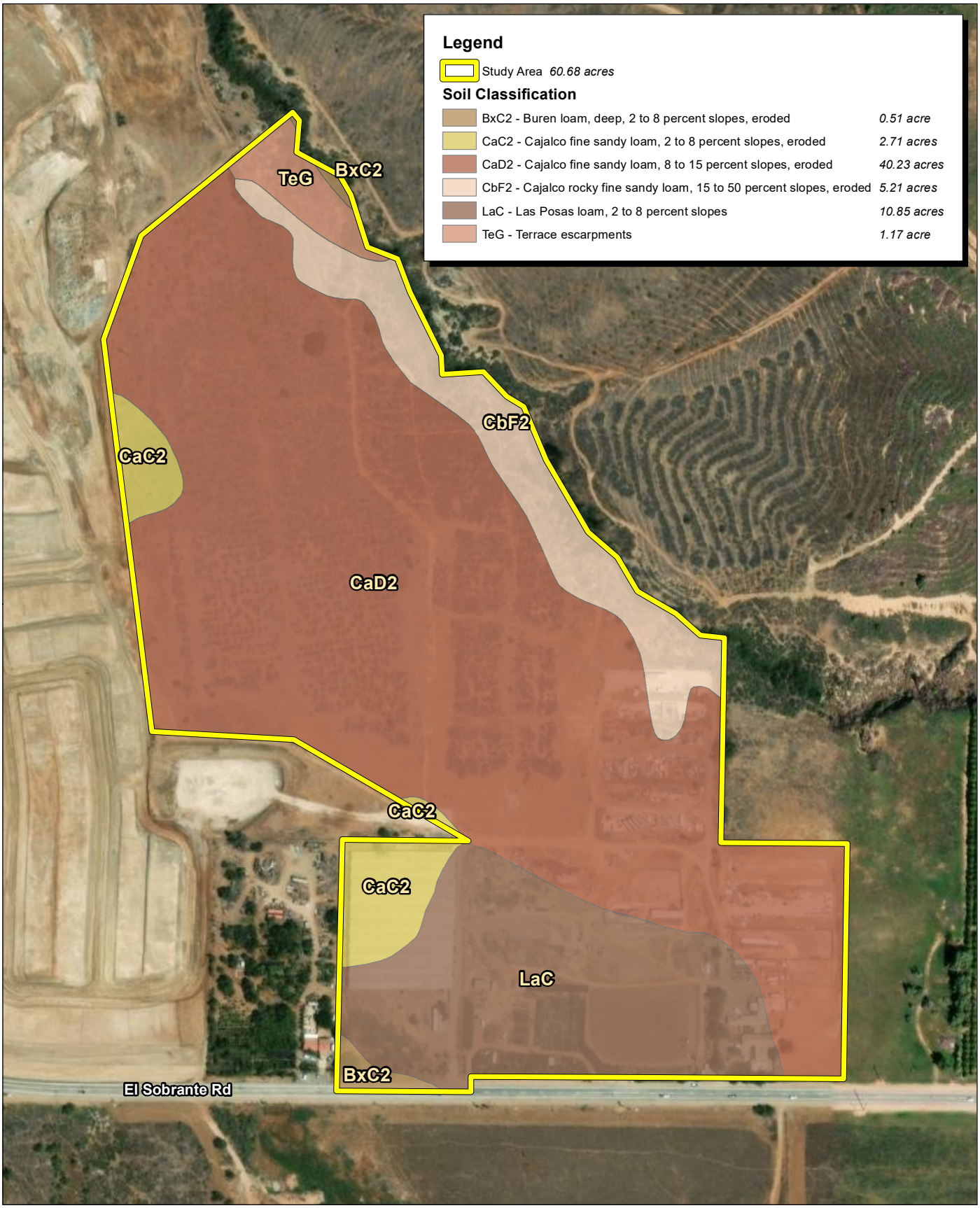

Source: ESRI Aerial Imagery. adkan Engineers, March 2024. Soils Data Mart, Western Riverside County.

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350 175 0 350
Feet

Exhibit 3
Soils Map

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SECTION 3: REGULATORY SETTING

3.1 - Federal

3.1.1 - Clean Water Act

The 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.

As of the preparation of the original version of this report on August 11, 2023, the final "Revised Definition of Waters of the United States" rule was published in the Federal Register on January 18, 2023, and took effect on March 20, 2023. However, the final rule is not currently operative in certain states and for certain parties due to litigation. Moreover, the United States Environmental Protection Agency (EPA) and USACE (hereafter known as 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* (*Sackett*). In light of this decision, the agencies will interpret the phrase "waters of the United States" consistent with the Supreme Court's decision in *Sackett*.

On August 29, 2023, the agencies issued a final ruling that amends the "Revised Definition of 'waters of the United States'" to conform key portions of the regulatory text to the U.S. Supreme Court's May 25, 2023, decision defining "waters of the United States" as follows:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
2. The interstate waters or interstate waters.
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:
    i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    iii. Which are used or could be used for industrial purposes by industries in interstate commerce.
4. All impoundments of waters otherwise defined as waters of the United States under this definition.
5. Tributaries of waters identified in paragraphs (a) (1) through (4) of this section.
6. The territorial seas; and
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.

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

   Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the Clean Water Act (other than cooling ponds as defined in 40 Code of Federal Regulations 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

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. Additionally, 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, applicants seeking to fill waters of the United States are required to obtain a CWA Section 401 Water Quality Certification from the 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]

[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.

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.

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SECTION 4: METHODS

FCS Senior Biologist Robert Carroll, assisted by FCS Botanist Juliet Simpson, surveyed the Study Area on April 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, where applicable, 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] United States Army Corps of Engineers (USACE). 2022. The National Wetland Plant List–Arid West Version 3.
[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, 7.5 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 Wetland 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 from 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 (acre)
Open Drainage Channel	1-1	1,923	10	19,230	0.44
Open Drainage Channel	1-2	116	1	116	0.002
Open Drainage Channel	1-3	89	1	89	0.001
Open Drainage Channel	2-1	303	1	303	0.007
Sum Open Drainage Channels	**–**	**2,431**	**n/a**	**19,738**	**0.45**
Sum All Potentially Jurisdictional Waters	**–**	**2,431**	**n/a**	**17,708**	**0.45**

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.

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Source: ESRI Aerial Imagery. adkan Engineers, March 2024.

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200 100 0 200
Feet

Exhibit 4
Aquatic Resources Delineation Map Overview

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Intermittent Drainage Segment 1-1

Intermittent Drainage Segment 1-1 is a naturally occurring first order drainage that supports riparian woodland habitat. This segment conveys flows south to north along the entire northern boundary of the Study Area before flowing north outside the Study Area. Other hydrological input includes two on-site ephemeral drainages and what appeared to be remnant culverts that discharge into this drainage. This segment appears to drain the northwestern half of the Study Area to the north. The channel is characterized by the presence of deeply incised banks. The average OHWM within this segment was approximately 10 feet wide and characterized by scour and sediment deposits. At the time of the survey, flowing or standing water was present in some locations along this drainage but was 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 (*Nasturtium officinale*), and stinging nettle were found growing within the OHWM at various locations along this drainage segment, with common eucrypta and hoary bowlesia often present along the OHWM. The canopy layer along this drainage segment was composed of scattered arroyo willow, Mexican fan palm, Canary Island date palm, and blue elderberry, with mule fat, willow baccharis, and Anderson thornbush common throughout the drainage. Segment 1-1 provides intermittent flows outside of the Study Area to the north, which later terminate approximately 2 miles northwest of the Study Area. Subsurface flow continues in the storm drain indefinitely and does not appear to reemerge as surface flow.

Ephemeral Drainage Segment 1-2

Ephemeral Drainage Segment 1-2 is a remnant culvert-fed second-order ephemeral tributary that runs southwest to northeast on the southwestern side of Intermittent Drainage Segment 1-1. Segment 1-2 is the northern-most tributary to Intermittent Drainage Segment 1-1. This drainage is characterized by the presence of narrow banks. There was vegetation obscuring the OHWM; however, it appeared to be a maximum of 12 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, tree tobacco, fourwing saltbush, pine bush (*Ericameria pinifolia*), California buckwheat, white horehound, chilicothe, dwarf nettle, Maltese star thistle (*Centaurea melitensis*), black mustard, and red brome. Segment 1-2 helps drain a small portion of the northern Study Area into Intermittent Drainage Segment 1-1.

Ephemeral Drainage Segment 1-3

Ephemeral Drainage Segment 1-3 is a remnant culvert-fed second-order ephemeral tributary that runs southwest to northeast on the southwestern side of Intermittent Drainage Segment 1-1. Segment 1-3 is the second northern-most tributary to Intermittent Drainage Segment 1-1, approximately 250 feet south/upstream from Ephemeral Drainage Segment 1-2. 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 12 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, arroyo willow, pine bush, California brittlebush, California cholla, white horehound, Italian thistle, dwarf nettle, miner's lettuce (*Claytonia perfoliata*), common

eucrypta, common fiddleneck, black mustard, and red brome. Segment 1-3 helps drain a small portion of the northern Study Area into Intermittent Drainage Segment 1-1.

Ephemeral Drainage Segment 2-1

Ephemeral Drainage Segment 2-1 is an ephemeral erosive gulley/drainage that runs south to north where it meanders in and out of the southeastern corner of the Study Area. The inlet of what appeared to be a remnant culvert was observed approximately 100 feet south of this segment; however, the outlet of this culvert was not observed in the field. As such, it is unclear whether this culvert provides hydrological input to Segment 2-1. This drainage is characterized by the presence of shallow, eroded banks. Grass and small forbs were growing in and around the OHWM, which appeared to be a maximum of 12 inches wide. At the time of the survey, no water or soil moisture was present, indicating an ephemeral hydrological regime. Species found in this drainage segment include pepper tree (*Schinus molle*), blue elderberry, arroyo willow, tree tobacco, California brittlebush, white horehound, stinging nettle, dwarf nettle, common fiddleneck, black nightshade, Italian thistle, prickly lettuce (*Lactuca serriola*), black mustard, red brome, ripgut brome, and foxtail barley. Segment 1-3 appears to drain a small portion of the southeastern area of the Study Area to the north.

5.2.2 - Riparian Vegetation

In addition to the streambeds outlined above, the Study Area contains approximately 1.47 acres of riparian vegetation associated with Drainage Segment 1-1 (Exhibit 4).

5.3 - United States Fish and Wildlife Service National Wetland Inventory

The USFWS NWI did not depict any wetlands in the Study Area.[12] 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.

There was no evidence of hydric soils, hydrology indicators, or hydrophytic vegetation that would indicate a wetland within the Study Area; therefore, a Wetland Determination Data Form was not completed. The absence of wetland indicators was not caused by abnormally dry conditions because the delineation was conducted following a period of wetter than normal aggregate rainfall, 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 20, 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

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

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.

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

Per the guidance outlined above, no drainages 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 located 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, all drainage segments within the Study Area 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 four open and vegetated ephemeral and intermittent channels, for a total length of 2,431 feet, covering an aggregate area of approximately 19,738 square feet (0.45 acre), as shown on Exhibit 4.

No additional aquatic features, including wetlands, were observed within the Study Area.

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 19,738 square feet (0.45 acre) and 2,431 linear feet of potential waters of the State regulated by the RWQCB under Section 13260 of the California Water Code and 83,635 square feet (1.92 acres) of aquatic features and associated riparian habitat regulated pursuant to CDFW's 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: Southeastern edge of Study Area, facing south. Northeast side of Drainage Segment 1-1.



Photograph 2: Overgrown vegetation surrounding OHWM in southern portion of Drainage Segment 1-1.



Photograph 3: Overgrown riparian woodland in northern stretches of Drainage Segment 1-1.



Photograph 4: Flowing water present in OHWM in northern portion of Drainage Segment 1-1.



Photograph 5: Tributary Segment 1-2 facing northeast, showing vegetation growing through the OHWM.



Photograph 6: Tributary Segment 1-3 facing northeast, showing vegetation growing through the OHWM.



Photograph 7: Drainage Segment 2-1 facing south, showing vegetation growing through the OHWM.



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

Appendix B: WETS Analysis

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WETS Analysis for Highland Grove II 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:
Ordinary High Water Mark Datasheets

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Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Highland Grove II | **Date: 4/26/2024** | **Time: 2:00pm**
Project Number: 0760.0052 | **Town: Riverside** | **State: CA**
Stream: 1-1 | **Photo begin file#:** | **Photo end file#:**
Investigator(s): Robert Carroll, Juliet Simpson

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

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates: 33.864242°N, -117.431169°W

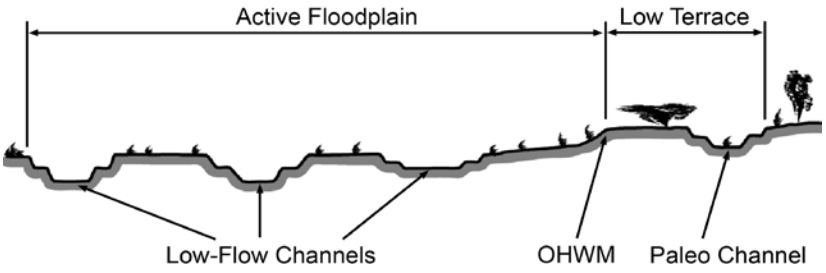
Potential anthropogenic influences on the channel system: Remnant culverts, development on west side of Drainage Segment 1-1, active culverts offsite downstream

Brief site description: Non-native grassland and sage scrub with riparian woodland in 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

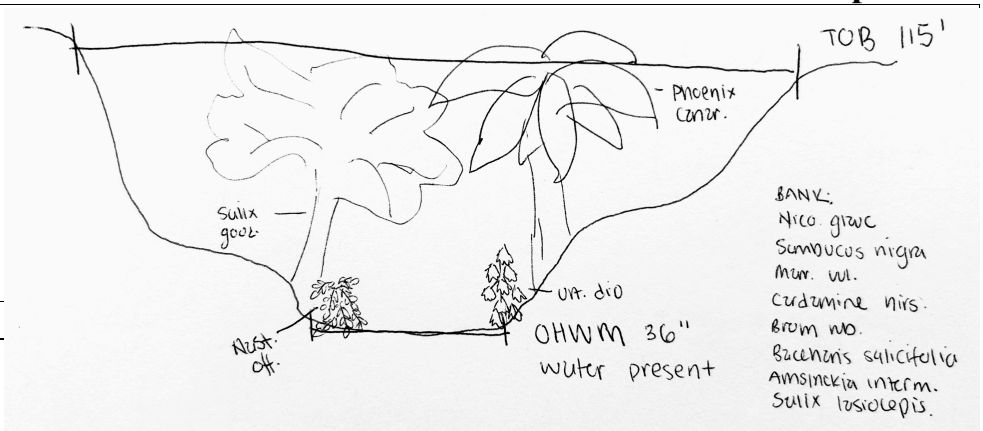


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

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
   - ☒ GPS
   - ☐ Digitized on computer
   - ☐ Other:

Project ID: 0760.0052 Cross section ID: OHWM #1 Date: 4/26/2024 Time: 2:00pm

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:

Project ID: **Cross section ID:** **Date:** **Time:**

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)
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- ☐ Mudcracks
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- ☐ Benches
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- ☐ Surface relief
- ☐ Other: _____
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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:

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Comments:

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5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

Katherine E. Curtis and Robert W. Lichvar

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

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U.S. Army Engineer Research and Development Center
Cold Regions Research and Engineering Laboratory
72 Lyme Road
Hanover, NH 03755-1290

8. PERFORMING ORGANIZATION REPORT NUMBER

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14. ABSTRACT

The Ordinary High Water Mark (OHWM) is a method used to identify the lateral limits of non-wetland waters. Lichvar and McColley (2008) developed an OHWM delineation manual for ephemeral and intermittent streams in the Arid West. Their approach identified key hydrologic, geomorphic, and vegetation indicators useful in OHWM delineation. This technical note provides an updated datasheet to the manual. The datasheet has been simplified but still includes the overall field signatures and preliminary methods used to determine the OHWM. The datasheet now focuses on identifying the characteristics of each individual hydrogeomorphic floodplain unit and uses the differences between the floodplain units to identify the OHWM.

15. SUBJECT TERMS
Arid West, Floodplains, Ephemeral streams, Intermittent streams, Ordinary High Water Mark

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a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. TELEPHONE NUMBER** *(include area code)*
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Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Highland Grove II | **Date: 4/26/2024** | **Time: 2:15pm**
Project Number: 0760.0052 | **Town: Riverside** | **State: CA**
Stream: 1-1 | **Photo begin file#:** | **Photo end file#:**
Investigator(s): Robert Carroll, Juliet Simpson

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

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates: 33.861468°N, -117.428313°W

Potential anthropogenic influences on the channel system: Remnant culverts, development on west side of Drainage Segment 1-1, active culverts offsite downstream

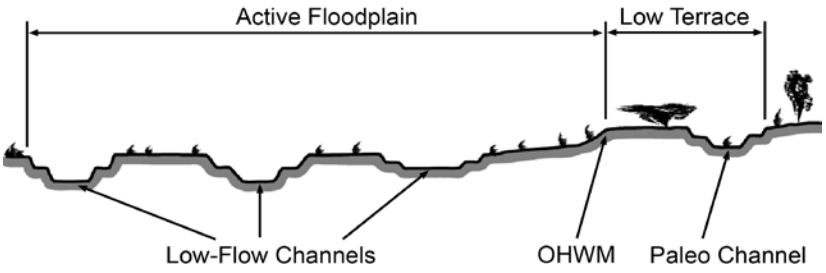
Brief site description: Non-native grassland and sage scrub with riparian woodland in drainages

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.
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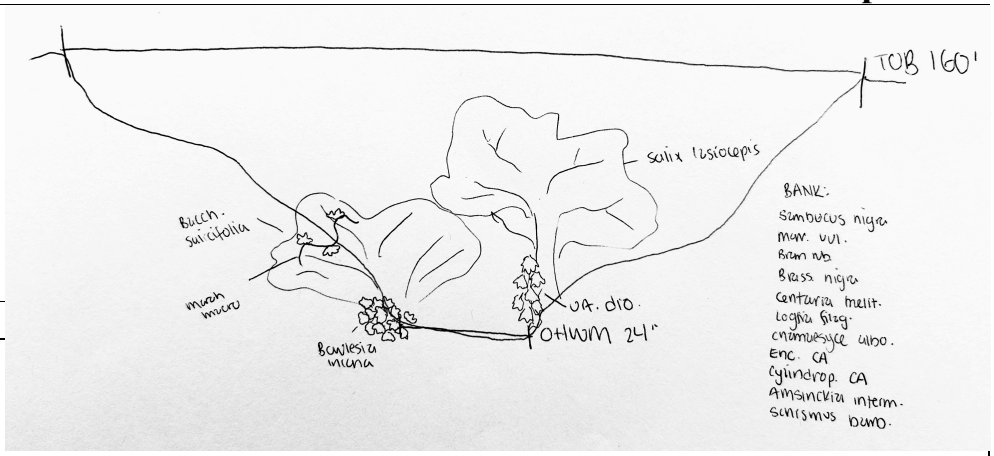
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☒ GPS
   - ☐ Digitized on computer
   - ☐ Other:

Project ID: 0760.0052 Cross section ID: OHWM #2 Date: 4/26/2024 Time: 2:15pm

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: _____
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a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. TELEPHONE NUMBER** *(include area code)*
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C-5: Least Bell Vireo Survey Report

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September 3, 2024

Michael Tuma
Senior Biologist
FirstCarbon Solutions
Email: mtuma@fcs-intl.com
Phone: 626-390-5717

RE: Least Bell`s Vireo Survey Report for Highland Grove 4 Project in Riverside, California

Dear Dr. Tuma,

This least bell`s vireo survey report has been prepared by South Environmental for the 111.59-acre Highland Grove 4 Project in Riverside, California. The scope of this report includes a description of the project, biological setting, vegetation communities, survey methodology, and survey results. Photographs of the survey area are included as attachments to this report.

Project Description

Project Location

As shown in Figure 1 below, the survey area is located along Travertine Drive in Riverside, California. The project is within the U.S. Geological Survey (USGS) Lake Mathews 7.5" topographical map, and within Sections 00 of Township 03 South (03S) and Range 5 West (5W). As shown in Figure 2 below, the survey can be accessed from Travertine Drive at a point that is approximately 3-miles south of Highway 91 and approximately 7-miles east of Highway 15. The survey area is north of El Sobrante Road, south of Sweet Avenue, west of Travertine Street, East of McAllister Street and Lake Mathews is located south of the project site.



Source: ESRI USA Topo Maps and World Topo Map 2024

Highland Grove 4 Project

Figure 1. Regional Location

Project Boundary

Study Area (100-ft buffer)



0 1,000 2,000 Feet

Scale: 1:24,000

N

SOUTH ENVIRONMENTAL



Source: BING Aerial Map 2024

Highland Grove 4 Project

Figure 2. Site Vicinity

0 360 720 Feet

N

Scale: 1:7,171

Project Boundary

Study Area (100-ft buffer)

SOUTH ENVIRONMENTAL

Proposed Activities

The project site in total is a 111.59-acres and 96.43-acres of that will have impacts from the construction of a new residential neighborhood, including new paved streets as well as new single-family homes.

Vegetation Communities

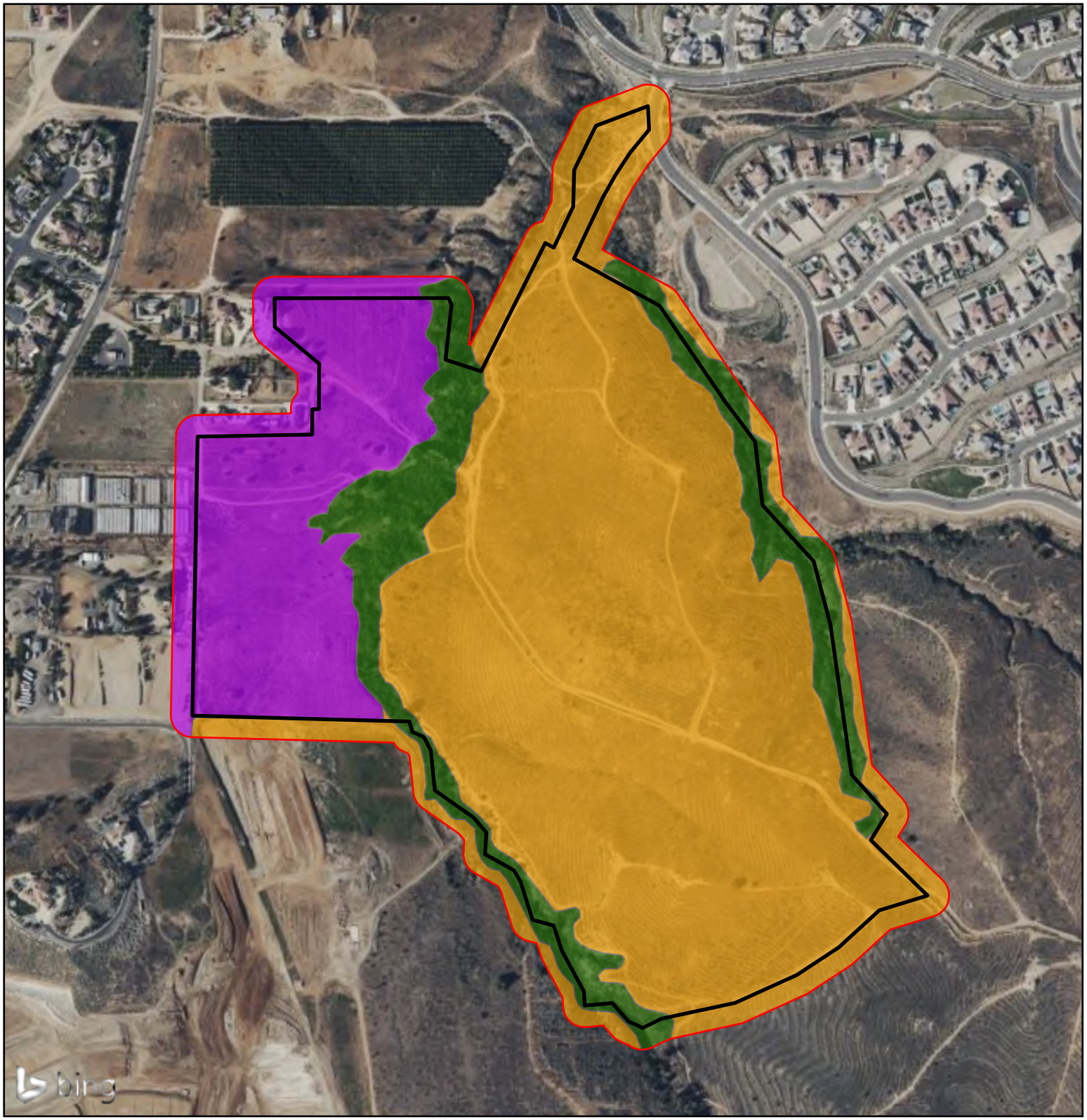
As shown in Figure 3, there are three plant communities mapped within the survey area (CNPS 2024):

- **Wild oats and annual brome grasslands** (*Avena spp.-Bromus spp.* Herbaceous Semi-Natural Alliance) is found in the study area. This area is in the northern region and central area of the project area as well as on the western most side of the riparian area. This community is co-dominated by wall barley (*Hordeum murinum)* and shortpod mustard (*Hirschfeldia incana)*.
- **Goodding' s Willow-Red Willow Riparian Woodland and Forest** (*Salix gooddingii-Salix laevigata* Forest and Woodland Alliance) is found on the study area on the western and eastern side of the project area. This community is dominated by black willow (*Salix goodingii),* also present is Freemont cottonwood (*Populus fremontii*), mule fat (*Baccharis salicifolia),* pepper tree (*Schinus molle),* and tree tobacco (*Nicotiana glauca)*.
- **Developed** area occurs on northwestern region of the project site. These areas include the roadway of McAllister Street and single-family homes that include garages, patios, driveways, fences, fenced-in areas, and ornamental landscaping. There is also ongoing construction work in this area.

Least bell`s vireos utilize riparian willow and mule fat dominated habitat during breeding season and during migration. Therefore, the Gooding`s Willow-Red Willow Riparian Woodland and Forest habitat found on the project site was the focus spot for surveying for the presence/absence of the least bell`s vireo. The habitat was located on the eastern and western borders of the survey site.

Natural History

According to the U.S Fish and Wildlife service the least bell`s vireo is a migratory songbird that breeds in southern California to northern Baja California, Mexico. The least bell`s vireo will winter in the southern region of Baja California, Mexico from the September to March. They prefer breeding grounds that are willow-dominated riparian woodlands but will also forage and sometimes nest in mulefat scrub, oak woodlands, and chaparral, if it is nearby. They begin



Source: BING Aerial Map 2024

Highland Grove 4 Project

Figure 3. Plant Communities and Land Cover

0 375 750 Feet

N

Scale: 1:7,500

- Project Boundary
- Study Area (100-ft buffer)
- Bromus Ruderal Grassland
- Developing / Developed
- Goodding's Willow - Red Willow Riparian Woodland and Forest

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migrating from southern Baja California, Mexico in mid-March to early April to Southern California and northern Baja California, Mexico.

Least bell`s vireo`s have two habitat characteristics that they require for breeding: the presence of dense cover within 3-6 feet, where nests are placed and a dense stratified canopy layer for foraging. Their nests are built using plant fibers and spiderweb silk, which can be found a few feet from the ground. Habitat loss has caused their population to decrease as well as decreased nesting productivity due to parasitism by brown-headed cowbirds (*Molothus ater*). Cowbirds will lay their eggs in nests of other birds so their young can be raised by the host species which in turn the host species young to not survive. Although least bell`s vireos numbers have increased since conservation efforts, a large part of their historical range is still unoccupied by them.

Methodology

Prior to conducting surveys, South Environmental referenced the *2001 Least Bell`s Vireo Survey Guidelines* regarding the survey methods proposed, timing of the survey, and potential strategies for avoiding impacts. It was determined that 8 total surveys would be sufficient. Coverage with a start date on May 1st and the final survey on July 24th, with 10 days minimum between each survey.

Least Bell`s Vireo Surveys

South Environmental biologists conducted a habitat assessment and eight total least bell`s vireo surveys in areas of suitable habitat throughout the entire project site. The surveys were conducted according to Appendix D of the *2001 Least Bell`s Vireo Survey Guidelines*, and took place on May 1st (Survey #1), May 13th (Survey #2), May 24th (Survey #3), June 6th (Survey #4), June 14th (Survey #5), June 24th (Survey #6), July 5th (Survey #7), and July 24th (Survey #8). The habitat assessment was conducted concurrently with Survey #1. The surveys were conducted during appropriate weather conditions and were timed to occur during the most active period for least bell`s vireos at intervals determined through coordination with the CDFW. Table 1 below provides a summary of the surveys.

Table 1. Least Bell`s Vireo Survey Summary

Survey #	Date - Time	Conditions (Temp, Wind Speed, Cloud cover, precipitation)	Surveyors
Habitat Assessment - Survey #1	5/1/2024 7:00 – 11:00	60-67F, 0-5mph, 100% cloud cover, no precip.	Philip Samples
Survey #2	5/13/2024 7:00 – 11:00	56-60F, 0-5mph, 100-75% cloud cover, no precip.	Philip Samples
Survey #3	5/24/2024 7:00-11:00	57-61F, 0-5mph, 25-100% cloud cover, no precip.	Philip Samples
Survey #4	6/4/2024 8:00-11:00	60-73F, 0-5mph, 100-25% cloud cover, no precip.	Philip Samples, Meagan Najera
Survey #5	6/14/2024 8:00-10:00	64-74F, 0-5mph, 0% cloud cover, no precip.	Meagan Najera
Survey #6	6/24/2024 8:00-10:30	76-85F, 0-5mph, 0% cloud cover, no precip.	Meagan Najera
Survey #7	7/5/2024 7:30-9:30	73-84F, 0-5mph, 0% cloud cover, no precip.	Meagan Najera
Survey #8	7/24/2024 8:15-10:00	77-83F, 0-5mph, 5% cloud cover, no precip.	Meagan Najera

The biologist performed the survey by walking alongside the suitable habitat where they would be able to hear and/or see if the least bell`s vireo is present without being too close and potentially harassing the species. Biologists would periodically scan the area for the least bell's vireo using binoculars to observe the surrounding. During the surveys, biologists recorded sightings or sound identifications. Locations of vireos were recorded in the field using ArcGIS FieldMaps mobile application. Also recorded were brown-headed cowbirds and other incidental threatened or endangered species.

Survey Results

Least Bell`s Vireo Survey Results

The survey results are shown in Figure 4 and summarized in Table 2 below. During the survey period there was between 2-5 individual LBVI detected during each survey. During survey #7 and Survey #8 there was a pair of LBVI recorded together but all other detections were of a singular species. The LBVI were recorded in the riparian habitat on the northern, eastern, and western sides of the project area.



Source: BING Aerial Map 2024

Highland Grove 4 Project

Figure 4. Survey Results

0 360 720 Feet

N

Scale: 1:7,171

- Least Bell's Vireo
- Brown Headed Cowbird
- Coastal California Gnatcatcher
- Project Boundary
- Study Area (100-ft buffer)

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Table 2 –Survey Results Summary

Survey #	LBVI Observations	BHCO Observation	CAGN Observations
Survey #1	2	1	0
Survey #2	2	3	0
Survey #3	5	1	0
Survey #4	3	2	1
Survey #5	4	0	0
Survey #6	4	1	0
Survey #7	4	0	0
Survey #8	4	0	0

Incidental Species Survey Results

The incidental species survey results are summarized in Figure 2. There was a total of 8 brown-headed cowbird (BHCO) during all eight surveys beginning May 1st and ending July 24th. There was 1 California gnatcatcher (CAGN) detected on June 4th.

Conclusion

Throughout all eight of the focused, protocol-level least bell`s vireo surveys conducted at the Highland Grove 4 project site. Figure 4 depicts the location of vireo detections, with between 2-5 individual vireo detected during any single survey. There were two recordings of a pair of least bell's vireo on separate days in similar locations on the northwest side of the project site. Also detected was one California gnatcatcher, which is federally listed as endangered. There was a total of 8 brown-headed cowbird detections during all 8 surveys, with between 0-3 per survey, which are known to parasitize least bell`s vireo nest.

If you have any questions regarding the information in this report, please contact Matthew South by email: msouth@southenvironmental.com or by mobile phone: 303.818-3632.

Sincerely,



Matthew R. South
Principal Biologist

List of Attachments

1. **Attachment A**. Photograph Exhibit
2. **Attachment B**. List of Species Observed

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Attachment A

Photograph Exhibit



Photo 1. Depicts the entrance to project area in the northern project area from Travertine Drive, west facing.

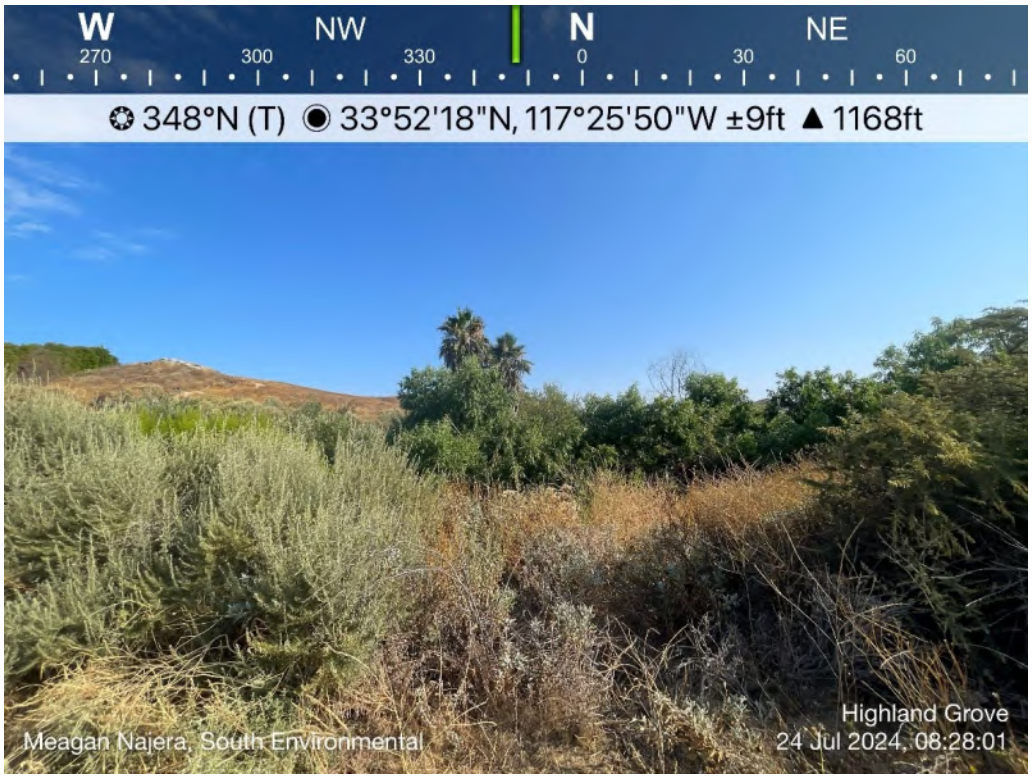

Photo 2. Depicts the riparian area near entrance, in the northern region, Facing north.



Photo 3. Depicts the grass field and riparian area in the northwest region of the project area, west facing.

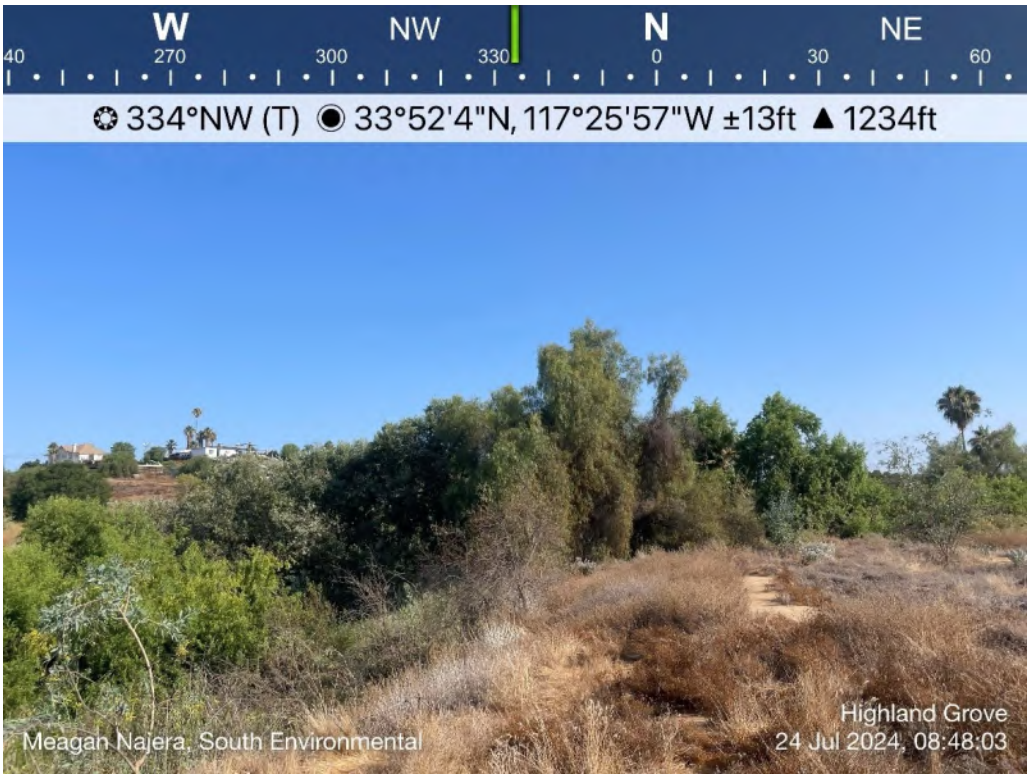

Photo 4. Depicts the northwestern region of study area with riparian habitat, northwest facing.



Photo 5. Depicts the riparian area in the western region of the project area, southwest facing, with riparian habitat and the construction area in the background.



Photo 6. Depicts the western region of the project area, facing west.



Photo 7. Depicts the grass field that dominates the central area of the project site, northeast facing.



Photo 8. Depicts the eastern side of the project area with riparian and grass fields, facing north.

Attachment B

List of Species Observed

Birds		
Family	Common Name	Scientific Name
Accipitridae		
	Red Shouldered Hawk	Buteo linatus
	Red-tailed Hawk	Buteo jamaicensis
Aegithalidae		
	Bushtit	Psaltriparus minimus
Ardeidae		
	Great Blue Heron	Ardea herodias
Apodidae		
	White-throated Swift	Aeronautes saxatails
Bombycillidae		
	Cedar Waxwing	Bombycilla cedrorum
Cathartidae		
	Turley Vulture	Cathartes aura
Charadriidae		
	Killdeer	Charadrius vociferus
Columbidae		
	Eurasian Collared-dove	Streptopelia decaocto
	Mourning Dove	Zenaida macroura
Corvidae		
	California Scrub-jay	Aphelocoma californica
	Common Raven	Corvus corax
	American Crow	Corvus brachyrhyncus
Cuculidae		
	Greater Roadrunner	Geococcyx californianus
Fringillidae		
	American Goldfinch	Spinus tristis
	House Finch	Carpodacus mexicanus
	Lesser Goldfinch	Careuelis psaltria
Hirundinidae		
	Cliff Swallow	Petrochelidon pyrrhonota
	Northern Rough-winged Swallow	Stelgidopteryx serripennis
Icteridae		
	Brown-headed Cowbird	Molothrus ater
	Bullock's Oriole	Icterus bullockii
	Great-tailed Grackle	Quiscalus mexicanus
	Hooded Oriole	Icterus cucullatus
	Red-winged Blackbird	Agelaius phoeniceus
	Western Meadowlark	Sturnella neglecta
Mimidae		
	California Thrasher	Toxostoma redivivum
	Northern Mockingbird	Mimus polyglottos

Musicapidae		
	Western Bluebird	Sialia mexicana
Odontophoridae		
	California Quail	Callipepla californica
Pandionidae		
	Osprey	Pandion haliaetus
Parulidae		
	Common Yellowthroat	Geothlypis trichas
	Yellow Warbler	Setophaga petechia
Passerellidae		
	California Towhee	Melozone crissalis
	Dark-eyed Junco	Junco hyemalis
	Song Sparrow	Melospiza melodia
	Spotted Towhee	Pipilo maculatus
Passeridae		
	House Sparrow	Passer domesticus
Picidae		
	Northern Flicker	Colaptes auratus
	Nuttall's Woodpecker	Dryobates nuttallii
Polioptillidae		
	Blue-gray Gnatcatcher	Polioptila caerulea
Ptiliogonatidae		
	Phainopepla	Phaninopepla nitens
Scolopacidae		
	Spotted Sandpiper	Actitis macularius
Sturnidae		
	European Starling	Sturnis vulgaris
Trochilidae		
	Allen's Hummingbird	Selasphorus sasin
	Anna's Hummingbird	Calypte anna
Troglodytidae		
	Bewick's Wren	Thryomanes bewickii
	House Wren	Troglodytes aedon
Tyrannidae		
	Ash-throated Flycatcher	Myiarchus cinerascens
	Cassin's Kingbird	Tyrannus vociferans
	Black phoebe	Sayornis nigricans
	Say's Phoebe	Sayornis saya
	Western Kingbird	Tyrannus verticalis
Vieronidae		
	Least Bell's Vireo	Vireo bellii pusillus
Mammals		

Family	Common Name	Scientific Name
Cricetidae		
	Woodrat	Neotoma sp.
Leporidae		
	Black-tailed jackrabbit	Lepus californicus
	Dessert Cottontail	Sylvilagus audubonii
Sciuridae		
	California Ground Squirrel	Otospermophilus beecheyi

Amphibians		
Family	Common Name	Scientific Name
Hylidae		
	Pacific Tree Frog	Pseudacris regilla
Ranidae		
	American Bullfrog	Lithobates catesbeianus

Reptiles		
Family	Common Name	Scientific Name
Colubridae		
	California Kingsnake	Lampropeltis californiae
Phrynosomatidae		
	Western side-blotched Lizard	Ulta stanburiana elegans

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