The following document has been reviewed and approved by staff of the Environmental Permitting Support (EPS), Engineering and Capital Projects Department (ECP), City of San Diego:

Biological Technical Report: Encanto Improvements 1 Project, prepared by DUDEK

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July, 2022

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Biological Technical Report

Encanto Improvements I Project

JULY 2022

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Acronyms and Abbreviations

Acronym or Abbreviation	Definition
AMM	Avoidance and Mitigation Measure
ASMD	Area Specific Management Directive
BCME	Biological Construction Mitigation/Monitoring Exhibit
BMP	best management practice
CDFW	California Department of Fish and Wildlife
LCD	Landscape Construction Documents
LDC	Land Development Code
MHPA	Multi-Habitat Planning Area
MMC	Mitigation Monitoring Coordination
MSCP	Multiple Species Conservation Program
OHWM	ordinary high water mark
PQB	Principal Qualified Biologist
PVC	polyvinyl chloride
RR	Regulatory Requirement
RWQCB	California Regional Water Quality Control Board
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

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Executive Summary

Dudek conducted a general biological reconnaissance survey, vegetation mapping, a jurisdictional aquatic resources delineation, and a focused plant survey for the proposed Encanto Improvements I Project (project) alignment. The study area for the biological review includes the alignment plus a 10-foot buffer for a 20-foot-wide corridor; however, the study area includes wider buffers, up to approximately 40 feet, where the work area is expected to be larger (see Figures 2.1 through 2.7). The study area includes one upland vegetation community (Diegan coastal sage scrub), one wetland community (Arundo-dominated riparian), and four other upland types (disturbed habitat, urban/developed, non-native woodland, and eucalyptus woodland). No special-status plant or wildlife species were observed on site.

The project is proposed to provide sewer, water, and roadway improvements in the neighborhood of Encanto and small portions of immediately adjacent neighborhoods.

Areas of temporary impacts would be revegetated in accordance with AMM-BIO-1. The project must also be conducted in compliance with the most current iteration of the City of San Diego Biological Guidelines at the time of implementation.

The City will be required to demonstrate compliance with the California Environmental Quality Act (CEQA) and anticipates that a Mitigated Negative Declaration (MND) will be suited to the project. The City will also be required to comply with other discretionary actions such as obtaining the appropriate Site Development Permit from City of San Diego.

Nesting bird surveys are required for Cooper's hawk per the MSCP area specific management directives (ASMDs).

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1 Introduction

This technical report provides an analysis of potential biological resource impacts associated with the proposed project located southeast of State Route 94 in the City of San Diego, California.

In accordance with the current City of San Diego (City) Biology Guidelines (City of San Diego 2018), this report provides an introduction, a project description, a summary of the pertinent biological resource regulations, the project setting, survey methods, existing biological resources, special-status biological resources, project impacts (direct and indirect), and project mitigation. The project impacts and avoidance and minimization measures are discussed in accordance with the California Environmental Quality Act, Clean Water Act, Migratory Bird Treaty Act, California Fish and Game Code, City of San Diego Final MSCP Subarea Plan (City of San Diego 1997), and the City of San Diego's (City's) Environmentally Sensitive Lands regulations. The regulatory setting is provided in Appendix A to this Biological Resources Report (report).

1.1 Project Location

The project is located in the City of San Diego within the developed community of Encanto and the eastern edge of Emerald Hills and Valencia Park (Figure 1, Project Location). The study area consists of the series of sewer alignment segments that range from Elmwood Avenue east to 69th Street and from Fulmar Street south to Akins Avenue (Figure 1). The approximate center of the project is located at a latitude and longitude of 32°43′2.579″N, 117°4′0.957″W. The study area is located within Township 17 South, Range 2 West, and Sections 2, 3, and 10–12 within the National City 7.5-minute quadrangle, as mapped by the U.S. Geological Survey.

1.2 Project Description

The Encanto Improvements I Project proposes to provide sewer, water, and roadway improvements in Encanto and immediately adjacent neighborhoods. The study area for the biological review includes the alignment plus a 10-foot buffer for a 20-foot-wide corridor; however, the study area includes wider buffers, up to approximately 40 feet, where the work area is expected to be larger (e.g., along Eider Street) (Figures 2.1 through 2.7).

Water Improvements:

The proposed project would construct approximately 3,776 linear feet (0.72 miles) of new PVC water mains (8 inches in diameter). New water mains would be installed via open trench at depths ranging from 3 to 5 feet. The proposed width for trenching would be approximately 3 feet. The project would replace-in-place 11,095 linear feet (2.10 miles) and realign approximately 6,694 linear feet (1.27 miles) of existing asbestos cement (AC) water mains (ranging from approximately 6 to 12 inches in diameter) with new PVC water mains (ranging from approximately 8 to 12 inches in diameter), including associated water services, fire hydrants, valves, water meters, and other appurtenances. Existing water mains would be replaced via open trench within the same trench alignment and at the same or shallower depths as the existing mains and within new trenches, which would range from approximately 3 feet to 8 feet deep. Realigned water main depths range between 3 feet to 5 feet. The proposed width for trenching would be approximately 3 feet. Approximately 3,572 linear feet of water main will be abandoned within City Right-of-Way and an existing easement. Furthermore, existing water main between Brooklyn Avenue and 64th Street was converted from open trench replacement to abandonment to reduce impacts to sensitive biological resources.

Sewer Improvements:

The project proposes to replace-in-place approximately 12,326 linear feet (2.33 miles) and realign approximately 1,101 linear feet (0.21 miles) of existing vitrified clay (VC) sewer mains (ranging from approximately 6 to 12 inches in diameter) with new polyvinyl chloride (PVC) sewer mains (ranging from approximately 8 to 12 inches in diameter). Existing sewer mains would be replaced via open trench within the same trench alignment at the same depth or shallower than existing utilities, within the same trench alignment at deeper depth than existing utilities, and within new trenches, which would range from approximately 5 to 22 feet deep. Realigned sewer main depths range between 5 to 12 feet. New sewer main depths range between 5 to 22 feet. The proposed width for trenching would be approximately 3 feet. Additional sewer improvements include the installation of associated laterals, the installation of approximately 27 new manholes, the replacement of approximately 44 manholes, manhole abandonment, 2,260 linear feet of sewer main abandonment, replacement of cleanouts, and other appurtenances.

The project would also include replacement and/or improved curb ramps in various locations in the project area, sidewalk panel replacement, concrete street replacements, and street resurfacing. The project would also include permanent BMP installation. Up to 0.56 acres of revegetation will be installed within the limits of work where impacts occur to natural land cover types.

More specific descriptions of construction methods are as follows:

Construction Staging: The proposed project would also require staging areas totaling approximately 4,000 square feet, which would be temporarily located on the streets or in empty lots in various locations throughout construction.

Total Disturbance: The project would include 2.4 acres of total excavation with depths ranging from 3 feet to 22 feet.

Open Trenching: The open trench method of construction will be used to complete portions of the Project. Trenches are typically 5-6 feet wide and are dug with excavators and similar large construction equipment.

Abandonment: Pipeline abandonment activities will have minimum surface/subsurface disturbance at both ends of the mains. Disturbance would be limited to removal of manholes and exposed pipe sections. Utility abandonment work activity would occur within the public right-of-way and within City easements.

Geotech & Potholing: No geotechnical investigation is required. Potholes will be required to locate existing utilities and determine if there are any utility conflicts.

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2 Survey Methods and Limitations

Data regarding biological resources present on the study area were obtained through a review of pertinent literature and through field reconnaissance; both are described in detail in the following sections.

2.1 Literature Review

Sensitive biological resources present or potentially present on site were identified through a literature search using the following sources: California Department of Fish and Wildlife (CDFW) (2021a, 2021b, 2021c, 2021d, 2021e, 2021f), the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2021), and the vegetation and special-status species mapping performed for the City MSCP (City of San Diego 1997). General information regarding wildlife species present in the region was obtained from CDFW (2021d) and the American Ornithological Society (AOS 2021) for birds, Wilson and Reeder (2005) for mammals, Crother (2017) for reptiles and amphibians, and the North American Butterfly Association (NABA 2018) or the San Diego Natural History Museum (SDNHM 2002) for butterflies. Plant identification was made with reference to the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2021).

Dudek also reviewed the U.S. Geological Survey National Hydrography Dataset and topography data (USGS 2021), the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory data (USFWS 2021a), and Natural Resources Conservation Service soils data to further determine the potential locations of aquatic resources within the study area (USDA 2022).

2.2 Field Reconnaissance

Biological field surveys for the project were conducted by Dudek biologists on May 25, 2021, and June 14, 2021. Surveys conducted included a jurisdictional delineation, vegetation mapping, general habitat assessment, and focused rare plant survey. Table 1 lists the survey dates, times, surveying biologists, and weather conditions for these surveys.

All biological surveys were conducted in accordance with the City's Guidelines for Conducting Biological Surveys (City of San Diego 2018).

Table 1. Schedule of Surveys

Date	Hours	Personnel	Focus	Conditions
5/25/2021	11:00 a.m.–2:20 p.m.	Callie Amoaku	Jurisdictional Delineation, Vegetation Mapping	72°F–75°F; 0%–10% cloud cover; 0–1 mph wind
6/14/2021	9:00 a.m.–12:50 p.m.	Callie Amoaku, Kathleen Dayton	Jurisdictional Delineation, Rare Plants	70°F–86°F; 0% cloud cover, 0–3 mph wind

2.2.1 Resource Mapping

Dudek biologist Callie Amoaku conducted a general biological reconnaissance survey and vegetation mapping of the proposed project area in May 2021, inventorying all plant and wildlife species encountered. Boundaries of plant communities were mapped in the field using a mobile mapping application. The vegetation community and land cover mapping follows the Draft Vegetation Communities of San Diego County (Oberbauer et al. 2008) and guidance regarding non-native annual grasslands vs. other disturbed areas included in the City's Biology Guidelines (City of San Diego 2018). Minimum mapping units were established at 0.25 acres.

2.2.2 Flora and Fauna

The plant species encountered during the field survey were identified and recorded. A compiled list of plant species observed in the study area is presented in Appendix B. Latin and common names follow the Checklist of the Vascular Plants of San Diego County, 5th Edition (Rebman and Simpson 2014). Where the scientific name listed in Rebman and Simpson (2014) differs from the name currently recognized by the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2021) or that listed in the California Native Plant Society Inventory of Rare and Endangered Plants (CNPS 2021), the synonym is included in brackets following the name listed in Rebman and Simpson (2014).

Wildlife species detected during the field survey by sight, calls, tracks, scat, or other signs were recorded directly onto a field notebook. Binoculars (10×42) were used to aid in the identification of wildlife. Latin and common names of any animals detected follow Crother (2017) for reptiles and amphibians, American Ornithological Society (AOS 2021) for birds, Mammal Diversity Database (2021) for mammals, and North American Butterfly Association (NABA 2018) or San Diego Natural History Museum (SDNHM 2002) for butterflies. In addition to species actually detected during the surveys, expected wildlife use of the site was determined by known habitat preferences of local species and knowledge of their relative distributions in the area. A list of wildlife species observed in the study area is presented in Appendix C.

2.2.3 Jurisdictional Aquatic Resource Delineation

Dudek biologists Callie Amoaku and Kathleen Dayton conducted an aquatic resources delineation within areas of the study area containing depressions, drainage patterns, and/or wetland vegetation. These areas were evaluated, with focus on the presence of defined channels and/or wetland vegetation, soils, and hydrology. Results of this delineation are presented in the *Aquatic Resources Delineation Report Encanto Improvements I Project* document (Dudek 2022).

U.S. Army Corps of Engineers

Aquatic resources with a defined ordinary high water mark (OHWM) would be considered potential non-wetland waters of the U.S. Army Corps of Engineers (USACE). Regulations at Title 33, Code of Federal Regulations, Part 329.11 define an OHWM as "the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas" (51 FR 41251). Dudek biologists used guidance provided in A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States

(USACE 2008a) and Regulatory Guidance Letter (RGL) 05-05 to estimate the extent of an OHWM in the field. For each feature exhibiting the potential presence of an OHWM, Dudek biologists completed a 2010 Arid West Ephemeral and Intermittent Streams OHWM Datasheet following the guidance provided in the Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (OHWM Datasheet; USACE 2010).

Dudek biologists examined potential wetland waters of the United States using the routine determination methods set forth in Part IV, Section D, Subsection 2 of the USACE 1987 Wetland Delineation Manual (Wetland Manual; USACE 1987) and the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region Version 2.0 (Arid West Supplement; USACE 2008b). Areas that met the three parameters per the Arid West Supplement (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology, following methods set forth in the Wetland Manual and Arid West Supplement) were considered wetland waters of the United States. Dudek biologists based wetland plant indicator status on the National Wetland Plant List (USACE 2018) and hydric soils indicators on Field Indicators of Hydric Soils in the United States, Version 8.2 (USDA 2018). Soil chromas were identified in the field according to Munsell Soil-Color Charts with Genuine Munsell Color Chips (Munsell Color 2015) and per the Wetland Manual and Arid West Supplement.

Regional Water Quality Control Board

In April 2019, the RWQCB adopted the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (the Procedures; SWRCB 2019) to define wetland waters of the state, which went into effect on May 28, 2020. As detailed in the Procedures, the RWQCBs define a wetland as follows: "An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation" (SWRCB 2019).

The Procedures provide that RWQCB shall rely on a wetland delineation from a final Aquatic Resource Delineation Report by USACE to determine the extent of wetland waters of the state. If any potential wetland areas have not been delineated in a final Aquatic Resource Delineation Report verified by the USACE, the limits of such potential wetland waters of the state shall be identified using the same wetland delineation methods per the USACE as described in Section 3.2.1, Vegetation Communities and Land Covers, except that a lack of vegetation (i.e., less than 5% areal coverage of plants during the peak of the growing season) does not preclude an area from meeting the definition of a wetland waters of the state (SWRCB 2019).

California Department of Fish and Wildlife

CDFW jurisdiction relies on the presence of a lake and/or streambed and associated riparian or wetland habitat. Lakes include "natural lakes or man-made reservoirs" (14 CCR, Part 1.56). CDFW regulations define a streambed as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports riparian vegetation" (14 CCR Section 1.72). CDFW-jurisdictional habitat includes all riparian shrub or tree canopy associated with a stream that may extend beyond the banks of a stream.

CDFW follows the USFWS wetland definition and classification system, which defines a wetland as transitional land between terrestrial and aquatic systems having one or more of the following attributes: "(1) at least periodically,

the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year" (USFWS 1979). Potential CDFW-jurisdictional wetland boundaries were determined based on the presence of wetland areas supported by a lake or streambed. Wetland delineation methods to determine the presence of one or more wetland attributes included the same methods per the USACE as described above. Field staff delineated the lateral extent of potential CDFW jurisdiction to be "bank to bank" for a streambed or to the "dripline" of riparian habitat and/or wetland boundary, if present.

City Wetlands

Dudek biologists delineated City wetlands based on the City's definition of wetlands under Municipal Code Section 113.0103 and the City's Biological Resources Guidelines. Generally, City wetlands include all USACE and RWQCB-delineated wetlands and may extend to the limits of CDFW jurisdiction if the extent of the streambed is supporting or could be capable of supporting wetland vegetation, soils, and/or hydrology absent scour or human-altered conditions.

2.3 Focused Surveys for Sensitive Biological Resources

Sensitive biological resources are those defined by Municipal Code Section 113.0103 and the City's Biology Guidelines (City of San Diego 2018) as follows: (1) lands that have been included in the MHPA as identified in the City of San Diego MSCP Subarea Plan (City of San Diego 1997); (2) wetlands (as defined by the Municipal Code, Section 113.0103); (3) lands outside the MHPA that contain Tier I Habitats, Tier II Habitats, Tier IIIA Habitats, or Tier IIIB Habitats as identified in the City's Biology Guidelines (City of San Diego 2018); (4) lands supporting species or subspecies listed as rare, endangered, or threatened; (5) lands containing habitats with narrow endemic species; and (6) lands containing habitats of covered species as listed in the City's Biology Guidelines (City of San Diego 2018).

Additionally, sensitive biological resources are defined as follows: (1) species that have been given special recognition by federal, state, or local agencies and organizations due to limited, declining, or threatened population sizes; (2) habitat types recognized by local and regional agencies as sensitive; (3) habitat areas or plant communities that are unique, are of relatively limited distribution, or are of particular value to wildlife; and (4) wildlife corridors and habitat linkages. Sources used for determination of sensitive biological resources are as follows: for plants, USFWS (2021b), CDFW (2021a and 2021c), and California Native Plant Society (CNPS 2021); for wildlife, USFWS (2021b) and CDFW (2021b and 2021c); and for plant communities, City of San Diego MSCP Subarea Plan (City of San Diego 1997) and the City's Biology Guidelines (City of San Diego 2018).

Dudek conducted the following surveys and/or habitat assessments for the following sensitive biological resources: surveys for sensitive upland and wetland (i.e., jurisdictional) vegetation communities; focused surveys for rare plants within suitable habitat; and a formal wetland delineation. Incidental detections of sensitive wildlife species, either through sight, calls, tracks, scat, or other signs, were also recorded. A summary of the dates and site conditions for the field efforts performed as part of this biological report are presented in Table 1 in Section 2.2, Field Reconnaissance.

2.4 Survey Limitations

Focused wildlife surveys were not conducted but incidental observations of special-status species were recorded. Site visits were conducted during daylight hours. Complete inventories of biological resources present on a site often require numerous focused surveys at different times of day during different seasons. Some species, such as annual plants, are present in only spring or summer, and nocturnal animals are difficult to detect during the day. Other species may be present in such low numbers that they could be missed. Due to such timing and seasonal variations, survey results are not an absolute list of all species that the study area may support. Special-status plant and wildlife species with potential to occur are described in Sections 3.2.4 and 3.2.5 of this report.

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3 Results

3.1 Physical Characteristics

The physical characteristics and quantification of biological resources described herein pertains to the study area. The physical characteristics are analyzed in the following sections. The study area is surrounded primary by residential development.

3.1.1 Topography and Drainage

The study area is at about 140 to 465 feet above mean sea level. Drainage patterns on site generally trend east to west, following a gradual decrease in elevation toward the Pacific Ocean. There is an unnamed tributary to Chollas Creek that is south of Radio Drive and north and west of Merlin Drive. This joins another unnamed tributary that runs along Akins Avenue. The unnamed tributary travels west before draining into Chollas Creek, which then drains to San Diego Bay (see Figure 3 of the *Aquatic Resources Delineation Report Encanto Improvements I Project* document (Dudek 2022).

3.1.2 Soils

Ten soil map units occur within the study area: Diablo–Urban land complex, 15% to 50% slopes; Diablo–Urban land complex, 5% to 15% slopes; Las Flores loamy fine sand, 15% to 30% slopes; Las Flores-Urban land complex, 2% to 9% slopes; Las Flores-Urban land complex, 9% to 30% slopes; Linne clay loam, 9% to 30% slopes; Made land; Olivenhain–Urban land complex, 9% to 30% slopes; Redding–Urban land complex, 2% to 9% slopes; and Redding–Urban land complex, 9% to 30% slopes (USDA 2022).

3.2 Biological Resources

The following discussion describes the existing biological conditions within the study area, provided as biological resource descriptions.

3.2.1 Vegetation Communities and Land Covers

The study area primarily consists of urban/developed land. The vegetation communities and land covers were mapped according to Oberbauer et al. (2008). The study area includes one upland vegetation community (Diegan coastal sage scrub), one wetland community (Arundo-dominated riparian), and four other upland types (disturbed habitat, urban/developed, non-native woodland, and eucalyptus woodland). The vegetation communities and land cover types recorded in the study area are described in detail below, their acreages are presented in Table 2, and their spatial distributions are presented on the Biological Resources and Impacts Maps (Figures 2.1 through 2.7). Also included in Table 2 are the sensitivity designations of each vegetation community according to the Tiers described in the City's Biology Guidelines (City of San Diego 2018).

Sensitive habitats are those that are considered rare within the region, that support special-status plant and/or wildlife species, that function as corridors for wildlife movement, or that are otherwise regulated by USFWS, CDFW, RWQCB, USACE, or the City of San Diego. Sensitive upland habitat within the study area includes coastal sage scrub. Wetland habitat in the study area includes Arundo-dominated riparian.

Table 2. Vegetation Types and Land Covers in the Encanto Improvements I Project Study Area

Vegetation Community/Land Cover Type	MSCP Subarea Plan Habitat Tier[a]	Acreage[b]
Uncommon and Common Uplands		
Diegan Coastal Sage Scrub	Tier II	0.10
Native Upland Vegetation Communities Subtotal[b]		*0.10*
Wetlands, including Non-Wetland Waters of the United States and State		
Arundo-Dominated Riparian	Wetlands	0.06
Wetland Subtotal[b]		*0.06*
Other Uplands		
Disturbed Habitat	Tier IV	0.35
Urban/Developed	Tier IV	15.35
Non-Native Woodland	Tier IV	0.17
Eucalyptus Woodland	Tier IV	0.12
Non-Native Vegetation Communities and Land Covers Subtotal[b]		*16.00*
Total[b]		**16.16**

Notes:
[a] City of San Diego 2018.
[b] Some numbers may not sum precisely due to rounding.

3.2.1.1 Diegan Coastal Sage Scrub

Diegan coastal sage scrub is a native vegetation community. According to Oberbauer et al. (2008), coastal sage scrub is composed of a variety of soft, low, aromatic shrubs, characteristically dominated by drought-deciduous species—such as California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and sages (*Salvia* spp.), with scattered evergreen shrubs including lemonadeberry (*Rhus integrifolia*) and laurel sumac (*Malosma laurina*).

The Diegan coastal sage scrub on site is dominated by lemonadeberry, laurel sumac, felt-leaf yerba santa (*Eriodictyon crassifolium*), and/or toyon (*Heteromeles arbutifolia*). Stands are moderately disturbed by the presence of non-native species, including non-native grasses such as ripgut grass (*Bromus diandrus*), and other non-native species, such as hottentot-fig (*Carpobrotus edulis*), sydney golden wattle (*Acacia longifolia*), olive (*Olea europaea*), bougainvillea (*Bougainvillea* sp.), shortpod mustard (*Hirschfeldia incana*), and crown daisy (*Glebionis coronaria*).

Diegan coastal sage scrub occurs in the canyon along Scimitar Drive.

3.2.1.2 Arundo-Dominated Riparian

Arundo-dominated riparian vegetation community is composed of monotypic or nearly monotypic stands of giant reed that are fairly widespread in Southern California. Typically, it occurs on moist soils and in streambeds and may be related directly to soil disturbance or the introduction of propagates by grading or flooding. Mapped occurrences may include surrounding native trees. Giant reed often occupies jurisdictional wetlands.

On site, Arundo-dominated riparian is dominated by giant reed with bristly ox-tongue, smilo grass (*Stipa miliacea* var. *miliacea*), glaucous barley (*Hordeum murinum* ssp. *glaucum*), ripgut grass, castor bean, cheeseweed (*Malva parviflora*), garden nasturtium (*Tropaeolum majus*), wild radish, and London rocket (*Sisymbrium irio*) in the understory. Eucalyptus and Peruvian pepper tree occur in the tree layer.

Arundo-dominated riparian occurs along the channel south of Brooklyn Avenue and north of 64th Street.

3.2.1.3 Disturbed Habitat

Disturbed habitat contains predominantly non-native and/or weedy species that indicate disturbance and soil compaction, such as Russian thistle (*Salsola tragus*), telegraph weed (*Heterotheca grandiflora*), horehound (*Marrubium vulgare*), and sow-thistle (*Sonchus oleraceus*). In areas with less than 10% vegetative cover, there is evidence of soil surface disturbance and compaction from previously legal activities. In areas with higher vegetative cover, there is soil surface disturbance and compaction, and the presence of building foundations and debris resulting from legal activities (rather than dumping). Recently graded firebreaks, construction pads, construction staging areas, off-road vehicle trails, and old home sites are examples of disturbed land (City of San Diego 2018).

On site, disturbed habitat occurs in areas of predominantly bare ground from previous disturbance, such as road shoulders. Vegetative cover, where present, is dominated by weedy species, such as London rocket, red-stem filaree (*Erodium cicutarium*), ripgut grass, crown daisy, notch-leaf marsh-rosemary (*Limonium sinuatum*), and Peruvian pepper tree.

Disturbed land within the study area generally occurs between Radio Drive and Elder Street.

3.2.1.4 Urban/Developed

Urban/developed refers to areas that have been constructed on or disturbed so severely that native vegetation is no longer supported. Developed land includes areas with permanent or semi-permanent structures, pavement or hardscape, landscaped areas, and areas with a large amount of debris or other materials (Oberbauer et al. 2008).

Urban/developed land within the study area includes roads and structures, as well as maintained landscape areas with mulch and a few non-native trees, such as Peruvian pepper tree, Brazilian pepper tree (*Schinus terebinthifolius*), and wattle (*Acacia* sp.).

Urban/developed is the predominant land cover type within the study area.

3.2.1.5 Non-Native Woodland

According to Oberbauer et al. (2008), non-native woodland refers to stands of non-native trees which are typically intentionally planted but are not maintained or irrigated artificially. Species characteristic of this community include eucalyptus or tamarisk, but other exotic tree species may also be representative (Oberbauer et al. 2008).

On site, non-native woodland is dominated by Peruvian pepper tree or wattle. Other species present in the tree and shrub layers include toyon, jade plant (*Crassula ovata*), and eucalyptus (*Eucalyptus* spp.). The understory is composed of ripgut grass, wild oat, crown daisy, and notch-leaf marsh-rosemary.

Non-native woodland occurs along Scimitar Drive west of Wren Street and along Eider Street.

3.2.1.6 Eucalyptus Woodland

Oberbauer (2008) includes eucalyptus woodland as a subtype of non-native woodland that is fairly widespread in Southern California. It typically consists of monotypic stands of introduced Australian eucalyptus trees. The understory is either poor or lacking, owing to shade and possible allelopathic (toxic) properties of the eucalyptus leaf litter. Although eucalyptus woodlands are of limited value to most native plants and animals, they frequently provide nesting and perching sites for some raptors.

Eucalyptus woodland on site is generally dominated by river red gum (*Eucalyptus camaldulensis*), blue gum (*E. globulus*), or red iron bark (*E. sideroxylon*). Other species present include jade plant, Peruvian pepper tree, and lemonadeberry at low cover. The herbaceous layer is dominated by bromes and wild oat where present.

Eucalyptus woodland within the study area occurs along 64th Street south of Brooklyn Avenue and along Scimitar Drive east of Wren Street.

3.2.2 Floral Diversity

A total of 62 vascular plant species, 13 (21%) native and 49 (79%) non-native, were recorded during surveys for the project. A cumulative list of all common and sensitive plant species observed in the study area are provided in Appendix B[1].

3.2.3 Wildlife Diversity

As previously mentioned in Section 2.2, wildlife species that were detected during the field survey by sight, calls, tracks, scat, or other signs were recorded. Binoculars (10 × 50) were used to aid in the identification of wildlife. A total of 14 wildlife species were recorded during surveys, including 1 reptile species, 8 bird species, and 5 butterfly species. A cumulative list of wildlife species observed in the study area during field surveys is provided in Appendix C[1].

3.2.31 Amphibians and Reptiles

No amphibians were observed during the wildlife surveys; however, it is likely that common amphibians, such as bullfrogs (*Rana catesbeiana*), western toads (*Bufo boreas*), and treefrogs (*Hyla* spp.), occupy wetter portions of the study area.

One reptile species, common side-blotched lizard (*Uta stansburiana*), was observed during surveys. Other common reptiles, such as western fence lizard (*Sceloporus occidentalis*), also likely occur in the study area.

[1] The study area initially comprised an area larger than the Project's current footprint, and as such, not all species may be present within the current Project study area.

3.2.3.2 Birds

Eight species of birds were observed during the surveys. Birds adapted to human disturbance, such as mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), and common raven (*Corvus corax*), were observed. Flying or foraging birds observed were red-tailed hawk (*Buteo jamaicensis*) and red-shouldered hawk (*Buteo lineatus*).

3.2.3.3 Mammals

No mammal species were observed, but it is likely that common mammal species such as brush rabbit (*Sylvilagus bachmani*), California ground squirrel (*Otospermophilus beecheyi*), common raccoon (*Procyon lotor*), Botta's pocket gopher (*Thomomys bottae*), and striped skunk (*Mephitis mephitis*) use the area.

3.2.4 Special-Status Plants

Plant species are considered special status if they have been listed or proposed for listing by the federal or state government as rare, endangered, or threatened ("listed species"); have a California Rare Plant Rank of 1–4; are listed as an MSCP-covered species; and/or have been adopted by the City as narrow endemic. An evaluation of known records in the National City quadrangle and the surrounding quadrangles (CDFW 2021b; CNPS 2021; USFWS 2019b) was conducted to determine which species have been recorded in the project vicinity. In addition, Dudek's knowledge of biological resources; the regional distribution of each species; and the elevation, habitat, and soils present within the study area were evaluated to determine the potential for various special-status species to occur.

No special-status plant species were observed during surveys. No special-status species are expected to occur given that the limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub (i.e., Diegan coastal sage scrub). Focused surveys conducted within suitable habitat in June 2021 were negative. A list of special-status plant species known to occur within the surrounding region or covered under the MSCP, and the probability of their occurrence in the project area, is presented in Appendix D.

No critical populations of sensitive plant species within the MSCP Subarea are located in or near the project area.

No plant species recognized as rare, threatened, endangered, or otherwise sensitive by CDFW or covered under the MSCP were observed on site.

3.2.5 Special-Status Wildlife

Special-status wildlife species are those listed as federally/state endangered or threatened, proposed for listing, fully protected by CDFW, California watch list, California species of special concern, or MSCP covered species. An evaluation of known records in the National City quadrangle and the surrounding quadrangles (CDFW 2021b; USFWS 2019b) was conducted. In addition, Dudek's knowledge of biological resources; the regional distribution of each species; and the elevation, habitat, and soils present within the study area were evaluated to determine the potential for various special-status species to occur.

No special-status wildlife species were observed on site. Based on the habitats present and the known distribution of species, there is a moderate to high potential for the following species to occur in the study area: Cooper's hawk

(*Accipiter cooperii*) and western bluebird (*Sialia mexicana*). A list of observed or potentially occurring species and the probability of their occurrence is presented in Appendix E.

3.2.6 Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the immigration and emigration of animals. Wildlife corridors contribute to population viability by (1) ensuring the continual exchange of genes between populations, which helps maintain genetic diversity; (2) providing access to adjacent habitat areas, representing additional territory for foraging and mating; (3) allowing for greater carrying capacity; and (4) providing routes for colonization of habitat lands following local population extinctions or habitat recovery from ecological catastrophes (e.g., fires).

Habitat linkages are patches of native habitat that function to join two larger patches of habitat. They serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation, representing a potential route for gene flow and long-term dispersal. Habitat linkages may serve both as habitat and as avenues of gene flow for small animals such as reptiles and amphibians. Habitat linkages may be represented by continuous patches of habitat or by nearby habitat "islands" that function as steppingstones for dispersal.

The study area does not include Biological Core or Habitat Linkage Areas as identified by the MSCP (City of San Diego 1998).

3.2.7 Jurisdictional Aquatic Resources

The results provided in this section include the extent of delineated aquatic resources within the study area based on observed field indicators of potential waters of the United States, waters of the state, CDFW streambed, and City wetlands per the methods discussed in Section 2.2.3, Jurisdictional Aquatic Resource Delineation.

There are a total of 0.003 acres of USACE/RWQCB and 0.06 acres of CDFW/City jurisdictional aquatic resources within the study area. The jurisdictional aquatic resources within the study area are associated with one waterway. Table 3 summarizes the jurisdictional aquatic resources under each resource agency occurring within the study area.

Table 3. Jurisdictional Areas in the Encanto Improvements I Project Study Area (Acres)

Jurisdictional Aquatic Resource Location	USACE/RWQCB	CDFW	City of San Diego Wetlands
Wetland/Riparian			
Arundo-Dominated Riparian adjacent to NWW-1	—	0.06	0.06
Wetland/Vegetated Streambed Subtotal[a]	—	*0.06*	*0.06*
Non-Wetland Waters/Streambed			
NWW-1	0.003	0.003	0.003
Non-Wetland Waters/ Unvegetated Streambed Subtotal[a]	*0.003*	*0.003*	*0.06*
Total[a]	**0.003**	**0.06**	**0.06**

Notes: USACE = U.S. Army Corps of Engineers; RWQCB = Regional Water Quality Control Board; CDFW = California Department of Fish and Wildlife.

The acreages listed in the USACE/RWQCB, CDFW, and City of San Diego Wetlands columns overlap and therefore should not be summed together.

[a] Acreages may not sum precisely due to rounding.

There are 0.06 acres of City wetlands within the study area, composed of Arundo-dominated riparian.

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4 Consistency with the City MSCP

The MSCP is a long-term regional conservation plan established to protect sensitive species and habitats in San Diego County. The MSCP is divided into subarea plans that are implemented separately from one another. This planning effort is designed to address cumulative impacts through development of a regional plan that addresses impacts to covered species and habitats in a manner that ensures their conservation despite impacts of cumulative projects over the long term. The ultimate goal of this plan is the establishment of biological reserve areas in conformance with the State of California Natural Communities Conservation Planning Act.

The study area is within the Urban area of the City of San Diego Subarea Plan. The City's Subarea Plan contributes to the regional MSCP Plan for preservation and mitigation for impacts to sensitive biological resources within southwestern San Diego County. The Subarea Plan is intended to provide cumulative mitigation for impacts to covered biological resources within the City's jurisdiction and to ensure sufficient resources are preserved to avoid jeopardizing the continued presence of Covered Species under the MSCP.

The project does not occur within or adjacent to the City of San Diego's MHPA.

4.1 Essential Public Project

Because this project is a linear infrastructure project, it meets the definition of an Essential Public Project as identified in Section IV of the City's Biology Guidelines (City of San Diego 2018).

4.2 Compliance with ASMDs for Impacts to Covered Wildlife Species

This subsection provides the project's analysis of the Area Specific Management Directives (ASMDs) included in Appendix A of the City's MSCP Subarea for MSCP Covered Species. In addition to project-specific mitigation, the project is required to implement the ASMDs, as stated in Appendix A of the City's MSCP Subarea for MSCP Covered Species, for each covered species proposed to be impacted. The project must demonstrate how ASMDs (or Conditions of Coverage) would be implemented in order for the species to be considered "covered" by the MSCP and issue take authority under the City Incidental Take Permit. Table 4 provides the ASMDs for each covered species that has a potential to be impacted by the project and outlines the project compliance with the applicable ASMDs.

Table 4. Compliance with ASMDs for Impacts to Covered Wildlife Species

Covered Species	ASMD	Project Compliance
Cooper's hawk	Area Specific Management Directives must include 300-foot impact avoidance areas around the active nests, and minimization of disturbance in oak woodlands and oak riparian forests.	Active nests are protected by implementation of pre-construction nesting bird surveys. No oak woodlands or oak riparian forests occur on site.
Western bluebird	None.	Not applicable.

Note: ASMD = Area Specific Management Directive.

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5 Impact Analysis

The purpose of Chapter 5 is to describe the direct, indirect, and cumulative impacts of the proposed project on special-status biological resources. The significance determinations for proposed or potential impacts are described in this chapter.

5.1 Definition of Impacts

Based on the project description (Section 1.2), direct impacts, indirect (short-term and long-term), and cumulative impacts are defined as follows.

Direct impacts include both the permanent loss of on-site habitat and the plant and wildlife species that it contains and the temporary loss of on-site habitat. Direct impacts were quantified by overlaying the work limits, including the temporary construction area, on the biological resources map of the site (Figures 2.1 through 2.7). Permanent impacts are impacts that would not be revegetated following project implementation. Temporary impacts would be revegetated following project construction (or remain urban/developed). Specific to this project, all below ground features would result in temporary impacts while all above ground features (i.e. manholes) will result in permanent impacts. Areas subject to vegetation trimming, but not vegetation clearing, are not included as direct impacts.

Indirect impacts refer to off-site and on-site effects that are short-term impacts (i.e., temporary) due to the project construction or long-term (i.e., permanent) design of the project and the effects it may have to adjacent resources. For this project, indirect impacts include short-term impacts during construction, such as additional dust and noise that could temporarily disrupt wildlife activities, and construction-related soil erosion and runoff. Given that the project involves placement of underground structures, no long-term indirect impacts are anticipated with project implementation.

Cumulative impacts refer to the combined environmental effects of the proposed project and other relevant projects. In some cases, the impact from a single project may not be significant, but when combined with other projects, the cumulative impact may be significant.

5.2 Direct Impacts

5.2.1 Vegetation Communities and Land Cover Types

Implementation of the proposed project would not result in direct permanent or temporary impacts to rare upland or wetland vegetation communities, including Diegan coastal sage scrub and Arundo-dominated riparian. The proposed project would result in impacts to 15.91 acres of Tier IV naturalized vegetation communities and land covers (Figures 2.1 through 2.7). Table 5 provides the corresponding City Biology Guidelines (City of San Diego 2018) habitats and MSCP Subarea Plan Tier and a summary of these impacts by vegetation category; further analysis of the proposed impacts is provided below. None of the proposed impacts occur within the City of San Diego's MHPA.

Table 5. Direct Impacts to Vegetation Communities and Land Cover Types within the Project Footprint

Vegetation Community/ Land Cover Type	MSCP Subarea Plan Habitat Tier[a]	Permanent Impact (Acres)	Temporary Impact (Acres)	Total Impact (Acres)[b]
Other Uplands				
Disturbed Habitat	Tier IV	—	0.35	0.35
Urban/Developed	Tier IV	—	15.35	15.35
Non-Native Woodland	Tier IV	<0.01	0.08	0.08
Eucalyptus Woodland	Tier IV	—	0.12	0.12
	Total[b]	**<0.01**	**15.91**	**15.91**

[a] City of San Diego 2018.
[b] Some numbers may not sum precisely due to rounding.

Permanent and temporary impacts would occur to disturbed habitat, urban/developed, non-native woodland, and eucalyptus woodland, which are considered by the San Diego Municipal Code, Land Development Code (LDC)—Biology Guidelines (City of San Diego 2018), to be Tier IV land covers, which do not require mitigation. However, impacts to these land covers would require compliance with the LDC—Landscape Standards (City of San Diego 2016), which would require erosion control and return to pre-impact conditions for temporary impacts (AMM-BIO-1).

5.2.2 Waters of the United States, including Wetlands

The proposed project will not impact any jurisdictional areas.

5.2.3 Direct Impacts to Special-Status Plants

No direct impacts to special-status plants are expected. No special-status plants were observed during focused surveys; no special-status plants have a moderate to high likelihood of occurrence (Appendices B and D).

5.2.4 Direct Impacts to Special-Status Wildlife

No special-status amphibians, reptiles, fish, invertebrates, or mammals are likely to occur in the project area. In addition, the following species have not been detected on site, but have a moderate to high potential to occur: Cooper's hawk and western bluebird.

Cooper's hawk (CDFW watch list, MSCP covered) could nest within the tall trees in ornamental and non-native woodland. However, these vegetation communities are not subject to permanent impacts. Potential direct impacts to nesting Cooper's hawk on site may occur if construction occurs during the breeding season. However, pre-construction nesting bird surveys would be implemented to avoid significant impacts to this species per the MSCP ASMDs. Western bluebird could forage on site but is not expected to nest. Given the mobile nature of these species (i.e., they are likely to move away from the project area to utilize adjacent areas of equally suitable habitat), it is anticipated that project impacts would not result in direct impacts to birds outside of the nesting season. Direct temporary impacts to suitable habitat for these species would be less than significant given the limited impacts to natural suitable habitat for species that are well adapted to urban environments. However, AMM-BIO-1 requires habitat revegetation and erosion control treatments will be installed within temporary disturbance areas. In addition, see Section 4.2 for compliance with ASMDs for Cooper's hawk. There are no Conditions of Coverage for western bluebird.

5.2.5 Wildlife Corridors and Habitat Linkages

Construction has the potential to create a minor disruption in dispersal of wildlife, including birds and small mammals. It is unlikely that the project area supports movement by mule deer (*Odocoileus hemionus*), bobcats (*Lynx rufus*), or cougars (*Puma concolor*), due to the urban and constrained nature of the area. Coyotes (*Canis latrans*) may still occur in the area and may use the area for movement purposes, but most of their movement occurs during the early morning or nighttime periods when construction activity will not be occurring.

The study area does not include Biological Core or Habitat Linkage Areas identified by the MSCP. In addition, project impacts to native habitat are largely temporary and no large structures would be placed on site; therefore, the project would not have a significant impact on wildlife movement.

5.3 Indirect Impacts

5.3.1 Vegetation Communities and Land Covers

Short-term indirect impacts to vegetation communities that could result from the proposed project include dust, erosion, and increased human presence. Short-term indirect impacts to vegetation communities would be less than significant. Given the temporary nature of the project as an infrastructure improvement project, no long-term indirect impacts to vegetation communities, such as introduction of invasive plant species, are anticipated from the project.

5.3.2 Waters of the United States, including Wetlands

There will be temporary indirect impacts to waters of the United States, including wetlands, during project construction. These impacts include dust and erosion. Short-term indirect impacts to waters of the United States, including wetlands, would be reduced through implementation of standard construction BMPs. Given the temporary nature of the project as an infrastructure improvement project, no long-term indirect impacts to waters of the United States, including wetlands, are anticipated from the project.

5.3.3 Special-Status Plant Species

No special-status plants are known or expected to occur within the study area. Therefore, no indirect impacts to special-status species are anticipated with project implementation.

5.3.4 Special-Status Wildlife Species

Most of the indirect impacts to vegetation communities previously described can also affect special-status wildlife. Wildlife may also be indirectly affected in the short term by construction-related noise, which can disrupt normal activities and subject wildlife to higher predation risks. Breeding birds in particular can be significantly affected by short-term construction-related noise, which can result in the disruption of foraging, nesting, and reproductive activities. However, pre-construction nesting bird surveys would avoid impacts to nesting special-status birds. Adverse edge effects can cause degradation of habitat quality. However, implementation of standard construction BMPs, such as construction fencing, would protect sensitive habitat adjacent to the project disturbance footprint.

Indirect impacts to all special-status wildlife within the study area would be avoided through avoidance and minimization measures described in Chapter 6. Given the temporary nature of the project as an infrastructure improvement project, no long-term indirect impacts to special-status wildlife species are anticipated from the project.

5.3.5 Wildlife Corridors and Habitat Linkages

No indirect impacts to wildlife corridors and habitat linkages are anticipated from the project.

5.4 Cumulative Impacts

In an effort to eliminate cumulative impacts to sensitive biological resources throughout San Diego County, the City is participating in a regional conservation planning effort, the San Diego MSCP. This planning effort is designed to address cumulative impacts through development of a regional plan that addresses impacts to covered species and habitats in a manner that assures their conservation despite impacts of cumulative projects over the long term. The ultimate goal of this plan is the establishment of biological reserve areas in conformance with the State of California Natural Communities Conservation Planning Act.

Preservation of habitat, planning in accordance with the biological resource conservation goals of the MSCP, and limitation of impacts in accordance with the MSCP are intended to mitigate cumulative biological resource impacts. The project is not located within designated MHPA. Additionally, implementation of the project will improve the sewer, water, and roadway infrastructure of Encanto and will not promote additional future development or contribute to additional future habitat losses in any way. Therefore, the project is consistent with the MSCP, and cumulative impacts to wetlands, sensitive plants, and sensitive wildlife would be mitigated in accordance with the City's guidelines.

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6 Avoidance and Minimization Measures

A total of 0.56 acres of other upland land covers (disturbed habitat, non-native woodland, Eucalyptus woodland) would require erosion control and return to pre-impact conditions, as outlined in AM-BIO-1. Newly installed, above-ground structures are the only impacts being considered permeant impacts for this project, with below-ground structures receiving revegetation over the area of disturbance.

AM-BIO-1 Habitat Revegetation. Habitat revegetation and erosion control treatments will be installed within temporary disturbance areas in native habitat, in accordance with the current San Diego Municipal Code, Land Development Code (LDC)—Biology Guidelines and the current LDC—Landscape Standards. Habitat revegetation will feature native species that are typical of the area, and erosion control features will include silt fence and straw fiber rolls, where appropriate. The revegetation areas will be monitored and maintained for 25 months to ensure adequate establishment and sustainability of the plantings/seedings.

Revegetation Plan(s) and Specifications:

1. Landscape Construction Documents (LCD) shall be prepared on D-sheets and submitted to the City of San Diego (City) Development Services Department, Landscape Architecture Section for review and approval. The Landscape Architecture Section shall consult with Mitigation Monitoring Coordination (MMC) and obtain concurrence prior to approval of LCD. The LCD shall consist of revegetation, planting, irrigation, and erosion control plans; including all required graphics, notes, details, specifications, letters, and reports as outlined below.
2. Landscape Revegetation Planting and Irrigation Plans shall be prepared in accordance with the San Diego LDC Chapter 14, Article 2, Division 4, the LDC Landscape Standards submittal requirements, and Attachment "B" (General Outline for Revegetation/Restoration Plans) of the City's LDC Biology Guidelines (City of San Diego 2018). The Principal Qualified Biologist (PQB) shall identify and adequately document all pertinent information concerning the revegetation goals and requirements, such as but not limited to, plant/seed palettes, timing of installation, plant installation specifications, method of watering, protection of adjacent habitat, erosion and sediment control, performance/success criteria, inspection schedule by City staff, document submittals, reporting schedule, etc. The LCD shall also include comprehensive graphics and notes addressing the ongoing maintenance requirements (after final acceptance by the City). For areas where a water source is not available, irrigation can be completed by a water truck. Additionally, it is recommended that planting/seeding occur in the fall or early winter, to the maximum extent practical, in order to minimize the amount of water truck visits needed.
3. The Revegetation Installation Contractor, Revegetation Maintenance Contractor, PQB, and Grading Contractor, where applicable, shall be responsible for ensuring that for all grading and contouring, clearing, and grubbing, installation of plant materials and any necessary maintenance activities or remedial actions required during installation and the 120-day plant establishment period are done per approved LCD. At minimum, the following procedures shall be performed:
    a. The Revegetation Maintenance Contractor shall be responsible for the maintenance of the revegetation area for a minimum period of 120 days.

b. At the end of the 120-day period, the PQB shall review the revegetation area to assess the completion of the short-term plant establishment period and submit a report for approval by MMC. If the 120-day plant establishment period success criteria have not been met, an extension may be warranted at the discretion of the PQB.

c. MMC would provide approval in writing to begin the 25-month maintenance and monitoring program.

d. Existing indigenous/native species shall not be pruned, thinned, or cleared in the revegetation/mitigation area.

e. The revegetation site shall not be fertilized.

f. Within one week of written recommendation by the PQB, the Revegetation Installation Contractor is responsible for reseeding (if applicable) if weeds are not removed.

g. Weed control measures shall include the following: (1) hand removal, (2) cutting with power equipment, and (3) chemical control. Hand removal of weeds is the most desirable method of control and would be used wherever possible.

h. Damaged areas shall be repaired immediately by the Revegetation Installation Contractor/ Revegetation Maintenance Contractor. Insect infestations, plant diseases, herbivory, and other pest problems shall be closely monitored throughout the 25-month maintenance period. Protective mechanisms such as metal wire netting shall be used as necessary. Diseased and infected plants shall be immediately disposed of off site in a legally acceptable manner at the discretion of the PQB or Qualified Biological Monitor (City approved). Where possible, biological controls shall be used instead of pesticides and herbicides.

7 Regulatory Requirements

The project must also be conducted in compliance with the most current iteration of the City of San Diego Biological Guidelines at the time of implementation.

The City will be required to demonstrate compliance with the California Environmental Quality Act (CEQA) and anticipates that a Mitigated Negative Declaration (MND) will be suited to the project. The City will also be required to comply with other discretionary actions such as obtaining the appropriate Site Development Permit from City of San Diego.

To avoid indirect impacts to Cooper's hawk nesting in off-site adjacent trees, a nesting raptor survey shall be conducted by a Qualified Biologist within 10 days prior of the start of grading if construction occurs between February 1 to September 15. If occupied nests are present within 300 feet of the construction area, construction must be avoided to the 300-foot buffer area around the nest until the juvenile birds have fledged.

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8 Staff Qualifications

Per City of San Diego request, qualifications of staff who have worked on this BTR are included in Appendix F.

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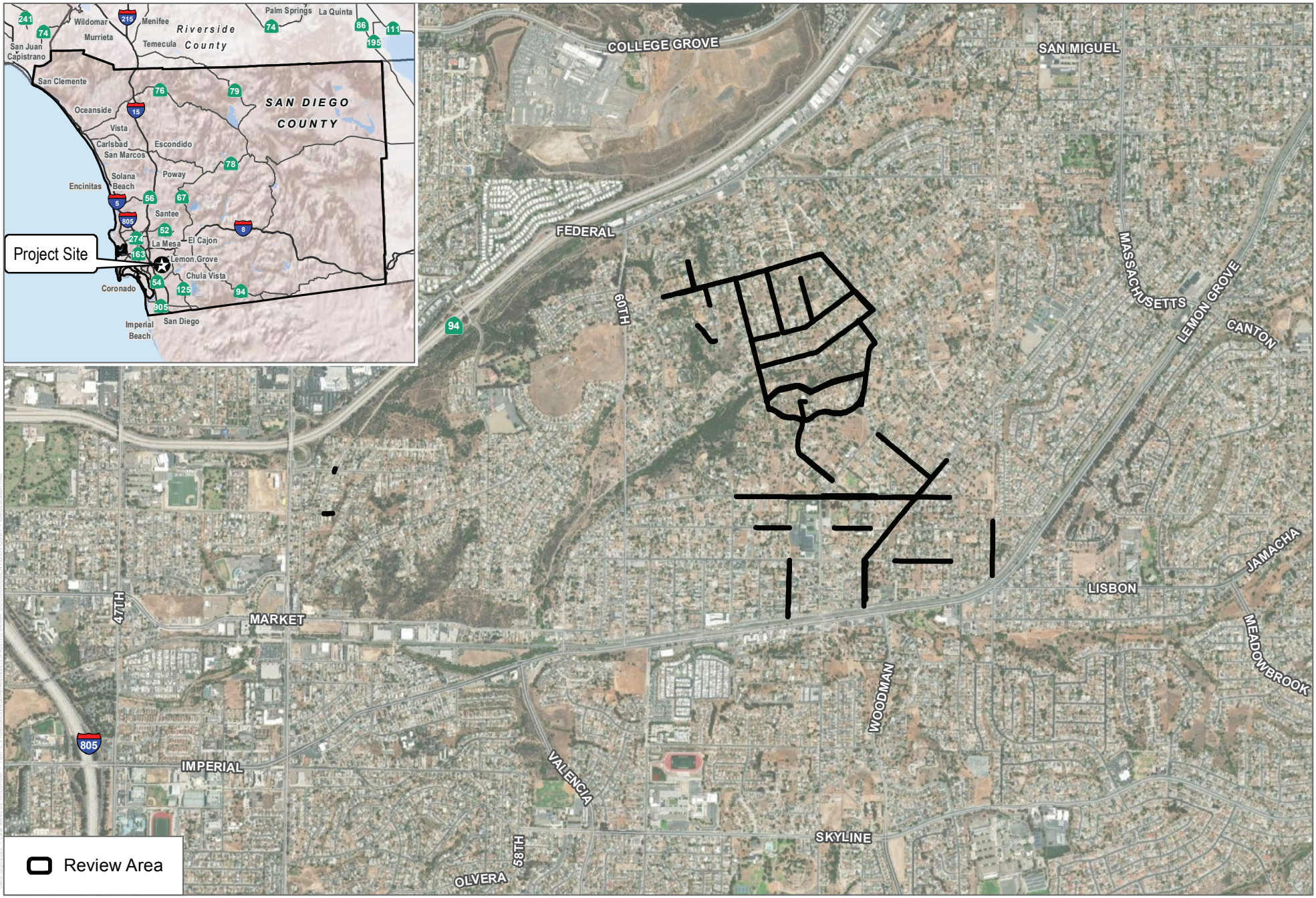

SOURCE: DigitalGlobe 2017

DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Biological Technical Report for the Encanto Improvements I Project

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SOURCE: SanGIS 2019

DUDEK

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FIGURE 2.1

Biological Resources and Impacts

Biological Technical Report for the Encanto Improvements I Project

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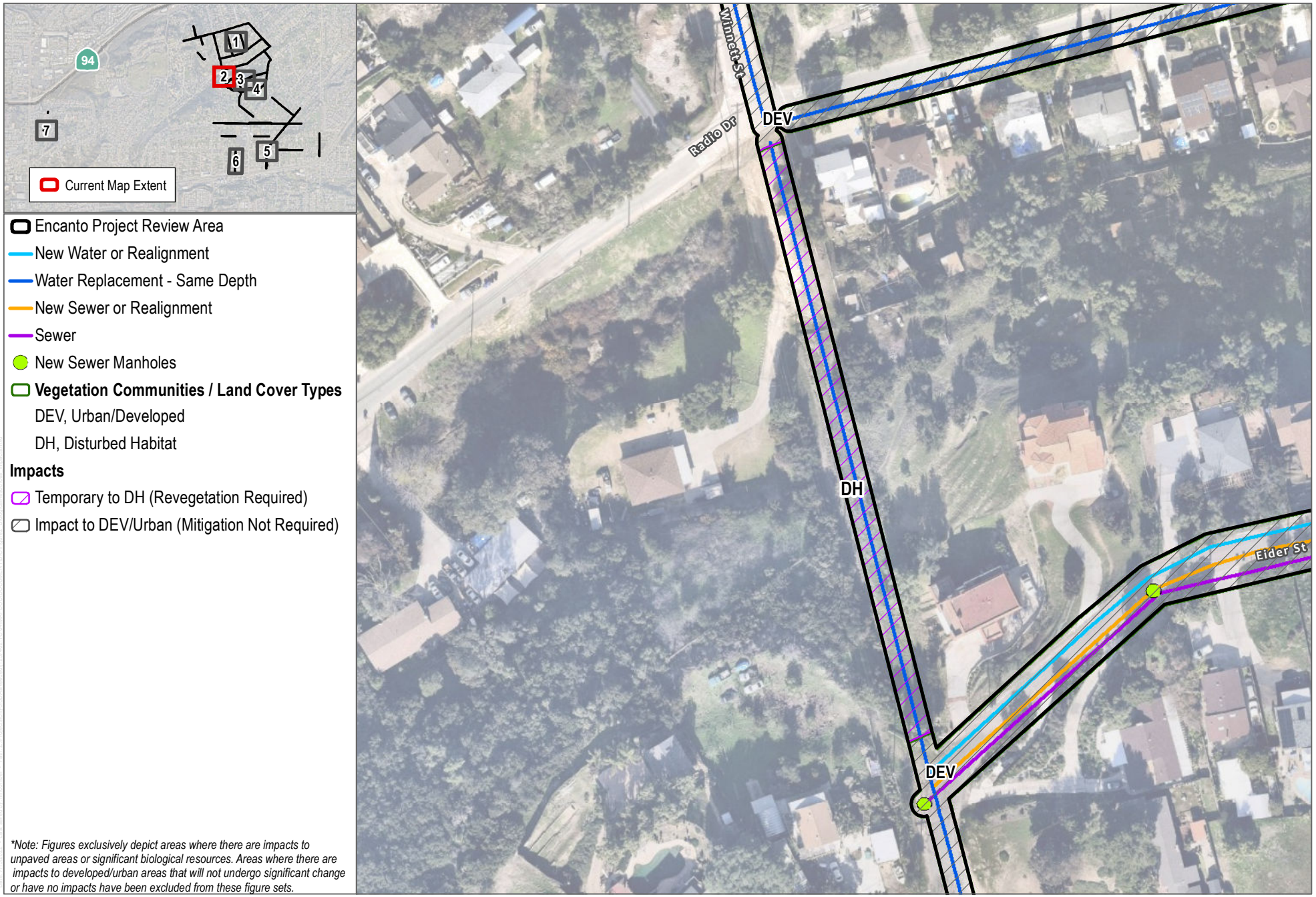

SOURCE: SanGIS 2019

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FIGURE 2.2

Biological Resources and Impacts

Biological Technical Report for the Encanto Improvements I Project

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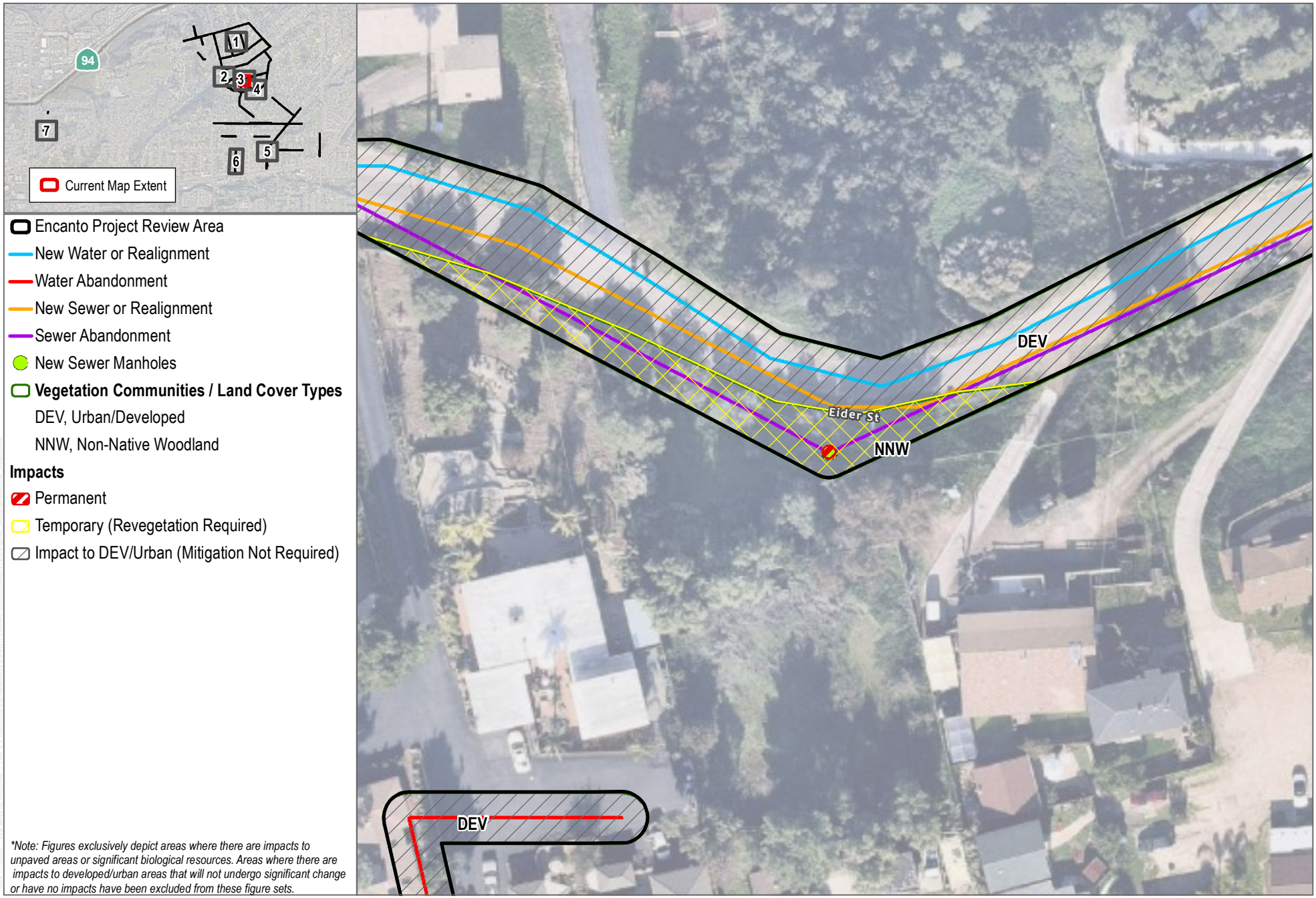

*Note: Figures exclusively depict areas where there are impacts to unpaved areas or significant biological resources. Areas where there are impacts to developed/urban areas that will not undergo significant change or have no impacts have been excluded from these figure sets.

SOURCE: SanGIS 2019

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FIGURE 2.3

Biological Resources and Impacts

Biological Technical Report for the Encanto Improvements I Project

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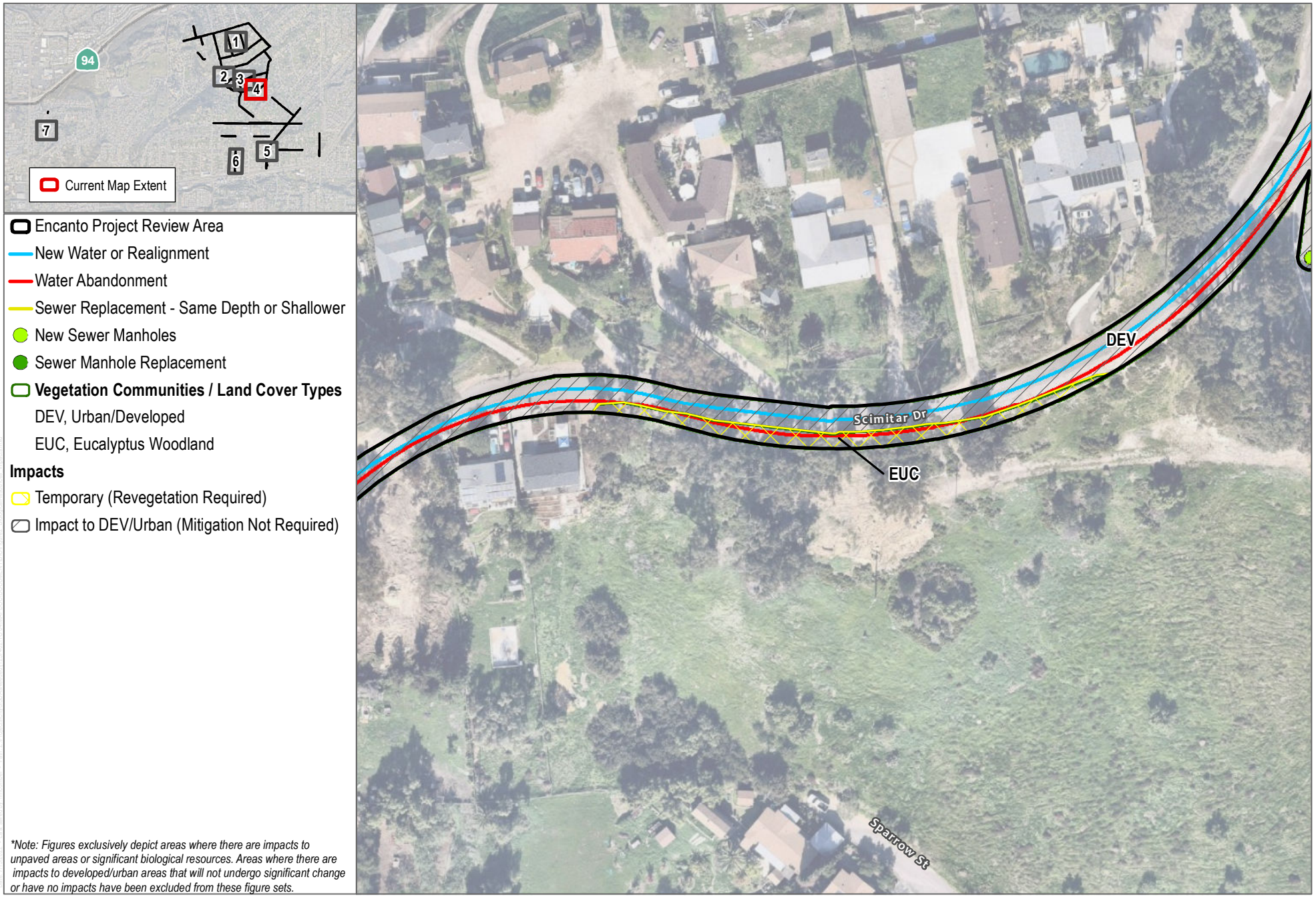

SOURCE: SanGIS 2019

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FIGURE 2.4

Biological Resources and Impacts

Biological Technical Report for the Encanto Improvements I Project

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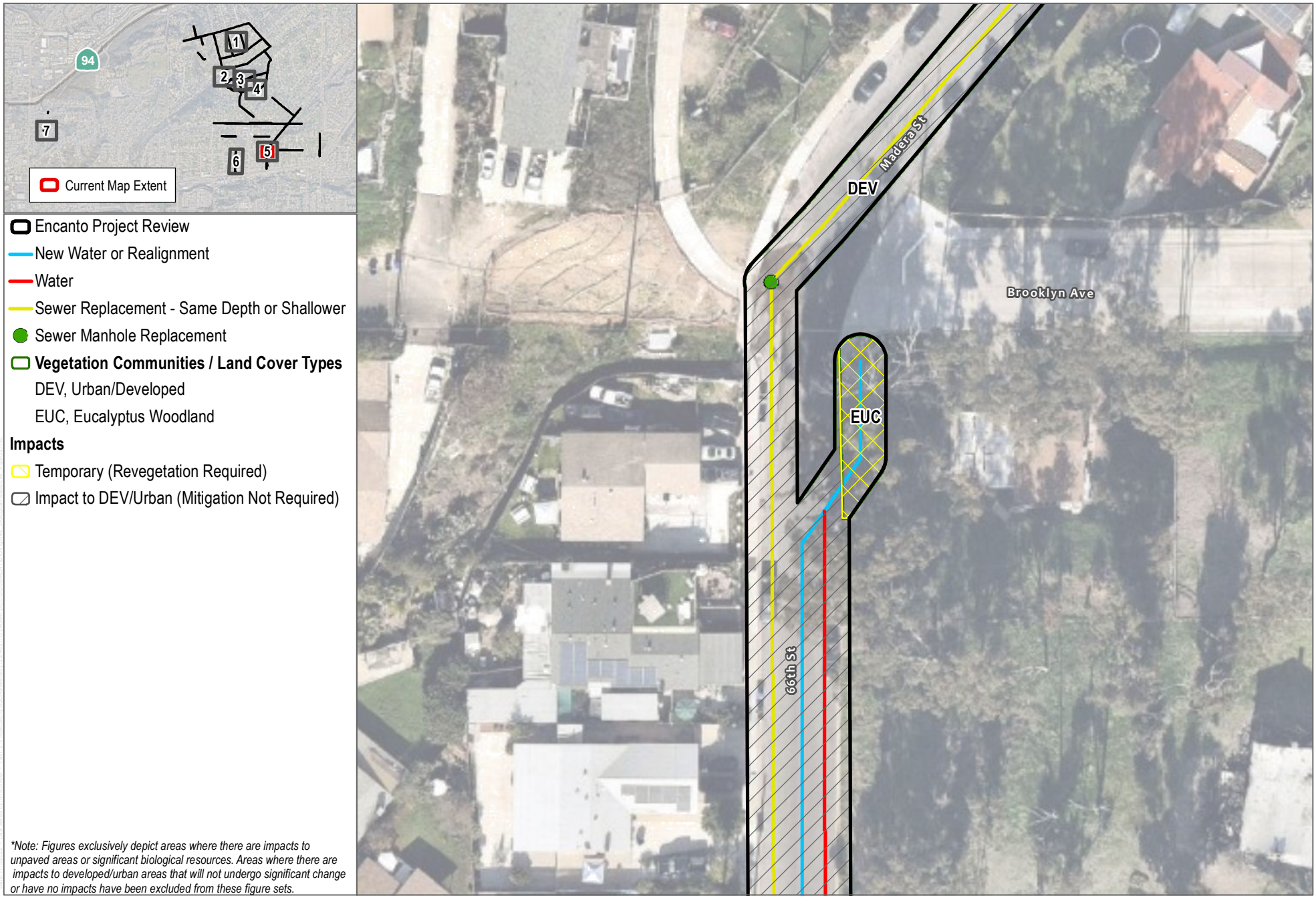

SOURCE: SanGIS 2019

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FIGURE 2.5

Biological Resources and Impacts

Biological Technical Report for the Encanto Improvements I Project

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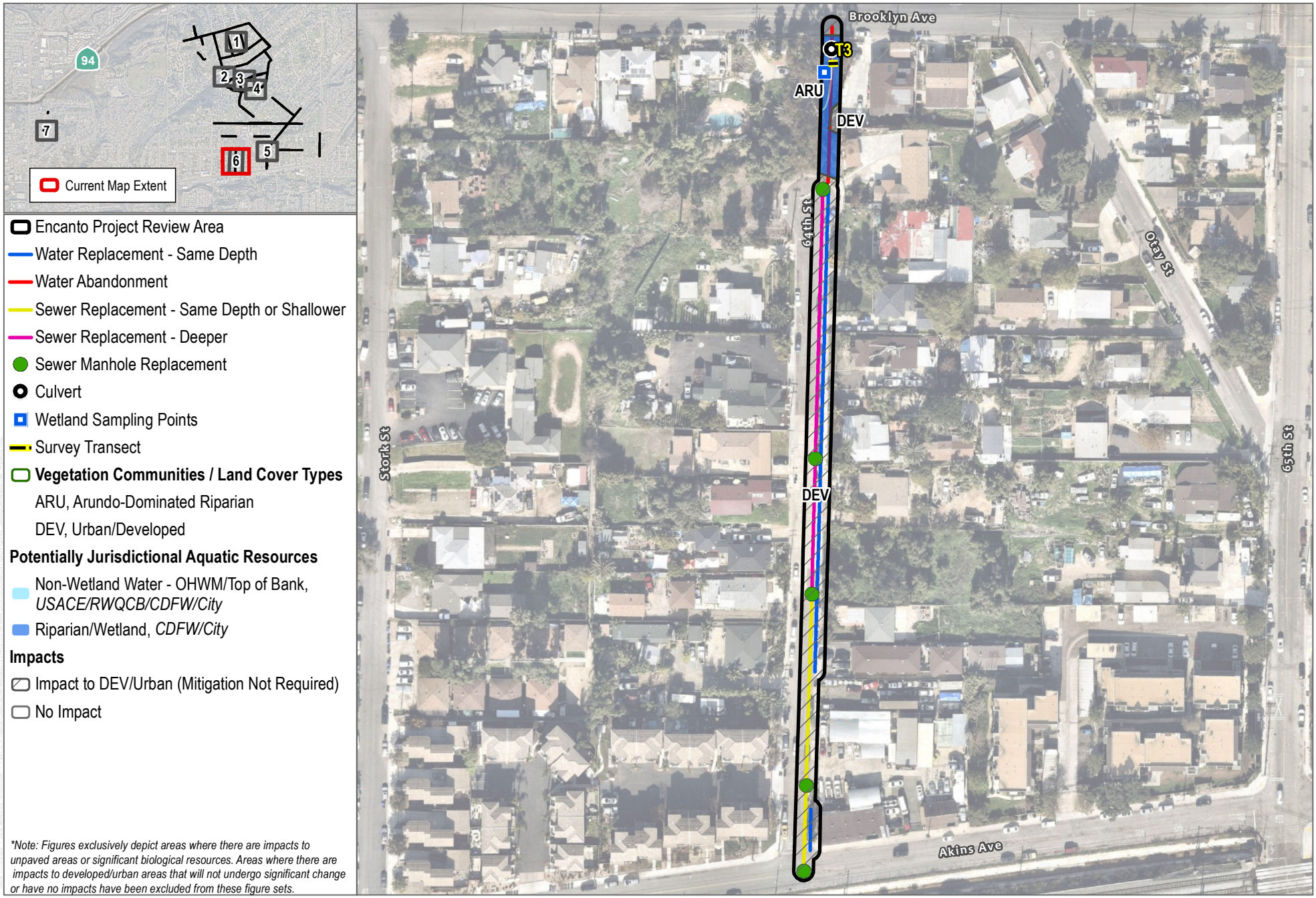

SOURCE: SanGIS 2019

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FIGURE 2.6

Biological Resources and Impacts

Biological Technical Report for the Encanto Improvements I Project

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SOURCE: SanGIS 2019

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FIGURE 2.7

Biological Resources and Impacts

Biological Technical Report for the Encanto Improvements I Project

Appendix A
Regulatory Setting

Regulatory Setting

Federal

Federal Endangered Species Act

The federal Endangered Species Act of 1973 (16 USC 1531 et seq.), as amended, is administered by the U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration, and National Marine Fisheries Service. This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend and provide programs for the conservation of those species, thus preventing extinction of plants and wildlife. Under provisions of Section 9 (16 USC 1538[a][1][B]) of the Endangered Species Act, it is unlawful to "take" any listed species. "Take" is defined in Section 3 (16 USC 1532[19]) of the act as, "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

The federal Endangered Species Act allows for the issuance of "incidental take" permits for listed species under Section 7, which is generally available for projects that also require other federal agency permits or other approvals, and under Section 10, which provides for the approval of habitat conservation plans on private property without any other federal agency involvement. Incidental take is defined as "take that results from, but is not the purpose of, carrying out an otherwise lawful activity" (USFWS 2004). Upon development of a habitat conservation plan, USFWS can issue incidental take permits for listed species.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA; 16 U.S.C. 703 et seq.) is a federal statute that implements treaties with several countries on the conservation and protection of migratory birds. The number of bird species covered by the MBTA is extensive; the species are listed in Title 50 of the Code of Federal Regulations (CFR), Part 10.13. The regulatory definition of "migratory bird" is broad and includes any mutation or hybrid of a listed species, and also includes any part, egg, or nest of such birds (50 CFR 10.12). Migratory birds are not necessarily federally listed endangered or threatened birds under the ESA.

The MBTA prohibits the any action for which the purpose is the "take" of any migratory bird or any part, nest, or eggs of any such bird. Under the MBTA, "take" is defined as pursue, hunt, shoot, wound, kill trap, capture, or collect, or any attempt to carry out these activities (16 U.S.C. 703 et seq.). In December 2017, Department of Interior Principal Deputy Solicitor Jorjani issued a memorandum (M-37050) that interprets the MBTA to only prohibit intentional take. Similarly, the Ninth Circuit Court of Appeals, like the Fifth Circuit and the Eighth Circuit, has held that the MBTA applies only to intended takes. See Seattle Audubon Soc'y v. Evans, 952 F.2d 297, 303 (9th Cir. 1991). Unintentional or accidental take is not prohibited. Additionally, Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, requires that any project with federal involvement address impacts of federal actions on migratory birds with the purpose of promoting conservation of migratory bird populations (66 Federal Register [FR] 3853–3856). The Executive Order requires federal agencies to work with USFWS to develop a memorandum of understanding to promote the conservation of migratory bird populations. USFWS reviews actions that might affect these species.

State

California Environmental Quality Act

CEQA requires identification of a project's potentially significant impacts on sensitive biological resources and feasible mitigation measures and alternatives that could avoid or reduce significant impacts. CEQA Guidelines Section 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 California Code of Regulations [CCR] 15000 et seq.). A rare animal or plant is defined in CEQA Guidelines Section 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guidelines Section 15380(c). CEQA also requires identification of a project's potentially significant impacts on riparian habitats (such as wetlands, bays, estuaries, and marshes) and other sensitive natural communities, including habitats occupied by endangered, rare, and threatened species.

California Fish and Game Code

Under the California Fish and Game Code, CDFW provides protection from "take" for a variety of species, including fully protected species. "Fully protected" is a legal protective designation administered by CDFW intended to conserve wildlife species that risk extinction within California. Lists have been created for birds, mammals, fish, amphibians, and reptiles.

According to Sections 3511 and 4700 of the Fish and Game Code, which regulate birds and mammals, respectively, a "fully protected" species may not be taken or possessed without a permit from the Fish and Game Commission, and "incidental takes" of these species are not authorized.

According to Section 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 states that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds of prey) or to take, possess or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto. Finally, Section 3513 states that is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

For the purposes of these state regulations, CDFW currently defines an active nest as one that is under construction or in use and includes existing nests that are being modified. For example, if a hawk is adding to or maintaining an existing stick nest in a transmission tower, then it would be considered to be active and covered under these Fish and Game Code Sections.

Regional

City of San Diego MSCP Subarea Plan

Within the City of San Diego, the MSCP is implemented through the City of San Diego MSCP Subarea Plan (Subarea Plan) (City of San Diego 1997). The Subarea Plan encompasses 206,124 acres within the MSCP Plan (City of San Diego 1998). The Subarea Plan area is characterized by urban land uses with approximately three-quarters either built out or retained as open space/park system. The study area is located within the Urban Area of the Subarea Plan.

The MSCP Plan established a Multi-Habitat Planning Area (MHPA) preserve system designed to conserve large blocks of interconnected habitat having high biological value. The City MHPA is a "hard line" preserve developed by the City in cooperation with the wildlife agencies, property owners, developers, and environmental groups. The MHPA identifies biological core resource areas and corridors targeted for conservation, in which only limited development may occur (City of San Diego 1997). The MHPA is considered an urban preserve that is constrained by existing or approved development and is comprised of habitat linkages connecting several large core areas of habitat. The criteria used to define core and linkage areas involves maintaining ecosystem function and processes, including large animal movement. Each core area is connected to other core areas or to habitat areas outside of the MSCP either through common boundaries or through linkages. Core areas have multiple connections to help ensure that the balance in the ecosystem will be maintained (City of San Diego 1997). Critical habitat linkages between core areas are conserved in a functional manner with a minimum of 75% of the habitat within identified linkages conserved (City of San Diego 1997). Urban habitat areas within the MHPA include existing designated open space such as Mission Bay, Tecolote Canyon, Marian Bear Memorial Park, Rose Canyon, San Diego River, the southern slopes along Mission Valley, Carroll and Rattlesnake Canyons, Florida Canyon, Chollas Creek, and a variety of smaller canyon systems. The Eastern area includes East Elliott and Mission Trails Regional Park. The study area overlaps the MHPA north of Market Street.

City of San Diego Biology Guidelines

The City of San Diego Development Services Department developed the Biology Guidelines presented in the Land Development Manual "to aid in the implementation and interpretation of the Environmentally Sensitive Lands Regulations, San Diego Land Development Code (LDC), Chapter 14, Division 1, Section 143.0101 et seq., and the Open Space Residential (OR-1-2) Zone, Chapter 13, Division 2, Section 131.0201 et seq." (City of San Diego 2018a). The guidelines also provide standards for the determination of impact and mitigation under CEQA and the CCA. Sensitive biological resources, as defined by the Environmentally Sensitive Lands Regulations, include lands within the MHPA, as previously discussed, as well as other lands outside of the MHPA that contain wetlands; vegetation communities classifiable as Tier I, II, IIIA, or IIIB; habitat for rare, endangered, or threatened species; or narrow endemic species.

The City's definition of wetlands is broader than the definition applied by the USACE. The City uses the criteria listed in Section 320.4(b)(2) of the USACE General Regulatory Policies (33 CFR 320–330) to apply an appropriate buffer around wetlands that serves to protect the function and value of the wetland. Guidelines that supplement the development regulation requirements described in this section are provided in the City's Biology Guidelines (City of San Diego 2018a). The 2021 jurisdictional delineation surveyed the entire impact area and included a survey of the 100-foot buffer surrounding existing potential wetland habitat. According to the City's Biology Guidelines, a wetland buffer is an area surrounding a wetland that helps protect the function and value of the adjacent wetland by reducing physical disturbance, provides a transition zone where one habitat phases into another, and acts to

slow flood waters for flood and erosion control, sediment filtration, water purification, and groundwater recharge. The width of the buffer is determined by factors such as type and size of development, sensitivity of the wetland resource to edge effects, topography, and the need for upland transition (City of San Diego 2018a).

The San Diego Municipal Code also ranks upland habitat values by rarity and sensitivity. The most sensitive habitats are Tier I, and the least sensitive are Tier IV. The varying mitigation ratios and requirements that mitigation be either in-tier or in-kind are based on the sensitivity of the habitat being affected.

Appendix B
Plant Species Compendium

Plant Species[1]

Angiosperms (Eudicots)

AIZOACEAE – FIG-MARIGOLD FAMILY

* *Carpobrotus edulis* – hottentot-fig
* *Malephora crocea* var. *crocea* – crocea iceplant

AMARANTHACEAE – AMARANTH FAMILY

Rhus integrifolia – lemonadeberry
* *Schinus molle* – Peruvian pepper tree
* *Schinus terebinthifolius* – Brazilian pepper tree

APIACEAE – CARROT FAMILY

* *Foeniculum vulgare* – sweet fennel

ASTERACEAE – SUNFLOWER FAMILY

Baccharis sarothroides – broom baccharis
* *Centaurea melitensis* – tocalote
Encelia californica – California encelia
* *Glebionis coronaria* – garland/crown daisy
* *Hedypnois cretica* – Crete hedypnois
* *Helminthotheca echioides* – bristly ox-tongue
Heterotheca grandiflora – telegraph weed
* *Lactuca serriola* – prickly lettuce
Pseudognaphalium californicum – California everlasting
* *Pseudognaphalium luteoalbum* – fragrant everlasting cudweed
* *Sonchus oleraceus* – common sow-thistle

BORAGINACEAE – BORAGE FAMILY

Eriodictyon crassifolium – felt-leaf yerba santa

BRASSICACEAE – MUSTARD FAMILY

* *Hirschfeldia incana* – short-pod mustard
* *Raphanus sativus* – wild radish
* *Sisymbrium irio* – London rocket

[1] The study area initially comprised an area larger than the Project's current footprint, and as such, not all species may be present within the current Project study area.

CACTACEAE – CACTUS FAMILY

Cylindropuntia prolifera – coast cholla

Opuntia littoralis – coast prickly-pear

CHENOPODIACEAE – GOOSEFOOT FAMILY

* *Chenopodium murale* – nettle-leaf goosefoot
* *Salsola tragus* – prickly Russian-thistle, tumbleweed

CRASSULACEAE – STONECROP FAMILY

* *Crassula ovata* – jade plant

CUCURBITACEAE – GOURD FAMILY

Marah macrocarpa – manroot, wild-cucumber

EUPHORBIACEAE – SPURGE FAMILY

* *Ricinus communis* – castor bean

FABACEAE – LEGUME FAMILY

* *Acacia longifolia* – sydney golden wattle
* *Melilotus indicus* – Indian sweetclover

GERANIACEAE – GERANIUM FAMILY

* *Erodium cicutarium* – red-stem filaree/storksbill

LAMIACEAE – MINT FAMILY

* *Marrubium vulgare* – horehound

MALVACEAE – MALLOW FAMILY

* *Malva parviflora* – cheeseweed

MYRSINACEAE – MYRSINE FAMILY

* *Anagallis arvensis* – scarlet pimpernel, poor man's weatherglass

MYRTACEAE – MYRTLE FAMILY

* *Eucalyptus camaldulensis* – river red gum
* *Eucalyptus globulus* – blue gum
* *Eucalyptus sideroxylon* – red iron bark

NYCTAGINACEAE – FOUR O'CLOCK FAMILY

* *Bougainvillea* sp. – bougainvillea

OLEACEAE – OLIVE FAMILY

Fraxinus velutina – velvet ash

* *Olea europaea* – olive

PLUMBAGINACEAE – LEADWORT FAMILY

* *Limonium sinuatum* – notch-leaf marsh-rosemary
* Plumbago auriculata – cape leadwort

POLYGONACEAE – BUCKWHEAT FAMILY

Eriogonum fasciculatum – California buckwheat

* *Polygonum aviculare* – common knotweed, doorweed
* *Rumex crispus* – curly dock

ROSACEAE – ROSE FAMILY

Heteromeles arbutifolia – toyon, Christmas berry

SCROPHULARIACEAE – FIGWORT FAMILY

* *Myoporum laetum* – ngaio, mousehole tree

SOLANACEAE – NIGHTSHADE FAMILY

* *Nicotiana glauca* – tree tobacco

TROPAEOLACEAE – NASTURTIUM FAMILY

* *Tropaeolum majus* – garden nasturtium

Angiosperms: Monocots

AGAVACEAE – AGAVE FAMILY

* *Agave americana* – American agave

ARECACEAE – PALM FAMILY

* *Washingtonia robusta* – Mexican fan palm

CYPERACEAE – SEDGE FAMILY

Cyperus eragrostis – tall flatsedge

POACEAE – GRASS FAMILY

* *Arundo donax* – giant reed
* *Avena barbata* – slender wild oat
* *Avena fatua* – wild oat
* *Brachypodium distachyon* – purple false brome
* *Bromus diandrus* – ripgut grass
* *Cenchrus setaceus* – African fountain grass

* *Ehrharta erecta* – panic veldt grass
* *Festuca perennis* – perennial rye grass
* *Hordeum murinum* ssp. *glaucum* – glaucous barley
* *Stipa miliacea* var. *miliacea* – smilo grass

* signifies introduced (non-native) species

Appendix C
Wildlife Species Compendium

Wildlife Species – Vertebrates[1]

Birds

Blackbirds, Orioles, and Allies

ICTERIDAE – BLACKBIRDS

Icterus cucullatus – hooded oriole

Finches

FRINGILLIDAE – FRINGILLINE AND CARDUELINE FINCHES AND ALLIES

Haemorhous mexicanus – house finch

Hawks

ACCIPITRIDAE – HAWKS, KITES, EAGLES, AND ALLIES

Buteo jamaicensis – red-tailed hawk

Buteo lineatus – red-shouldered hawk

Jays, Magpies, and Crows

CORVIDAE – CROWS AND JAYS

Corvus brachyrhynchos – American crow

Corvus corax – common raven

Mockingbirds and Thrashers

MIMIDAE – MOCKINGBIRDS AND THRASHERS

Mimus polyglottos – northern mockingbird

Pigeons and Doves

COLUMBIDAE – PIGEONS AND DOVES

Zenaida macroura – mourning dove

[1] The study area initially comprised an area larger than the Project's current footprint, and as such, not all species may be present within the current Project study area.

Invertebrates

Butterflies

NYMPHALIDAE – BRUSH-FOOTED BUTTERFLIES

Agraulis vanillae – Gulf fritillary

Nymphalis antiopa – mourning cloak

PAPILIONIDAE – SWALLOWTAILS

Papilio zelicaon – anise swallowtail

PIERIDAE – WHITES AND SULFURS

Phoebis sennae – cloudless sulphur

Pontia protodice – checkered white

Reptiles

Lizards

PHRYNOSOMATIDAE – IGUANID LIZARDS

Uta stansburiana – common side-blotched lizard

Appendix D

Plant Species Potential to Occur

Scientific Name	Common Name	Status (Federal/ State/CRPR)	City of San Diego MSCP	Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet above mean sea level)	Potential to Occur
Abronia maritima	red sand-verbena	None/None/4.2	None	Coastal dunes/perennial herb/Feb–Nov/0–330	Not expected to occur. No suitable coastal dune habitat. Focused surveys conducted June 2021 were negative.
Acanthomintha ilicifolia	San Diego thorn-mint	FT/SE/1B.1	Narrow Endemic	Chaparral, coastal scrub, valley and foothill grassland, vernal pools; clay, openings/annual herb/Apr–June/33–3,145	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Acmispon prostratus	Nuttall's acmispon	None/None/1B.1	Covered	Coastal dunes, coastal scrub (sandy)/annual herb/ Mar–June(July)/0–35	Not expected to occur. The site is outside of the species' known elevation range.
Adolphia californica	California adolphia	None/None/2B.1	None	Chaparral, Coastal scrub, valley and foothill grassland; clay/perennial deciduous shrub/Dec–May/33–2,425	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Agave shawii var. *shawii*	Shaw's agave	None/None/2B.1	Narrow Endemic	Coastal bluff scrub, coastal scrub; maritime succulent scrub/perennial leaf succulent/Sep–May/10–395	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Ambrosia chenopodiifolia	San Diego bur-sage	None/None/2B.1	None	Coastal scrub/perennial shrub/Apr–June/180–510	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Ambrosia monogyra	singlewhorl burrobrush	None/None/2B.2	None	Chaparral, Sonoran desert scrub; sandy/perennial shrub/ Aug–Nov/33–1,640	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Ambrosia pumila	San Diego ambrosia	FE/None/1B.1	Narrow Endemic	Chaparral, coastal scrub, valley and foothill grassland, vernal pools; sandy loam or clay, often in disturbed areas, sometimes alkaline/perennial rhizomatous herb/Apr–Oct/66–1,360	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Aphanisma blitoides	aphanisma	None/None/1B.2	Narrow Endemic	Coastal bluff scrub, coastal dunes, coastal scrub; sandy or gravelly/annual herb/Feb–June/3–1,000	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Arctostaphylos glandulosa ssp. *crassifolia*	Del Mar manzanita	FE/None/1B.1	Covered	Chaparral (maritime, sandy)/perennial evergreen shrub/ Dec–June/0–1,195	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Arctostaphylos otayensis	Otay manzanita	None/None/1B.2	Covered	Chaparral, cismontane woodland; metavolcanic/perennial evergreen shrub/Jan–Apr/902–5,575	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Artemisia palmeri	San Diego sagewort	None/None/4.2	None	Chaparral, coastal scrub, riparian forest, riparian scrub, riparian woodland; sandy, mesic/perennial deciduous shrub/ (Feb) May–Sep/49–3,000	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Asplenium vespertinum	western spleenwort	None/None/4.2	None	Chaparral, cismontane woodland, coastal scrub; rocky/perennial rhizomatous herb/Feb–June/591–3,280	Not expected to occur. The site is outside of the species' known elevation range.
Astragalus deanei	Dean's milk-vetch	None/None/1B.1	None	Chaparral, cismontane woodland, coastal scrub, riparian forest/perennial herb/Feb–May/246–2,280	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Astragalus tener var. *titi*	coastal dunes milk-vetch	FE/SE/1B.1	Narrow Endemic	Coastal bluff scrub (sandy), coastal dunes, coastal prairie (mesic); often vernally mesic areas/annual herb/Mar–May/ 3–165	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Atriplex coulteri	Coulter's saltbush	None/None/1B.2	None	Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland; alkaline or clay/perennial herb/Mar–Oct/ 10–1,505	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Atriplex pacifica	South Coast saltscale	None/None/1B.2	None	Coastal bluff scrub, coastal dunes, coastal scrub, playas/annual herb/Mar–Oct/0–460	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Bergerocactus emoryi	golden-spined cereus	None/None/2B.2	None	Closed-cone coniferous forest, chaparral, coastal scrub; sandy/perennial stem succulent/May–June/10–1,295	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Bloomeria clevelandii	San Diego goldenstar	None/None/1B.1	Covered	Chaparral, coastal scrub, valley and foothill grassland, vernal pools; clay/perennial bulbiferous herb/Apr–May/164–1,525	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Brodiaea orcuttii	Orcutt's brodiaea	None/None/1B.1	Covered	Closed-cone coniferous forest, chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, vernal pools; mesic, clay/perennial bulbiferous herb/May–July/98–5,550	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.

Scientific Name	Common Name	Status (Federal/ State/CRPR)	City of San Diego MSCP	Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet above mean sea level)	Potential to Occur
Calandrinia breweri	Brewer's calandrinia	None/None/4.2	None	Chaparral, coastal scrub; sandy or loamy, disturbed sites and burns/annual herb/(Jan)Mar–June/33–4,000	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Calochortus dunnii	Dunn's mariposa lily	None/SR/1B.2	Covered	Closed-cone coniferous forest, chaparral, valley and foothill grassland; gabbroic or metavolcanic, rocky/perennial bulbiferous herb/(Feb)Apr–June/607–6,000	Not expected to occur. The site is outside of the species' known elevation range.
Camissoniopsis lewisii	Lewis' evening-primrose	None/None/3	None	Coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland; sandy or clay/ annual herb/Mar–May(June)/0–985	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Castilleja plagiotoma	Mojave paintbrush	None/None/4.3	None	Great Basin scrub (alluvial), Joshua tree woodland, lower montane coniferous forest, pinyon and juniper woodland/perennial herb (hemiparasitic)/Apr–June/984–8,200	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Ceanothus cyaneus	Lakeside ceanothus	None/None/1B.2	Covered	Closed-cone coniferous forest, chaparral/perennial evergreen shrub/Apr–June/771–2,475	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Ceanothus otayensis	Otay Mountain ceanothus	None/None/1B.2	None	Chaparral (metavolcanic or gabbroic)/perennial evergreen shrub/Jan–Apr/1,965–3,605	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Ceanothus verrucosus	wart-stemmed ceanothus	None/None/2B.2	Covered	Chaparral/perennial evergreen shrub/Dec–May/3–1,245	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Centromadia pungens ssp. *laevis*	smooth tarplant	None/None/1B.1	None	Chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland; alkaline/annual herb/Apr–Sep/0–2,095	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	None/None/1B.1	None	Coastal bluff scrub (sandy), coastal dunes/annual herb/ Jan–Aug/0–330	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Chamaebatia australis	southern mountain misery	None/None/4.2	None	Chaparral (gabbroic or metavolcanic)/perennial evergreen shrub/Nov–May/984–3,345	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Chloropyron maritimum ssp. *maritimum*	salt marsh bird's-beak	FE/SE/1B.2	Covered	Coastal dunes, marshes and swamps (coastal salt)/annual herb (hemiparasitic)/May–Oct(Nov)/0–100	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Chorizanthe orcuttiana	Orcutt's spineflower	FE/SE/1B.1	None	Closed-cone coniferous forest, chaparral (maritime), coastal scrub; sandy openings/annual herb/Mar–May/10–410	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Chorizanthe polygonoides var. *longispina*	long-spined spineflower	None/None/1B.2	None	Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools; often clay/annual herb/Apr–July/ 98–5,015	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Cistanthe maritima	seaside cistanthe	None/None/4.2	None	Coastal bluff scrub, coastal scrub, valley and foothill grassland; sandy/annual herb/(Feb)Mar–June(Aug)/16–985	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Clarkia delicata	delicate clarkia	None/None/1B.2	None	Chaparral, cismontane woodland; often gabbroic/annual herb/Apr–June/771–3,280	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Clinopodium chandleri	San Miguel savory	None/None/1B.2	Covered	Chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland; rocky, gabbroic or metavolcanic/perennial shrub/Mar–July/394–3,525	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Comarostaphylis diversifolia ssp. *diversifolia*	summer holly	None/None/1B.2	None	Chaparral, cismontane woodland/perennial evergreen shrub/Apr–June/98–2,590	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Convolvulus simulans	small-flowered morning-glory	None/None/4.2	None	Chaparral (openings), coastal scrub, valley and foothill grassland; clay, serpentinite seeps/annual herb/Mar–July/ 98–2,425	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.

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Corethrogyne filaginifolia var. *incana*	San Diego sand aster	None/None/1B.1	None	Coastal bluff scrub, chaparral, coastal scrub/perennial herb/June–Sep/10–375	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Corethrogyne filaginifolia var. *linifolia*	Del Mar Mesa sand aster	None/None/1B.1	Covered	Coastal bluff scrub, chaparral (maritime, openings), coastal scrub; sandy/perennial herb/May,July,Aug,Sep/49–490	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Cylindropuntia californica var. *californica*	snake cholla	None/None/1B.1	Narrow Endemic	Chaparral, coastal scrub/perennial stem succulent/ Apr–May/98–490	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Deinandra conjugens	Otay tarplant	FT/SE/1B.1	Narrow Endemic	Coastal scrub, valley and foothill grassland; clay/annual herb/(Apr)May–June/82–985	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Deinandra floribunda	Tecate tarplant	None/None/1B.2	None	Chaparral, coastal scrub/annual herb/Aug–Oct/230–4,000	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Deinandra paniculata	paniculate tarplant	None/None/4.2	None	Coastal scrub, valley and foothill grassland, vernal pools; usually vernally mesic, sometimes sandy/annual herb/ (Mar)Apr–Nov(Dec)/82–3,080	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Dichondra occidentalis	western dichondra	None/None/4.2	None	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland/perennial rhizomatous herb/ (Jan)Mar–July/164–1,640	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Dicranostegia orcuttiana	Orcutt's bird's-beak	None/None/2B.1	Covered	Coastal scrub/annual herb (hemiparasitic)/ (Mar)Apr–July(Sep)/33–1,145	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Diplacus aridus	low bush monkeyflower	None/None/4.3	None	Chaparral (rocky), Sonoran desert scrub/perennial evergreen shrub/Apr–July/2,460–3,935	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Dudleya attenuata ssp. *attenuata*	Orcutt's dudleya	None/None/2B.1	None	Coastal bluff scrub, chaparral, coastal scrub; rocky or gravelly/perennial herb/May–July/10–165	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya	None/None/1B.1	None	Coastal bluff scrub, chaparral, coastal scrub, valley and foothill grassland; rocky, often clay or serpentinite/perennial herb/ Apr–June/16–1,475	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Dudleya brevifolia	short-leaved dudleya	None/SE/1B.1	Narrow Endemic	Chaparral (maritime, openings), coastal scrub; Torrey sandstone/perennial herb/Apr–May/98–820	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Dudleya variegata	variegated dudleya	None/None/1B.2	Narrow Endemic	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland, vernal pools; clay/perennial herb/ Apr–June/10–1,900	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Dudleya viscida	sticky dudleya	None/None/1B.2	Covered	Coastal bluff scrub, chaparral, cismontane woodland, coastal scrub; rocky/perennial herb/May–June/33–1,800	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Ericameria palmeri var. *palmeri*	Palmer's goldenbush	None/None/1B.1	Covered	Chaparral, coastal scrub; mesic/perennial evergreen shrub/(July)Sep–Nov/98–1,965	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Eryngium aristulatum var. *parishii*	San Diego button-celery	FE/SE/1B.1	Covered	Coastal scrub, valley and foothill grassland, vernal pools; mesic/annual / perennial herb/Apr–June/66–2,030	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Erysimum ammophilum	sand-loving wallflower	None/None/1B.2	Covered	Chaparral (maritime), coastal dunes, coastal scrub; sandy, openings/perennial herb/Feb–June/0–195	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Euphorbia misera	cliff spurge	None/None/2B.2	None	Coastal bluff scrub, coastal scrub, Mojavean desert scrub; rocky/perennial shrub/Dec–Aug(Oct)/33–1,640	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Ferocactus viridescens	San Diego barrel cactus	None/None/2B.1	Covered	Chaparral, coastal scrub, valley and foothill grassland, vernal pools/perennial stem succulent/May–June/10–1,475	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.

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Frankenia palmeri	Palmer's frankenia	None/None/2B.1	None	Coastal dunes, marshes and swamps (coastal salt), playas/perennial herb/May–July/0–35	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Fremontodendron mexicanum	Mexican flannelbush	FE/SR/1B.1	None	Closed-cone coniferous forest, chaparral, cismontane woodland; gabbroic, metavolcanic, or serpentinite/perennial evergreen shrub/Mar–June/33–2,345	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Galium proliferum	desert bedstraw	None/None/2B.2	None	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; rocky, carbonate (limestone)/ annual herb/Mar–June/3,900–5,345	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Geothallus tuberosus	Campbell's liverwort	None/None/1B.1	None	Coastal scrub (mesic), vernal pools; soil/ephemeral liverwort/N.A./33–1,965	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Githopsis diffusa ssp. *filicaulis*	Mission Canyon bluecup	None/None/3.1	None	Chaparral (mesic, disturbed areas)/annual herb/ Apr–June/1,475–2,295	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Grindelia hallii	San Diego gumplant	None/None/1B.2	None	Chaparral, lower montane coniferous forest, meadows and seeps, valley and foothill grassland/perennial herb/ May–Oct/607–5,725	Not expected to occur. The site is outside of the species' known elevation range.
Harpagonella palmeri	Palmer's grapplinghook	None/None/4.2	None	Chaparral, coastal scrub, valley and foothill grassland; clay; open grassy areas within shrubland/annual herb/Mar–May/ 66–3,130	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Hesperocyparis forbesii	Tecate cypress	None/None/1B.1	Covered	Closed-cone coniferous forest, chaparral; clay, gabbroic or metavolcanic/perennial evergreen tree/N.A./262–4,920	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Heterotheca sessiliflora ssp. *sessiliflora*	beach goldenaster	None/None/1B.1	None	Chaparral (coastal), coastal dunes, coastal scrub/perennial herb/Mar–Dec/0–4,015	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Holocarpha virgata ssp. *elongata*	graceful tarplant	None/None/4.2	None	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland/annual herb/May–Nov/197–3,605	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Hordeum intercedens	vernal barley	None/None/3.2	None	Coastal dunes, coastal scrub, valley and foothill grassland (saline flats and depressions), vernal pools/annual herb/ Mar–June/16–3,280	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Horkelia truncata	Ramona Horkelia	None/None/1B.3	None	Chaparral, cismontane woodland; clay, gabbroic/perennial herb/May–June/1,310–4,265	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Hosackia crassifolia var. *otayensis*	Otay Mountain lotus	None/None/1B.1	None	Chaparral (metavolcanic, often in disturbed areas)/perennial herb/May–Aug/1,245–3,295	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Isocoma menziesii var. *decumbens*	decumbent goldenbush	None/None/1B.2	None	Chaparral, coastal scrub (sandy, often in disturbed areas)/perennial shrub/Apr–Nov/33–445	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Iva hayesiana	San Diego marsh-elder	None/None/2B.2	None	Marshes and swamps, playas/perennial herb/Apr–Oct/ 33–1,640	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Juncus acutus ssp. *leopoldii*	southwestern spiny rush	None/None/4.2	None	Coastal dunes (mesic), meadows and seeps (alkaline seeps), marshes and swamps (coastal salt)/perennial rhizomatous herb/(Mar)May–June/10–2,950	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None/None/1B.1	None	Marshes and swamps (coastal salt), playas, vernal pools/ annual herb/Feb–June/3–4,000	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Lepechinia cardiophylla	heart-leaved pitcher sage	None/None/1B.2	Covered	Closed-cone coniferous forest, chaparral, cismontane woodland/perennial shrub/Apr–July/1,705–4,490	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Lepechinia ganderi	Gander's pitcher sage	None/None/1B.3	Covered	Closed-cone coniferous forest, chaparral, coastal scrub, valley and foothill grassland; gabbroic or metavolcanic/perennial shrub/June–July/1,000–3,295	Not expected to occur. The site is outside of the species' known elevation range.

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Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	None/None/4.3	None	Chaparral, coastal scrub/annual herb/Jan–July/3–2,900	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Leptosyne maritima	sea dahlia	None/None/2B.2	None	Coastal bluff scrub, coastal scrub/perennial herb/Mar–May/ 16–490	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Lilium humboldtii ssp. *ocellatum*	ocellated Humboldt lily	None/None/4.2	None	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland; openings/perennial bulbiferous herb/Mar–July(Aug)/98–5,905	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Lycium californicum	California box-thorn	None/None/4.2	None	Coastal bluff scrub, coastal scrub/perennial shrub/(Dec)Mar,June,July,Aug/16–490	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Microseris douglasii ssp. *platycarpha*	small-flowered Microseris	None/None/4.2	None	Cismontane woodland, coastal scrub, valley and foothill grassland, vernal pools; clay/annual herb/Mar–May/ 49–3,510	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Mobergia calculiformis	light gray lichen	N.D./N.D./3	None	Coastal scrub (?); on rocks/crustose lichen (saxicolous)/N.A./33–35	Not expected to occur. The site is outside of the species' known elevation range.
Monardella hypoleuca ssp. *lanata*	felt-leaved monardella	None/None/1B.2	Covered	Chaparral, cismontane woodland/perennial rhizomatous herb/June–Aug/984–5,165	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Monardella stoneana	Jennifer's monardella	None/None/1B.2	None	Closed-cone coniferous forest, chaparral, coastal scrub, riparian scrub; usually rocky intermittent streambeds/perennial herb/June–Sep/33–2,590	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Monardella viminea	willowy monardella	FE/SE/1B.1	Covered	Chaparral, coastal scrub, riparian forest, riparian scrub, riparian woodland; alluvial ephemeral washes/perennial herb/June–Aug/164–740	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Mucronea californica	California spineflower	None/None/4.2	None	Chaparral, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland; sandy/annual herb/ Mar–July(Aug)/0–4,590	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Myosurus minimus ssp. *apus*	little mousetail	None/None/3.1	None	Valley and foothill grassland, vernal pools (alkaline)/annual herb/Mar–June/66–2,095	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Nama stenocarpa	mud nama	None/None/2B.2	None	Marshes and swamps (lake margins, riverbanks)/annual/perennial herb/Jan–July/16–1,640	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Navarretia fossalis	spreading navarretia	FT/None/1B.1	Narrow Endemic	Chenopod scrub, marshes and swamps (assorted shallow freshwater), playas, vernal pools/annual herb/Apr–June/ 98–2,145	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Navarretia prostrata	prostrate vernal pool navarretia	None/None/1B.2	None	Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pools; mesic/annual herb/ Apr–July/10–3,965	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Nemacaulis denudata var. *denudata*	coast woolly-heads	None/None/1B.2	None	Coastal dunes/annual herb/Apr–Sep/0–330	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Nemacaulis denudata var. *gracilis*	slender cottonheads	None/None/2B.2	None	Coastal dunes, desert dunes, Sonoran desert scrub/annual herb/(Mar)Apr–May/–164–1,310	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Ophioglossum californicum	California adder's-tongue	None/None/4.2	None	Chaparral, valley and foothill grassland, vernal pools (margins); mesic/perennial rhizomatous herb/(Dec)Jan–June/197–1,720	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Orcuttia californica	California Orcutt grass	FE/SE/1B.1	Narrow Endemic	Vernal pools/annual herb/Apr–Aug/49–2,165	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Ornithostaphylos oppositifolia	Baja California birdbush	None/SE/2B.1	None	Chaparral/perennial evergreen shrub/Jan–Apr/180–2,620	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.

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Orobanche parishii ssp. *brachyloba*	short-lobed broomrape	None/None/4.2	None	Coastal bluff scrub, coastal dunes, coastal scrub; sandy/perennial herb (parasitic)/Apr–Oct/10–1,000	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Pentachaeta aurea ssp. *aurea*	golden-rayed pentachaeta	None/None/4.2	None	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland, valley and foothill grassland/annual herb/Mar–July/262–6,065	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Phacelia stellaris	Brand's star phacelia	None/None/1B.1	None	Coastal dunes, coastal scrub/annual herb/Mar–June/3–1,310	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Pickeringia montana var. *tomentosa*	woolly chaparral-pea	None/None/4.3	None	Chaparral; gabbroic, granitic, clay/evergreen shrub/May–Aug/0–5,575	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Pinus torreyana ssp. *torreyana*	Torrey pine	None/None/1B.2	Covered	Closed-cone coniferous forest, chaparral; sandstone/perennial evergreen tree/N.A./98–525	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Piperia cooperi	chaparral rein orchid	None/None/4.2	None	Chaparral, cismontane woodland, valley and foothill grassland/perennial herb/Mar–June/49–5,200	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Pogogyne abramsii	San Diego mesa mint	FE/SE/1B.1	Narrow Endemic	Vernal pools/annual herb/Mar–July/295–655	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Pogogyne nudiuscula	Otay Mesa mint	FE/SE/1B.1	Narrow Endemic	Vernal pools/annual herb/May–July/295–820	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Pseudognaphalium leucocephalum	white rabbit-tobacco	None/None/2B.2	None	Chaparral, cismontane woodland, coastal scrub, riparian woodland; sandy, gravelly/perennial herb/(July)Aug–Nov(Dec)/0–6,885	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Quercus dumosa	Nuttall's scrub oak	None/None/1B.1	None	Closed-cone coniferous forest, chaparral, coastal scrub; sandy, clay loam/perennial evergreen shrub/Feb–Apr(May–Aug)/ 49–1,310	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Quercus engelmannii	Engelmann oak	None/None/4.2	None	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland/perennial deciduous tree/Mar–June/ 164–4,265	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Ribes viburnifolium	Santa Catalina Island currant	None/None/1B.2	None	Chaparral, cismontane woodland/perennial evergreen shrub/Feb–Apr/98–1,145	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Romneya coulteri	Coulter's matilija poppy	None/None/4.2	None	Chaparral, coastal scrub; often in burns/perennial rhizomatous herb/Mar–July(Aug)/66–3,935	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Rosa minutifolia	small-leaved rose	None/SE/2B.1	Covered	Chaparral, coastal scrub/perennial deciduous shrub/ Jan–June/492–525	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Salvia munzii	Munz's sage	None/None/2B.2	None	Chaparral, coastal scrub/perennial evergreen shrub/ Feb–Apr/377–3,490	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Selaginella cinerascens	ashy spike-moss	None/None/4.1	None	Chaparral, coastal scrub/perennial rhizomatous herb/N.A./ 66–2,095	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Senecio aphanactis	chaparral ragwort	None/None/2B.2	None	Chaparral, cismontane woodland, coastal scrub; sometimes alkaline/annual herb/Jan–Apr(May)/49–2,620	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Sidalcea neomexicana	salt spring checkerbloom	None/None/2B.2	None	Chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, playas; alkaline, mesic/perennial herb/Mar–June/49–5,015	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Sphaerocarpos drewiae	bottle liverwort	None/None/1B.1	None	Chaparral, coastal scrub; openings, soil/ephemeral liverwort/N.A./295–1,965	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Stemodia durantifolia	purple stemodia	None/None/2B.1	None	Sonoran desert scrub (often mesic, sandy)/perennial herb/(Jan)Apr,June,Aug,Sep,Oct,Dec/591–985	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Stipa diegoensis	San Diego County needle grass	None/None/4.2	None	Chaparral, coastal scrub; rocky, often mesic/perennial herb/Feb–June/33–2,620	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.

Scientific Name	Common Name	Status (Federal/ State/CRPR)	City of San Diego MSCP	Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet above mean sea level)	Potential to Occur
Streptanthus bernardinus	Laguna Mountains jewelflower	None/None/4.3	None	Chaparral, lower montane coniferous forest/perennial herb/May–Aug/2,195–8,200	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Stylocline citroleum	oil neststraw	None/None/1B.1	None	Chenopod scrub, coastal scrub, valley and foothill grassland; clay/annual herb/Mar–Apr/164–1,310	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Suaeda esteroa	estuary seablite	None/None/1B.2	None	Marshes and swamps (coastal salt)/perennial herb/ (May)July–Oct(Jan)/0–15	Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present.
Suaeda taxifolia	woolly seablite	None/None/4.2	None	Coastal bluff scrub, coastal dunes, marshes and swamps (margins of coastal salt)/perennial evergreen shrub/Jan–Dec/0–165	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Tetracoccus dioicus	Parry's tetracoccus	None/None/1B.2	Covered	Chaparral, coastal scrub/perennial deciduous shrub/ Apr–May/541–3,280	Not expected to occur. The site is outside of the species' known elevation range.
Texosporium sancti-jacobi	woven-spored lichen	None/None/3	None	Chaparral (openings); on soil, small mammal pellets, dead twigs, and on *Selaginella* spp./crustose lichen (terricolous)/N.A./ 197–2,165	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Tortula californica	California screw-moss	None/None/1B.2	None	Chenopod scrub, valley and foothill grassland; sandy, soil/moss/N.A./33–4,790	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Viguiera laciniata	San Diego County viguiera	None/None/4.3	None	Chaparral, coastal scrub/perennial shrub/Feb–June(Aug)/ 197–2,460	Low potential to occur. Limited suitable habitat in an urban setting is generally disturbed or very dense lemonadeberry scrub. Focused surveys conducted June 2021 were negative.
Xanthisma junceum	rush-like bristleweed	None/None/4.3	None	Chaparral, coastal scrub/perennial herb/May–Jan/787–3,280	Not expected to occur. The site is outside of the species' known elevation range.

Notes: CRPR = California Rare Plant Rank; MSCP = Multiple Species Conservation Program; N.A. = not applicable; N.D. = no data.
Status Legend:
FE: Federally listed as endangered
FT: Federally listed as threatened
FC: Federal candidate for listing
DL: Delisted
SE: State listed as endangered
ST: State listed as threatened
SC: State candidate for listing
SR: State rare
CRPR 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere
CRPR 2A: Plants presumed extirpated in California but common elsewhere
CRPR 2B: Plants rare, threatened, or endangered in California but more common elsewhere
CRPR 3: Review List: Plants about which more information is needed
CRPR 4: Watch List: Plants of limited distribution
.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Moderately threatened in California (20%–80% occurrences threatened / moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

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Appendix E

Wildlife Species Potential to Occur

Scientific Name	Common Name	Status (Federal/State)	City of San Diego MSCP Subarea Plan	Habitat	Potential to Occur
Amphibians					
Anaxyrus californicus	arroyo toad	FE/SSC	Covered	Semi-arid areas near washes, sandy riverbanks, riparian areas, palm oasis, Joshua tree, mixed chaparral and sagebrush; stream channels for breeding (typically third order); adjacent stream terraces and uplands for foraging and wintering	Not expected to occur. No suitable wash/riverbank habitat present to support this species. Outside of range.
Rana draytonii	California red-legged frog	FT, BCC/SSC	Covered	Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands	Not expected to occur. California red-legged frog ranges from Riverside County to Mendocino County along the Coast Range (USFWS 2017). No CNDDB records in the vicinity (CDFW 2022). Outside of range.
Spea hammondii	western spadefoot	None/SSC	None	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley–foothill woodlands, pastures, and other agriculture	Low potential to occur. Not likely to occur due to lack of suitable vernal pools or ephemeral wetlands used for reproduction present. A CNDDB occurrence of this species from 1946 overlaps the study area (CDFW 2022). Urban setting diminishes potential.
Reptiles					
Anniella stebbinsi	southern California legless lizard	None/SSC	None	Coastal dunes, stabilized dunes, beaches, dry washes, valley–foothill, chaparral, and scrubs; pine, oak, and riparian woodlands; associated with sparse vegetation and moist sandy or loose, loamy soils	Low potential to occur. There is sandy loam present in the study area and a CNDDB occurrence of this species from 1976 overlaps the study area (CDFW 2022). However, this species is not expected to occur due to the study area being highly urbanized.
Arizona elegans occidentalis	California glossy snake	None/SSC	None	Arid scrub, rocky washes, grasslands, chaparral, open areas with loose soil	Not expected to occur. There is a relatively small amount of suitable coastal sage scrub and open undeveloped habitat present in the study area. However, this species is not expected to occur due to the study area being highly urbanized.
Aspidoscelis hyperythra	orange-throated whiptail	None/WL	Covered	Low-elevation coastal scrub, chaparral, and valley–foothill hardwood	Low potential to occur. There is suitable coastal sage scrub and adjacent open habitat present in the study area to support this species. Potential to occur is lower due to the study area being highly urbanized.
Aspidoscelis tigris stejnegeri	San Diegan tiger whiptail	None/SSC	None	Hot and dry areas with sparse foliage, including chaparral, woodland, and riparian areas.	Low potential to occur. There is a relatively small amount of suitable undeveloped habitat present in the study area. Potential to occur is lower due to the study area being highly urbanized.
Chelonia mydas	green sea turtle	FT/None	None	Shallow waters of lagoons, bays, estuaries, mangroves, eelgrass, and seaweed beds	Not expected to occur. No suitable coastal/marine habitat present.
Coleonyx variegatus abbotti	San Diego banded gecko	None/SSC	None	Rocky areas within coastal scrub and chaparral	Not expected to occur. There is no suitable rocky habitat present in the study area to support this species.
Crotalus ruber	red diamondback rattlesnake	None/SSC	None	Coastal scrub, chaparral, oak and pine woodlands, rocky grasslands, cultivated areas, and desert flats	Not expected to occur. There is a relatively small amount of suitable coastal sage scrub and open undeveloped habitat present in the study area. Potential to occur is lower due to the study area being highly urbanized.
Emys marmorata	western pond turtle	None/SSC	Covered	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter	Not expected to occur. No suitable habitat present.
Masticophis fuliginosus	Baja California coachwhip	None/SSC	None	In California restricted to southern San Diego County, where it is known from grassland and coastal sage scrub. Open areas in grassland and coastal sage scrub.	Not expected to occur. There is a relatively small amount of suitable coastal sage scrub and open undeveloped habitat present in the study area. Potential to occur is lower due to the study area being highly urbanized.

Scientific Name	Common Name	Status (Federal/State)	City of San Diego MSCP Subarea Plan	Habitat	Potential to Occur
Phrynosoma blainvillii	Blainville's horned lizard	None/SSC	Covered	Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral, valley–foothill hardwood, conifer, riparian, pine–cypress, juniper, and annual grassland habitats	Not expected to occur. The study area is highly urbanized, which generally results in high presence of non-native Argentine ants and lack of native harvester ants.
Salvadora hexalepis virgultea	coast patch-nosed snake	None/SSC	None	Brushy or shrubby vegetation; requires small mammal burrows for refuge and overwintering sites	Not expected to occur. There is a relatively small amount of suitable coastal sage scrub present in the study area. Potential to occur is lower due to the study area being highly urbanized.
Thamnophis hammondii	two-striped gartersnake	None/SSC	None	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	Not expected to occur. No suitable vegetation present in the study area to support this species.
Birds					
Accipiter cooperii (nesting)	Cooper's hawk	None/WL	Covered	Nests and forages in dense stands of live oak, riparian woodlands, or other woodland habitats often near water	High potential to occur. There is eucalyptus and non-native woodland habitat with tall trees present within the study area that could support nesting of this species. Cooper's hawk numbers have increased in urban areas due to increased dove and pigeon populations.
Agelaius tricolor (nesting colony)	tricolored blackbird	None/SSC, ST	Covered	Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberry; forages in grasslands, woodland, and agriculture	Not expected to occur. The wetland habitat present in the study area is not of suitable quality to support a nesting colony of this species.
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	None/WL	Covered	Nests and forages in open coastal scrub and chaparral with low cover of scattered scrub interspersed with rocky and grassy patches	Not expected to occur. The small amount of coastal scrub on site is relatively dense or disturbed and in an urban setting.
Ammodramus savannarum (nesting)	grasshopper sparrow	BCC/SSC	None	Nests and forages in moderately open grassland with tall forbs or scattered shrubs used for perches	Not expected to occur. There is not suitably expansive, open grassland habitat present within the study area to support this species.
Aquila chrysaetos (nesting and wintering)	golden eagle	None/FP, WL	Covered	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats	Not expected to occur. The study area is surrounded by development and there is no suitable open foraging habitat present to support this species.
Athene cunicularia (burrow sites and some wintering sites)	burrowing owl	None/SSC	Covered	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows	Not expected to occur. The study area is highly urbanized and there is no suitable open habitat present to support this species.
Branta canadensis	Canada goose	None/None	Covered	Lakes, rivers, ponds, and other bodies of water; yards, park lawns, and agricultural fields	Not expected to occur. There are no suitable bodies of open water present in the study area which would support this species.
Buteo regalis (wintering)	ferruginous hawk	None/WL	Covered	Winters and forages in open, dry country, grasslands, open fields, agriculture	Not expected to occur. The study area is surrounded by development and there is no suitable open foraging habitat present to support this species.
Buteo swainsoni (nesting)	Swainson's hawk	None/ST	Covered	Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture	Not expected to occur. The study area is surrounded by development and there is no suitable open foraging habitat present to support this species.
Campylorhynchus brunneicapillus sandiegensis (San Diego and Orange Counties only)	coastal cactus wren	None/SSC	Covered	Southern cactus scrub patches	Not expected to occur. There is no suitable cactus scrub habitat present in the study area to support this species.
Charadrius alexandrinus nivosus (nesting)	western snowy plover	FT/SSC	Covered	On coasts nests on sandy marine and estuarine shores; in the interior nests on sandy, barren or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds	Not expected to occur. There is no suitable habitat present in the study area to support nesting of this species.
Charadrius montanus (wintering)	mountain plover	None/SSC	Covered	Winters in shortgrass prairies, plowed fields, open sagebrush, and sandy deserts	Not expected to occur. There is no suitable habitat present to support this species.

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Circus hudsonius (nesting)	northern harrier	None/SSC	Covered	Nests in open wetlands (marshy meadows, wet lightly-grazed pastures, old fields, freshwater and brackish marshes); also in drier habitats (grassland and grain fields); forages in grassland, scrubs, rangelands, emergent wetlands, and other open habitats	Not expected to occur. There is no open wetland habitat or other suitable open habitat present to support nesting of this species.
Coccyzus americanus occidentalis (nesting)	western yellow-billed cuckoo	FT/SE	None	Nests in dense, wide riparian woodlands and forest with well-developed understories	Not expected to occur. No suitable expansive and high-quality riparian habitat is present to support this species.
Coturnicops noveboracensis	yellow rail	None/SSC	None	Nesting requires wet marsh/sedge meadows or coastal marshes with wet soil and shallow, standing water	Not expected to occur. No suitable habitat present.
Egretta rufescens	reddish egret	None/None	Covered	Freshwater marsh with emergent vegetation; in the Central Valley primarily nests and forages in rice fields and other flooded agricultural fields with weeds and other residual aquatic vegetation	Not expected to occur. No suitable habitat present.
Empidonax traillii extimus (nesting)	southwestern willow flycatcher	FE/SE	Covered	Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration	Not expected to occur. No suitable expansive and high-quality riparian habitat is present to support this species.
Falco peregrinus anatum (nesting)	American peregrine falcon	FPD/FP, SCD	Covered	Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present	Not expected to occur. There is no suitable habitat present in the study area to support nesting of this species.
Haliaeetus leucocephalus (nesting and wintering)	bald eagle	FPD/FP, SE	Covered	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains	Not expected to occur. No suitable habitat present to support this species.
Icteria virens (nesting)	yellow-breasted chat	None/SSC	None	Nests and forages in dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush	Not expected to occur. No suitable expansive and high-quality riparian habitat is present to support this species.
Ixobrychus exilis (nesting)	least bittern	None/SSC	None	Nests in freshwater and brackish marshes with dense, tall growth of aquatic and semi-aquatic vegetation	Not expected to occur. No suitable freshwater marsh habitat present to support this species.
Laterallus jamaicensis coturniculus	California black rail	None/FP, ST	None	Tidal marshes, shallow freshwater margins, wet meadows, and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra Nevada foothill populations	Not expected to occur. No suitable habitat present to support this species.
Numenius americanus (nesting)	long-billed curlew	None/WL	Covered	Nests in grazed, mixed grass, and short-grass prairies; localized nesting along the California coast; winters and forages in coastal estuaries, mudflats, open grassland, and cropland	Not expected to occur. This species is a migrant or wintering species in San Diego County and is not expected to nest within the study area.
Passerculus sandwichensis beldingi	Belding's savannah sparrow	None/SE	Covered	Nests and forages in coastal saltmarsh dominated by pickleweed (Salicornia spp.)	Not expected to occur. No coastal saltmarsh habitat is present in the study area to support this species.
Passerculus sandwichensis rostratus (wintering)	large-billed savannah sparrow	None/SSC	Covered	Nests and forages in open, low saltmarsh vegetation, including low halophytic scrub	Not expected to occur. No suitable saltmarsh habitat is present in the study area to support this species.
Pelecanus occidentalis californicus (nesting colonies and communal roosts)	California brown pelican	FPD/FP, SCD	Covered	Forages in warm coastal marine and estuarine environments; in California, nests on dry, rocky offshore islands	Not expected to occur. No suitable habitat present to support nesting or communal roosting of this species.
*Plegadis chihi (*nesting colony)	white-faced ibis	None/WL	Covered	Nests in shallow marshes with areas of emergent vegetation; winter foraging in shallow lacustrine waters, flooded agricultural fields, muddy ground of wet meadows, marshes, ponds, lakes, rivers, flooded fields, and estuaries	Not expected to occur. No suitable habitat present to support a nesting colony of this species.
Polioptila californica californica	coastal California gnatcatcher	FT, BCC/SSC	Covered	Nests and forages in various sage scrub communities, often dominated by California sagebrush and buckwheat; generally avoids nesting in areas with a slope of greater than 40%; majority of nesting at less than 1,000 feet above mean sea level	Not expected to occur. There is disturbed coastal sage scrub present within the study area; however, the shrub species typically found within habitat supporting California gnatcatcher (i.e., California sagebrush and buckwheat) are not substantially present. The Diegan coastal sage scrub on site is dominated by lemonadeberry, laurel sumac, felt-leaf yerba santa (Eriodictyon crassifolium), and/or toyon (Heteromeles arbutifolia), and the stands are moderately disturbed by the presence of non-native plant species. The narrow and disjunct patches are not large

Scientific Name	Common Name	Status (Federal/State)	City of San Diego MSCP Subarea Plan	Habitat	Potential to Occur
					enough to support CAGN and the highly urban situation makes this habitat unsuitable.
Rallus obsoletus levipes	Ridgway's rail	FE/FP, SE	Covered	Coastal wetlands, brackish areas, coastal saline emergent wetlands	Not expected to occur. No suitable habitat present to support this species.
Setophaga petechia (nesting)	yellow warbler	None/SSC	None	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixed-conifer habitats	Low potential to occur. There is marginally suitable riparian habitat present in the study area. There is more potential for this species to forage within the study area than to nest.
Sialia mexicana	western bluebird	None/None	Covered	Nests in old-growth red fir, mixed-conifer, and lodgepole pine habitats near wet meadows used for foraging	Moderate potential to forage within the study area. Western bluebirds are increasing around the County and are common in urban areas during the winter. Not expected to nest within the study area.
Sternula antillarum browni (nesting colony)	California least tern	FE/FP, SE	Covered	Forages in shallow estuaries and lagoons; nests on sandy beaches or exposed tidal flats	Not expected to occur. No suitable habitat present to support a nesting colony of this species.
Thalasseus elegans (nesting colony)	elegant tern	None/WL	Covered	Inshore coastal waters, bays, estuaries, and harbors; forages over open water	Not expected to occur. No suitable habitat present to support a nesting colony of this species.
Vireo bellii pusillus (nesting)	least Bell's vireo	FE/SE	Covered	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season	Not expected to occur. Riparian habitat present in the study area is not of suitable quality to support nesting of this species.
Fishes					
Oncorhynchus mykiss irideus pop. 10	southern steelhead - southern California DPS	FE/None	None	Clean, clear, cool, well-oxygenated streams; needs relatively deep pools in migration and gravelly substrate to spawn	Not expected to occur. No suitable stream habitat present to support this species.
Mammals					
Antrozous pallidus	pallid bat	None/SSC	None	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees	Not likely to roost due to lack of suitable rocky areas present on site.
Chaetodipus californicus femoralis	Dulzura pocket mouse	None/SSC	None	Open habitat, coastal scrub, chaparral, oak woodland, chamise chaparral, mixed-conifer habitats; disturbance specialist; 0 to 3,000 feet above mean sea level	Not likely to inhabit. Limited suitable coastal scrub habitat present on site.
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	None/SSC	None	Coastal scrub, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon–juniper, and annual grassland	Not likely to inhabit due to lack of suitable gravelly or rocky soil used for burrows present on site.
Choeronycteris mexicana	Mexican long-tongued bat	None/SSC	None	Desert and montane riparian, desert succulent scrub, desert scrub, and pinyon–juniper woodland; roosts in caves, mines, and buildings	Not expected to roost. Lack of suitable roosting habitat.
Corynorhinus townsendii	Townsend's big-eared bat	None/SSC	None	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, man-made structures, and tunnels	Not expected to roost. Lack of suitable roosting habitat.
Dasypterus xanthinus	western yellow bat	None/SSC	None	Valley–foothill riparian, desert riparian, desert wash, and palm oasis habitats; below 2,000 feet above mean sea level; roosts in riparian and palms	Not expected to roost. Lack of suitable roosting habitat.
Euderma maculatum	spotted bat	None/SSC	None	Foothills, mountains, desert regions of southern California, including arid deserts, grasslands, and mixed-conifer forests; roosts in rock crevices and cliffs; feeds over water and along washes	Low potential to roost. May use buildings for roosting, but site in an urban setting limits foraging opportunities.
Eumops perotis californicus	western mastiff bat	None/SSC	None	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels	Not likely to roost due to lack of suitable rocky canyons and cliffs present on site.
Lasiurus blossevillii	western red bat	None/SSC	None	Forest, woodland, riparian, mesquite bosque, and orchards, including fig, apricot, peach, pear, almond, walnut, and orange; roosts in tree canopy	Low potential to occur. Roosts primarily in trees adjacent to streams and urban areas. Although trees are present, the project site is highly urbanized.

Scientific Name	Common Name	Status (Federal/State)	City of San Diego MSCP Subarea Plan	Habitat	Potential to Occur
Lepus californicus bennettii	San Diego black-tailed jackrabbit	BCC/SSC	None	Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed areas, and rangelands	Not expected to occur. There is a relatively small amount of suitable coastal sage scrub and open undeveloped habitat present in the study area, and the study area is highly urbanized.
Neotoma lepida intermedia	San Diego desert woodrat	None/SSC	None	Coastal scrub, desert scrub, chaparral, cacti, rocky areas	Not expected to occur. The small amount of coastal sage scrub present in the study area is marginally suitable for this species, and the study area is highly urbanized.
Nyctinomops femorosaccus	pocketed free-tailed bat	None/SSC	None	Pinyon–juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oases; roosts in high cliffs or rock outcrops with drop-offs, caverns, and buildings	Not expected to occur. No suitable desert habitat present.
Nyctinomops macrotis	big free-tailed bat	None/SSC	None	Rocky areas; roosts in caves, holes in trees, buildings, and crevices on cliffs and rocky outcrops; forages over water	Not likely to roost due to lack of suitable rocky outcrops and high cliffs present on site.
Odocoileus hemionus	mule deer	None/None	Covered	Coastal sage scrub, chaparral, riparian, woodlands, and forest; often browses in open area adjacent to cover throughout California, except deserts and intensely farmed areas	Not expected to occur. There is too little native habitat to support this species and the study area is highly urbanized.
Perognathus longimembris pacificus	Pacific pocket mouse	FE/SSC	None	fine-grained sandy substrates in open coastal strand, coastal dunes, and river alluvium	Not likely to inhabit due to lack of suitable open coastal area or coastal dune habitat present on site. Thought to be extirpated except for very close to the coast in a few remaining locations. Closest location is at Camp Pendleton
Taxidea taxus	American badger	None/SSC	Covered	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	Not expected to occur. There is a small amount of open, undeveloped habitat present within the study area, and this species is not expected to occur in urban areas with high levels of human disturbance.
Invertebrates					
Branchinecta sandiegonensis	San Diego fairy shrimp	FE/None	Covered	Vernal pools, non-vegetated ephemeral pools	Not expected to occur. There is no vernal pool habitat or other suitable ephemerally-pooling habitat present to support this species.
Callophrys thornei	Thorne's hairstreak	None/None	Covered	Interior cypress woodland dominated by host plant Hesperocyparis forbesii (Tecate cypress)	Not expected to occur. There is no woodland dominated by Tecate cypress present in the study area to support this species.
Danaus plexippus pop. 1	monarch	FC/None	None	Wind-protected tree groves with nectar sources and nearby water sources	Low potential to overwinter or reproduce within the study area. No milkweed (Asclepias spp.) was observed during surveys in the study area. Monarch could pass through the study area.
Euphydryas editha quino	quino checkerspot butterfly	FE/None	None	Annual forblands, grassland, open coastal scrub and chaparral; often soils with cryptogamic crusts and fine-textured clay; host plants include Plantago erecta, Antirrhinum coulterianum, and Plantago patagonica (Silverado Occurrence Complex)	Not expected to occur. Suitable habitat for this species requires presence of specific host plants which are not known to occur within the study area. outside of required survey area.
Lycaena hermes	Hermes copper	FPT/None	None	Mixed woodlands, chaparral, and coastal scrub	Not expected to occur. Suitable habitat for this species requires presence of specific host plants which are not known to occur within the study area.
Panoquina errans	wandering skipper	None/None	Covered	Saltmarsh	Not expected to occur. No suitable saltmarsh habitat is present in the study area to support this species.
Streptocephalus woottoni	Riverside fairy shrimp	FE/None	Covered	Vernal pools, non-vegetated ephemeral pools	Not expected to occur. There is no vernal pool habitat or other suitable ephemerally-pooling habitat present to support this species.

Status Abbreviations
FE: Federally listed as endangered
FT: Federally listed as threatened

FPE: Federally proposed for listing as endangered
PFT: Federally proposed for listing as threatened
FC: Federal candidate species (former Category 1 candidates)
FPD: Federally proposed for delisting
BCC: U.S. Fish and Wildlife Service Bird of Conservation Concern
SSC: California Species of Special Concern
FP: California Fully Protected Species
WL: California Watch List Species
SE: State listed as endangered
ST: State listed as threatened
SCE: State candidate for listing as endangered
SCT: State candidate for listing as threatened
SCD: State candidate for delisting

References

CDFW (California Department of Fish and Wildlife). 2022. California Natural Diversity Database (CNDDB).
USFWS (U.S. Fish and Wildlife Service). 2017. “California red-legged frog”. Accessed January 17, 2022 at https://www.fws.gov/sacramento/es_species/Accounts/Amphibians-Reptiles/ca_red_legged_frog/documents/California-red_legged_frog-Fact_Sheet-FINAL.pdf.

Appendix F
Staff Qualifications

Callie Amoaku

SENIOR BIOLOGIST/PROJECT MANAGER

Callie Amoaku (*KAL-ee AUHM-wa-koo; she/her*) is a biologist with 15 years' experience as an environmental analyst specializing in field surveys and report preparation. Ms. Amoaku is committed to professional management of environmental resources, including land conservation. As a biologist with Dudek, she has coordinated large survey efforts and researched and prepared biological sections for environmental impact reports (EIRs), biological technical reports (BTRs), biological assessments, low-effect habitat conservation plans, and focused survey reports. She has also performed wildlife and plant surveys, vegetation mapping, and jurisdictional delineations throughout Southern California.

Education

California Polytechnic State University, San Luis Obispo BS, Environmental Management and Protection/GIS Minor, 2006

Certifications

USFWS Federal 10a Survey Permit No. TE-36118B-1

Quino Checkerspot Butterfly Surveys

Casey's June Beetle

CDFW Plant Voucher Collecting Permit No. 2081(a)-15-108-V

Professional Affiliations

The Western Section of the Wildlife Society

Xerces Society

Project Experience

Development

San Diego State University – Mission Valley Campus Master Plan Project, City of San Diego, California. Serving as the lead biologist for the SDSU Mission Valley Campus Master Plan Project, which involves demolition of the existing San Diego County Credit Union Stadium; new construction of a stadium, mixed-use, and residential; and the creation of the San Diego River Park. Conducted and/or managed biological surveys for riparian birds, coastal California gnatcatcher (*Polioptila californica californica*), bats, jurisdictional resources, vegetation mapping, and rare plants. Prepared a biological technical report and appendices per California Environmental Quality Act (CEQA) guidelines and attended meetings with resource agencies and the public. Assisted with preparation of the project's award-winning EIR. Assisted with the project's mitigation and monitoring reporting program and implementation of mitigation measures.

Ivanhoe Ranch, Pv Ivanhoe LLC, El Cajon, California. Serving as project manager for the biology-related tasks. Conducted vegetation mapping, habitat assessment, and host plant mapping for Quino checkerspot butterfly (*Euphydryas editha quino*) and Hermes copper butterfly (*Lycaena hermes*); conducted focused protocol surveys for Quino checkerspot butterfly and Hermes copper butterfly; and conducted habitat assessment and focused protocol surveys for burrowing owl (*Athene cunicularia*) and least Bell's vireo (*Vireo bellii pusillus*). Prepared a biological analysis letter report for the Major Project Pre-Application package. Also attending County of San Diego meetings and assisting client with mitigation planning.

Ocean Creek Project, JPI, City of Oceanside, California. Serving as the lead biologist for the Ocean Creek Project in the City of Oceanside. Conducted vegetation mapping, habitat assessment for special-status species, and jurisdictional delineation, and prepared the biological technical report, survey reports, and a low-effect habitat conservation plan and associated documents for the project. As lead biologist, continued meetings with staff from

the City of Oceanside, U.S. Fish and Wildlife Service (USFWS), and California Department of Fish and Wildlife (CDFW) to resolve questions and Subarea Plan consistency analysis.

Grapevine Project, Tejon Ranch, Kern County, California. Served as project task manager and field lead to conduct least Bell's vireo and special-status mammal surveys, wildlife camera studies, bat surveys, and habitat assessments for a variety of federally and state-listed wildlife species. As project task manager and field lead, conducted a formal wetlands jurisdictional delineation and mapped wetlands and waters in accordance with regulations and guidance from the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and CDFW. The jurisdictional delineation and determination included extensive literature review of historic aerials and topographic maps, the National Hydrography Dataset, and the National Wetlands Inventory; field survey of a 15,315-acre study area; and delineation of approximately 130 acres of potentially jurisdictional features. Also performed vegetation mapping, rare plant surveys, and habitat assessments for a variety of federally and state-listed wildlife species. Ongoing duties include preparation of a detailed BTR and 20 associated reports and appendices, data management and review, and project management.

Nirvana Project, OnPoint Development, Chula Vista, California. Serving as lead biologist for the Nirvana Project and other nearby projects by OnPoint within the City of Chula Vista's Subarea Plan. Conducted and/or reviewed vegetation mapping, habitat assessment for special-status species and jurisdictional delineation, and prepared the biological technical report, survey reports, and habitat loss incidental take permit. Also assisting in wetland permit coordination and mitigation planning.

Bonita Glen Drive Project Studies, Silvergate Development, Chula Vista, California. As project manager, prepared a BTR in accordance with the City of Chula Vista's Subarea Plan and managed other technical studies supporting the Mitigated Negative Declaration. Assisted client with City of Chula Vista coordination and mitigation planning.

Camelot, The Camelot Project Owner LLC, San Diego County, California. As project assistant, conducted a formal wetlands jurisdictional delineation and mapped wetlands and stream channels. Conducted general biological reconnaissance surveys throughout the 67-acre site. Several special-status species were mapped, including white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), loggerhead shrike (*Lanius ludovicianus*), and California adolphia (*Adolphia californica*).

Proctor Valley Village 14 and Preserve, Jackson Pendo Development, San Diego County, California. Assisted in the jurisdictional delineation; rare plant surveys, including mapping of the federally threatened and state-endangered Otay tarplant (*Deinandra conjugens*); habitat mapping and focused Hermes copper butterfly surveys; and preparation of the BTR in accordance with the County of San Diego guidelines.

Newhall Biological and Environmental Documentation, Newhall Land and Farming Company, Santa Clarita, California. As project assistant, assisted in writing numerous BTRs and biological sections of EIRs with detailed information about special-status wildlife species. Assisted in preparing the Comprehensive Mitigation Implementation Plan, which consisted of organizing multiple data sets and mitigation measures. Coordinated and performed biological surveys for spineflower (*Chorizanthe*), a state-endangered and sensitive plant species, which included population counts and using GPS coordinates to locate the boundaries of the populations. Also performed biological monitoring of known spineflower populations, including population counts and point-intercept transects, and performed vegetation mapping for multiple vegetation classes.

Bear Valley Parkway Project, Spieth-Wohlford, Escondido, California. As project task manager and field lead, conducted a formal wetlands jurisdictional delineation and mapped wetlands and waters under the jurisdiction of USACE, RWQCB, and CDFW; performed vegetation mapping; and prepared the biological resources letter report.

West Oaks Due Diligence, Carlsbad West Oaks Project Owner LLC, San Diego County, California. Conducted a formal wetland delineation and vegetation mapping for a 12.5-acre project site in Carlsbad.

Silveira Property, Marin County, California. Conducted a formal wetland delineation in Marin County. Mapped a variety of seasonal wetlands, an estuarine wetland, and isolated wetlands.

Grandview Street Project, Axelson and Corn, San Diego County, California. As project manager, coordinated wildlife surveys, prepared the BTR, and assisted the client with additional regulatory issues.

Tejon Mountain Village, Kern County, California. As project assistant and biologist, performed surveys for special-status plants, including population counts and mapping with GPS units on the 28,000-acre project site. Assisted in preparation of the biological resources report for CEQA documentation, including wildlife species, and portions of the draft EIR.

Newland Sierra Project, Newland Sierra LLC, San Diego, California. As field biologist, conducted vegetation mapping, a jurisdictional wetlands delineation, and focused rare plant surveys. Assisted in preparation of the BTR and biology section of the EIR; responded to public comments on the Draft EIR.

As-Needed Environmental Services, City of San Diego, California. Serving as a biologist for a variety of as-needed City of San Diego projects. Has conducted vegetation mapping, jurisdictional delineations, wildlife surveys, and preparation of biology reports in accordance with the city's Biology Guidelines.

Lone Oak Road, The Marker Company, Vista, California. As project task manager and field lead, conducted a formal wetlands jurisdictional delineation and mapped wetlands and waters under the jurisdiction of USACE, RWQCB, and CDFW; performed vegetation mapping; prepared the biological resources letter report; and coordinated additional field surveys.

Warner Ranch, WHP Warner Ranch LP, San Diego County, California. As project assistant, conducted a formal jurisdictional wetland delineation and surveys for special-status plants over approximately 80 acres within the 566-acre project site. Primary author of the BTR, written in compliance with the County of San Diego's guidelines for format and determining significance. Prepared the Conceptual Resource Mitigation Plan. Attended multiple County of San Diego meetings and assisted in additional research. Coordinated field surveys. Assisted in the preparation of the biological section of the EIR and response to comments on the EIR.

Otay Ranch, JPB Development, San Diego County, California. As project assistant, assisted in writing a multi-project BTR and preparing permits for 401 Water Quality Certification, 404 Pre-Construction Notification for a Nationwide Permit, and 1600 Streambed Alteration Agreement. Organized data from multiple years of focused surveys and coordinated graphics for the permit applications. Assisted in general biological surveys, including focused Quino checkerspot butterfly surveys, rare plant surveys focused on mapping the federally threatened and state-endangered Otay tarplant, and construction monitoring.

Rough Acres Ranch, Hamann Companies, San Diego County, California. Conducted two focused survey passes for rare plants, and mapped large populations of Jacumba milk-vetch (*Astragalus douglasii*). Also mapped sticky geraea (*Geraea viscida*) and Tecate tarplant (*Deinandra floribunda*). Conducted vegetation mapping to Holland classification system.

Sycuan Slope Repair Project, Sycuan Band of Kumeyaay Nation, El Cajon, California. Served as field biologist to conduct a formal wetlands jurisdictional delineation and mapped wetlands and waters under the jurisdiction of USACE.

Yokohl Ranch, Yokohl Ranch Company, Visalia, California. Performed quadrat surveys along 50-meter (164-foot) transects to collect species density information for spiny-sepaled button celery (*Eryngium spinosepalum*).

As-Needed Environmental Services, City of San Marcos, California. As project biologist, conducted focused surveys for least Bell's vireo along San Marcos Creek. Several special-status species were detected, including least Bell's vireo, yellow-breasted chat (*Icteria virens*), and yellow warbler (*Dendroica petechia*). Assisted in preparation of a Regional General Permit for the City of San Marcos.

Hallmark Project, Hallmark Communities, San Diego County, California. As project lead, conducted biological reconnaissance surveys and prepared a biological constraints analysis and BTR for the proposed residential development project.

ARCO AM/PM, Bonsall Service Station, San Diego County, California. As project assistant, conducted general biological reconnaissance surveys throughout the site. Prepared a biological resources letter report summarizing the results and proposed impacts from the project.

Sumida Property, San Diego County, California. As a field biologist, conducted general biological reconnaissance surveys throughout the site. Prepared a biological resources letter report summarizing the results and proposed impacts from the project. Mapped the extent of CDFW riparian habitat.

Colton Reclamation Facility, CalPortland Company, Riverside County, California. Served as project manager for collecting vegetation data for future reclamation of the mining facility. Conducted vegetation mapping for the undeveloped project site and collected data for density, percentage cover, and species richness along 50-meter transects. Prepared a summary memorandum describing the methods and results.

Focused Wildlife Surveys, Yaqui Pass and Viking Farms, Borrego Springs, California. As field assistant, conducted general nocturnal and diurnal surveys with a focus on special-status wildlife species on two proposed development properties. Conducted general plants surveys with a focus on special-status plant species.

Trabuco Canyon, The Planning Center, County of Orange, California. As project biologist, conducted focused surveys for least Bell's vireo on the 1,110-acre site in Orange County. Involved hiking in steep, rough terrain and collecting standardized data on field maps.

Ferber Ranch (Trabuco Canyon), Orange County, California. As project assistant, assisted with special-status plant surveys and focused surveys for least Bell's vireo. Involved steep, rough terrain and collecting standardized data on field maps.

High Tech Project, High Tech High Learning, City of Chula Vista, California. As field assistant, reviewed southwestern willow flycatcher (*Empidonax traillii extimus*) and least Bell's vireo survey records and assisted with writing the focused survey report.

Energy

Confidential Solar Project, Confidential Client, San Diego County, California. Serving as the lead biologist for a solar project within the County of San Diego. Conducted and/or managed biological surveys for Quino checkerspot butterfly, burrowing owl, rare plants, jurisdictional resources, vegetation mapping, bats, and more. Prepared a county BTR and appendices following the county's reporting guidelines and attended meetings with county staff and resource agencies. Assisted with preparation of the project's EIR, which was approved by the County of San Diego Board of Supervisors in August 2021.

Confidential Wind Energy Project Environmental Surveys, Confidential Client, San Diego County, California. Conducted a formal wetland delineation and vegetation mapping in eastern San Diego County on tribal lands. This delineation included mapping of numerous ephemeral drainages, as well as herbaceous wetlands.

Confidential Solar Project Environmental Licensing, Confidential Client, Washoe County, Nevada. Conducted a formal wetland delineation and determination based on the regulations and guidance of the Wetland Delineation Manual, the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), and A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual. While not required by the State of Nevada, the Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants were also reviewed as part of the delineation because the project site has similar geomorphic processes as those addressed in the 2014 California Energy Commission guidelines.

Confidential Solar Energy Project, Confidential Client, Kern County, California. Served as field lead for the formal jurisdictional delineation. Specifically, the wetland delineation included mapping waters defined in the Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants in addition to the USACE methods. Also conducted vegetation mapping and focused rare plant surveys.

Confidential Solar Project, Confidential Client, Kern County, California. Served as field lead for the formal jurisdictional delineation. Specifically, the wetland delineation included mapping waters defined in the Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants. Prepared the jurisdictional delineation report describing the methods and results of this survey.

Confidential Solar Project, Confidential Client, San Diego County, California. Served as project assistant for biology-related tasks. Conducted vegetation mapping in accordance with County of San Diego guidelines, conducted a habitat assessment and focused surveys for Quino checkerspot butterfly, mapped rare plants during focused surveys, and conducted a formal wetland delineation and determination based on the regulations and guidance of USACE, RWQCB, and CDFW. The delineation included mapping waters defined in the Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants in addition to the USACE methods. Prepared the County of San Diego BTR and associated reports and assisted with the biological resources section of the EIR and response to public comments. Successfully permitted the 304-acre solar project; the project applicant was issued a Nationwide Permit Verification through NWP 51, Land-Based Renewable Energy Generation Facilities through USACE; a Stream Alteration Agreement through CDFW; and a Water Quality Certification through RWQCB. The permitting process included obtaining a linear foot waiver through USACE and coordination with the State Historic Preservation Office.

Confidential Solar Project, Confidential Client, San Diego County, California. As project assistant and field biologist, conducted vegetation mapping and focused rare plant surveys, and assisted the permitted Quino checkerspot butterfly biologist during focused surveys for the 420-acre solar development site located within an unincorporated section of San Diego County. Prepared the BTR in accordance with the County of San Diego's guidelines and attended public outreach meetings.

Confidential Solar Project, Confidential Client, San Diego County, California. As project assistant and field biologist, conducted a formal wetland delineation and determination based on the regulations of USACE, RWQCB, and CDFW for the 765-acre solar development site located within an unincorporated section of San Diego County. Conducted vegetation mapping, prepared the BTR in accordance with the County of San Diego's guidelines, and attended public outreach meetings.

Ocotillo Wells Solar Farm, The Gildred Companies, San Diego County, California. As project task manager and field biologist, performed a formal jurisdictional delineation and mapped a series of ephemeral stream channels throughout the property. Prepared the BTR in accordance with the County of San Diego's guidelines.

East County Substation/Tule Wind/Energia Sierra Juarez Gen-Tie Project EIR/Environmental Impact Statement (EIS), San Diego Gas and Electric, San Diego County, California. As project assistant, assisted with review of environmental and focused survey reports for multiple years and various project sites. Assisted in the preparation of EIR/EIS biological resources section as required by the California Public Utilities Commission and Bureau of Land Management. Project includes a substation, approximately 14 miles of new transmission line, and rebuild of the Boulevard Substation. In addition to addressing the new substation project, the EIR/EIS also addressed, as "connected actions," a wind energy project encompassing approximately 15,000 acres and a generation tie-in required for a transmission line to connect to a wind energy project in Baja California, Mexico. Also attended project planning meetings and provided guidance on key biological issues. Assisted with response to comments and revisions to the Draft EIR/EIS.

Borrego Springs Gildred Site, The Gildred Companies, San Diego County, California. Conducted field work for this project (vegetation mapping and formal jurisdictional delineation); prepared BTR per the County of San Diego's guidelines. Responded to public comments on the biology section of the EIR.

Daggett Ridge Wind Energy Project EIS/EIR, Bureau of Land Management and County of San Bernardino, San Bernardino County, California. Served as project assistant for preparation of the joint EIS/EIR for the proposed Daggett Ridge Wind Energy Project, which involves an 82.5-megawatt wind energy-generating facility on approximately 2,000 acres of federal and private lands in the Barstow/Daggett unincorporated area of San Bernardino County.

Tehachapi Renewable Transmission Project, Southern California Edison (SCE), Los Angeles and San Bernardino Counties, California. As biologist, assisted senior botanists in conducting surveys for special-status plant species and vegetation mapping. This included mapping vegetation communities and plant species using the Trimble Yuma geographic information system (GIS)/GPS Data Collection System. Served as biological monitor for construction-related activities. Attended construction-monitoring workshop and Worker Environmental Awareness Program/safety training. Construction-monitoring activities included morning and evening sweeps of the construction areas and monitoring crews for compliance during vegetation removal, mobilization, and tower setup activities. Other activities included establishing environmentally sensitive areas for active nests and monitoring and updating active nests. Reported new nests observed. Field Reporting Environmental Database reports were completed each day to record daily monitoring activities and nest updates.

Devers Transmission Line, SCE, Riverside County, California. As field assistant, performed mapping of jurisdictional drainages and vegetation for future transmission line towers in the Sonoran Desert. Task included familiarity with the flora and fauna of the desert, vegetation keys, and field mapping forms. More than 500 towers were mapped in a 4-month period. Also conducted monitoring for geotechnical testing over a 3-month period to assist with avoidance of sensitive areas and monitor for desert tortoise (*Gopherus agassizii*), Coachella Valley fringe-toed lizard (*Uma inornata*), and nesting raptors.

Hazard Tree Removal Project, SCE, San Bernardino and San Jacinto Mountains, California. The project area encompasses 106 square miles, an estimated 62,000 acres of tree removal, more than 22,000 power poles, and 538 linear miles of utility lines. As biologist, performed biological monitoring for trees affected by bark beetle infestations, including special-status plant surveys and nesting wildlife species, and provided recommendations

for removing trees in environmentally sensitive areas (i.e., riparian zones). In addition, assisted with biological monitoring for trees affected by the 2007 fires in the Lake Arrowhead area.

Focused Field Surveys and Monitoring, SCE, San Bernardino County, California. As a field assistant, performed focused surveys for special-status species, including burrowing owl and desert tortoise, in areas designated for new tower construction. Served as a construction monitor for pole removal and replacement, conducted an environmental tailboard meeting, documented special-status species, avoided vegetation and special-status species, and ensured removal of all trash, including microtrash.

Prado 12 Kilovolt, SCE, Riverside County, California. As field biologist, conducted a general biological reconnaissance survey for a series of proposed pole maintenance activities. Conducted a formal wetlands jurisdictional delineation for USACE wetlands and waters. Prepared a preliminary jurisdictional report.

Fingal Transmission Line, SCE, Riverside County, California. Assisted with special-status plant species surveys along an existing transmission line to provide data in cases where emergency work that impacted special-status plant species would need to be conducted.

Holcomb Valley Boy Scout Ranch Emergency Tower Repair, SCE, San Bernardino County, California. Served as biological monitor for pole installation activities in biologically sensitive areas to ensure avoidance of impacts to potentially occurring U.S. Forest Service threatened, endangered, and sensitive species such as ash-gray paintbrush (*Castilleja cinerea*), southern mountain buckwheat (*Eriogonum kennedyi* var. *austromontanum*), and California dandelion (*Taraxacum californicum*).

Resource Management

Casey's June Beetles Project, USFWS, Riverside County, California. Conducted trapping surveys for Casey's June beetle (*Dinacoma caseyi*) in Palm Springs Wash for USFWS. Handled and documented Casey's June beetles.

Foss Lake Vector Habitat Remediation Plan, Center of Natural Lands Management, San Diego County, California. As project task manager for biological resource tasks, conducted vegetation mapping and a formal wetlands jurisdictional delineation, and assisted with least Bell's vireo surveys. Prepared the BTR.

Habitat Assessment, Riverside Conservation Agency, Riverside County, California. As field assistant, performed a habitat assessment for Quino checkerspot butterfly, a federally endangered species. The habitat assessment consisted of documenting butterfly species and surveying for Quino host plants.

Salton Sea Species Conservation Habitat Project, Cardno ENTRIX, Imperial County, California. As project assistant, assisted in species research for designing a series of ponds adjacent to the Salton Sea that will provide habitat for target bird species. Assisted in preparing the biological assessment.

Rancho Mission Viejo, Rancho Mission Viejo Land Trust, Orange County, California. Conducted focused coastal cactus wren (*Campylorhynchus brunneicapillus*) surveys within suitable habitat. Multiple cactus wrens were observed and mapped.

Morro Bay National Estuary Program, Morro Bay, California. As a water quality testing volunteer, performed water quality testing, including testing for nitrogen, phosphates, dissolved oxygen, turbidity, pH, and flow (using FloMaster).

Multiple Species Conservation Program Section, City of San Diego, California. Performed biological surveys for native vegetation using a hand-held GIS unit and uploaded new GIS information into the database. Reviewed plans

for properties within the Multiple Habitat Plan Area, ensuring that the correct guidelines were followed for a given plan (e.g., riparian buffer zones, landscape plans). Revised management plans per comments from local organizations and agencies. Organized property information for land put into a trust as part of mitigation measures.

Championship Off-Road Racing Project, City of Chula Vista, California. Conducted monitoring during races to assess the impacts of race activity on known occurrences of special-status bird species. Yellow-breasted chat was observed.

Transportation

Mid-County Parkway Project, County of Riverside, California. Field biologist for study area (approximately 1.1 to 4 miles in width and approximately 32 miles in length). Performed multiple focused surveys for least Bell's vireo and other special-status wildlife surveys for the mitigation areas. Identified nests for Cooper's hawk (*Accipiter cooperi*) and red-tailed hawk (*Buteo jamaicensis*). Conducted general plants surveys with a focus on special-status plant species for the mitigation areas.

Brown-Headed Cowbird Trapping Program, Oceanside-to-Escondido Rail Project, North County Transit District, City of Oceanside, California. Responsible for daily operation and maintenance of a brown-headed cowbird (*Molothrus ater*) trapping program along Loma Alta Creek in the City of Oceanside. The trapping program is a USFWS requirement as mitigation for impacts to habitat for federally listed species, including least Bell's vireo, southwestern willow flycatcher, and California gnatcatcher.

Water/Wastewater

Multiple Project, Department of Water Resources, California. Leading the jurisdictional delineation efforts for multiple large DWR projects that span numerous counties and ecoregions in California. Mapped vegetation in various locations in California and prepared guidance documents, quality control, and coordination for these ongoing efforts. Prepared Aquatic Resource Delineation Reports for submittal to USACE and associated reports for state agencies.

North Avenue Channel Protection Project, City of Oceanside, California. As field biologist and project assistant, performed a formal wetlands jurisdictional delineation and mapped wetlands and waters under the jurisdiction of USACE, RWQCB, and CDFW, and also mapped vegetation. Additional duties included preparation of the BTR; preparation of the joint permit applications for a 404 Pre-Construction Notification for a Nationwide Permit, 401 Water Quality Certification, and 1600 Streambed Alteration Agreement; attending site visits and meetings with USACE, RWQCB, and CDFW; and ongoing coordination to obtain project authorizations.

Buena Vista Creek, City of Carlsbad, San Diego County, California. Served as a field biologist to conduct a formal wetlands jurisdictional delineation and mapped wetlands and waters under the jurisdiction of USACE, RWQCB, CDFW, and the California Coastal Commission. Conducted weekly nesting bird surveys during invasive species removal. Identified a nest of Anna's hummingbird (*Calypte anna*) and established a buffer around the nest until it was inactive.

Pamo Valley Control Site, City of San Diego, San Diego County, California. Conducted riparian bird and nesting bird surveys along Santa Ysabel Creek. Additional duties included preparation of the BTR.

Upper Santa Ana River Wash Plan, County of Riverside, California. As field assistant, revised the BTR and response to comments for the Upper Santa Ana River Wash Plan. This included compiling data from multiple sources, conducting habitat suitability models for special-status species, coordinating graphics, and writing the report.

City of Carlsbad Sewer Extension, City of Carlsbad, California. As project manager, managed and conducted the jurisdictional delineation and biological reconnaissance survey and prepared the BTR for two sewer extension projects within San Diego Multiple Species Habitat Conservation Plan areas. Coordinated monitoring during construction activities to avoid impacts to nesting birds, jurisdictional waters, and California adolphia.

Santa Clara River Watershed Basin Analysis for the Newhall Land and Farming Company Project, Newhall Land and Farming Company, Counties of Ventura and Los Angeles, California. As project assistant, researched permits issued by USACE and CDFW and other documents related to the Santa Clara River Watershed Basin Analysis regarding impacts to jurisdictional waters and sensitive plant and wildlife species and the mitigation for these impacts.

San Joaquin Marsh Natural Treatment System, Irvine Ranch Water District, Orange County, California. As a field biologist and project assistant, assisted in preparation of agency permit applications. Performed surveys for special-status wildlife species and mapped white-tailed kite, Caspian tern (*Hydroprogne caspia*), and osprey (*Pandion haliaetus*).

Cañada Gobernadora Multipurpose Basin Project, Santa Margarita Water District, Rancho Santa Margarita, California. As project assistant, assisted with writing the BTR for the Cañada Gobernadora Multipurpose Basin project, which is located next to the Cañada Gobernadora Creek and north of the Gobernadora Ecological Reserve Area.

As-Needed Environmental Services, South Orange County Wastewater Authority, Laguna Niguel, California. Conducted biological construction monitoring for the emergency repair of export sludge, force main pipelines adjacent to Aliso Creek to ensure compliance with conditions within the Coastal Development Permit and Regional General Permit.

San Timoteo Creek Alternative Discharge Outfall, Yucaipa Valley Water District, Riverside and San Bernardino Counties, California. Conducted biological monitoring for construction of the non-potable water outfall on San Timoteo Creek to ensure compliance with the Section 1602 Streambed Alteration Agreement. Monitoring included photo documentation and completion of a Site Observation Report.

San Vicente Dam Project, San Diego County, California. Served as a biological monitor and conducted environmental training for new employees. Performed construction monitoring for removal of vegetation, including relocating snakes and common poorwill (*Phalaenoptilus nuttallii*).

Miramar Trunk Sewer Replacement and Permanent Access Project, City of San Diego Metropolitan Wastewater Department, San Diego, California. As field assistant, performed construction monitoring for special-status wildlife species for the sewer replacement in Rose Canyon.

As-Needed Biological Services, San Diego Metropolitan Wastewater Department, San Diego, California. Served as project assistant. Reviewed and analyzed plant survey forms and incorporated pertinent information into a biological report.

Aliso Creek Water Quality SUPER Project, South Orange County Wastewater Authority, Laguna Niguel, California. As project assistant, reviewed southwestern willow flycatcher and least Bell's vireo survey records and assisted with writing the focused survey report.

Specialized Training

- SWAMP Bioassessment Procedures: Benthic Macroinvertebrate, Algae and Physical Habitat Field Training, Dudek. 2021.

- Hydric Soil Indicators for Regional Supplements, Portland State University. 2021
- The Western Section of the Wildlife Society Annual Conference. Annually, 2010-Present.
- Desert Washes and Waters Training and Field Workshop. January 2013. Coachella Valley, California.
- San Joaquin Kit Fox Ecology, Conservation, and Survey Techniques. The Western Section of the Wildlife Society. July 2013.
- Arid Saline Wetlands Training and Field Workshop. March 2012. Coachella Valley, California.
- Introduction to Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop. Desert Tortoise Council Workshop. November 2011. Ridgecrest, California.
- 40-Hour Wetland Delineation Training, Wetland Training Institute. July 2011.
- Plant Families Identification: Series IV. Rancho Santa Ana Botanical Garden. Claremont, California. 2010.
- Flora of Joshua Tree. Desert Institute. 2010. Joshua Tree National Park, California.
- Orange County Trackers. Basic Tracking and Observing Class. Orange County Trackers. October 2009. Irvine, California.
- San Diego Natural History Museum. "*Rhamnaceae*." February 2009. San Diego, California.
- Basic Raptor Identification: Southern California Diurnal Raptors. Sea and Sage Audubon Society. February 2009. Huntington Beach, California.
- Birds of Southern California. Sea and Sage Audubon Society. November 2008–January 2009.Huntington Beach, California.
- Plant Terminology and Identification in San Diego County. San Diego State University and Field. April 2008. California.
- Observing Birds Workshop. Sea and Sage Audubon Society. January–March 2008. Huntington Beach, California.
- Introduction to the Morphology and Identification of Flowering Plants. Friends of the Jepson Herbarium. March 2007. University of California, Berkeley.
- Association of Environmental Professionals CEQA Workshop. November 2006.

Kathleen Dayton

BIOLOGIST

Kathleen Dayton (*KATH-leen DAY-tun; she/her*) is a biologist with 14 years' experience in general biological resource surveys, vegetation mapping, rare plant surveys, various wildlife surveys, native grasslands, wetland delineations, data collection and analysis, biological technical report preparation, wetland permitting, endangered species permitting, and project management. Ms. Dayton has excellent field skills and leads teams of biologists for vegetation mapping and monitoring and rare plant monitoring and surveys. She has exceptional technical writing skills and is an effective communicator.

Education

University of California, San Diego
BS, Environmental Systems: Ecology, Behavior, and Evolution, 2007

Project Experience

Development

Hesperia Commerce Center II, Covington Group Inc., Hesperia, California. Conducted rare plant surveys and desert native plants mapping.

Moonlight Station, Raintree Encinitas LLC, Encinitas, California. Prepared a biological technical report for a project site in the coastal zone of Encinitas.

Quail Meadows Apartments, Encinitas, California. Coordinated biological monitoring of nonnative vegetation removal.

Crouch Street Apartments, JPI Real Estate Acquisition LLC, Oceanside, California. Conducted rare plant surveys and assisted with coastal California gnatcatcher (*Polioptila californica californica*) surveys.

Fyfe Family Residence, Fyfe Family, Carlsbad, California. Conducted vegetation mapping.

United States Gypsum Mine Modernization and Expansion Project Mitigation, U.S. Gypsum Company, Borrego Springs, California. Conducted an episodic riverine California Rapid Assessment Method on a desert site in support of mitigation for impacts to waters of the state.

Church Residence, McCullough Design Development, Carlsbad, California. Managed the biological resource assessment for a residential development along the north shore of the Agua Hedionda Lagoon. Conducted general reconnaissance, vegetation mapping, and a jurisdictional delineation on site. Prepared the biological technical report, which included compliance with the Carlsbad Habitat Management Plan (HMP).

Martin Residence, Howard Anderson and Associates Architects, Carlsbad, California. Managed the biological resource assessment for a residential development along the north shore of the Agua Hedionda Lagoon. Conducted general reconnaissance, vegetation mapping, and a jurisdictional delineation on site. Prepared the biological technical report, which included compliance with the Carlsbad HMP.

Cannon Road Project, Caruso Acquisition Co. II LLC, Carlsbad, California. Participated in proposal development, reviewed botanical data, and assisted with vegetation mapping refinements for this project located along the south shore of the Agua Hedionda Lagoon. The project was subject to the Carlsbad HMP and California coastal zone regulations.

Inns at Buena Vista Creek Project, Jenna Development Inc., Carlsbad and Oceanside, California. Conducted rare plant surveys and assisted with preparing the biological technical report in accordance with requirements in the Carlsbad HMP and Oceanside Subarea Plan as well as California coastal zone considerations.

Alta Mixed-Use Development, Pr II/Wood Oceanside LLC, Oceanside, California. Managed the biological component of the project. Conducted a general reconnaissance and vegetation mapping on site. Prepared the biological technical report, consistent with the Oceanside Subarea Plan.

Grace International Property, Grace International Churches and Ministries Inc., Oceanside, California. Managed and prepared the biological constraints analysis for a property located in the Wildlife Corridor Planning Zone of the Oceanside Subarea Plan. Conducted a general reconnaissance survey and vegetation mapping on site.

Various Projects, Newhall Land and Farming Company, Los Angeles County, California. Managed botanical field surveys of teams of several biologists on more than 1,000 acres of habitat of mainly coastal sage scrub and chaparral. Fieldwork included mapping host plants for San Emigdio blue butterfly (*Plebejus emigdionis*), special-status plant focused surveys, and vegetation mapping in accordance with the 2019 California Department of Fish and Wildlife (CDFW) Natural Communities List. Conducted data review and compilation and report coordination and review. Also assisted with the preparation of biological resource reports for various projects to support California Environmental Quality Act (CEQA) documents.

Villamontes-Torrey Del Mar, D.R. Horton, San Diego, California. Compiled data used to prepare the biological technical report, researched background information on different vegetation communities and special-status species, and wrote portions of the biological technical report, draft environmental impact report (EIR), framework resource management plan, and 2081 permit for state-listed species.

Biological Technical Report and EIR, Confidential Client, Tulare County, California. Led botanical surveys over hundreds of acres with a team of biologists. Assisted in the preparation of the biological technical report and the biota section of the EIR.

North River Farms Technical Studies, The NRF Project Owner LLC, Oceanside, California. Conducted the jurisdictional delineation for the project. Assisted in preparing the biological technical report to analyze biological resources present as well as those impacted by the project within the regulatory context of the Oceanside Subarea Plan.

Otay Ranch Village Four, Otay Valley Quarry LLC, Chula Vista, California. Conducted rare plant surveys, including focused surveys for Otay tarplant (*Deinandra conjugens*).

Proctor Valley Villages 14, Jackson Pendo Development, Chula Vista, California. Led botanical surveys on an approximately 600-acre project site in southern San Diego County.

Surfer's Point Biological Technical Report, Surfer's Point LLC, Encinitas, California. Conducted the jurisdictional delineation for the project and assisted in preparing the biological technical report to analyze biological resources present as well as those impacted by the project within the regulatory context of the Draft Encinitas Subarea Plan.

Santa Barbara Ranch, Standard Portfolios LLC, Santa Barbara County, California. Assisted with a native grassland assessment that involved recording quantitative data along transects. Analyzed data and presented findings in a report.

Roselle Street Project Site, CLL-Roselle LLC, San Diego, California. Assisted in preparation of a biological resources letter report that addressed the development of a storage yard on a site with sensitive wetland habitat.

Dos Pueblos Naples Property, CPH Dos Pueblos Associates, Santa Barbara County, California. Assisted with preparation of a biologist constraints report, which included an assessment of native grasslands that synthesized quantitative transect data to determine compliance with different resource agency criteria.

West Coyote Hills, Chevron/Pacific Coast Homes, Fullerton, California. Reviewed and provided responses to comments on revised versions of the public EIR. Also conducted vegetation mapping in the field and wrote the vegetation descriptions to be included in the report documenting survey results.

Ferber Ranch (Trabuco Canyon), The Planning Center, Orange County, California. Assisted with special-status plant species surveys on a proposed development project. Surveys involved hiking in steep, rough terrain and collecting standardized data on field maps.

The Ranch at Yaqui Pass Viking Ranch Project, Giachino Development Company, San Diego County, California. Assisted with special-status plant species surveys on a proposed development project in the desert region of San Diego County.

Otay Ranch University Villages, SSBT LCRE V LLC, San Diego County, California. Assisted with vegetation mapping on areas proposed to be exchanges between development and preserve. Mapping was conducted in accordance with Robert F. Holland's *Preliminary Descriptions of the Terrestrial Natural Communities of California* (1986). Conducted surveys for Otay tarplant and other special-status species and drafted a report that included the methods, results, and impact analysis for different resources over several years of surveying.

Copley Press 25 Acres, City of San Diego Development Services, San Diego County, California. In 2011, provided biological resources monitoring for geotechnical activities conducted on a proposed development site. Monitoring was done to ensure avoidance and minimization of impacts to sensitive biological resources to the maximum extent feasible and to ensure specific measures for the protection of sensitive habitats. Monitoring included holding an environmental awareness meeting with the crew prior to work activities, photo documentation, and completion of a site observation report (SOR).

Otay Ranch Resort Site Village 13, Baldwin & Sons, San Diego County, California. In 2009 and 2010, monitored geotechnical studies to limit impacts to biological resources by determining the least accessed route to a geotechnical boring/trenching location that was least likely to impact areas with native vegetation, jurisdictional waterways, and/or Quino checkerspot (*Euphydryas editha quino*) host plant. Project lasted two seasons for approximately 2 weeks each time. In 2020, conducted a jurisdictional delineation and assessment of seasonal basins/vernal pools.

Tejon Mountain Village Project, Tejon Ranch Company, Kern County, California. Compiled data used to prepare the biological technical report, researched background information on different vegetation communities and special-status species, and wrote portions of the biological technical report, draft EIR, framework resource management plan, and 2081 permit for state-listed species.

Tejon Industrial Complex, Tejon Ranch Company, Kern County, California. Prepared a proposal outlining the tasks to be completed for a resource management and monitoring plan and property analysis record for proposed mitigation sites. Assisted in preparing the plan and the property analysis record and collected relevant biological reconnaissance data in the field.

International Traders Center Biological Services, International Traders Center, San Diego, California. Assisted with preparation of a biological resources letter report for the maintenance of an enterprise that contains sensitive wetland habitats. The report included recommendations to improve the quality of biological resources on site, including wetlands restoration and enhancement.

Levie Tentative Parcel Map, Laret Engineering, Rancho Santa Fe, California. Assisted with preparation of the biological technical report for a proposed residential development in an area considered sensitive under San Diego's Multiple Habitat Conservation Plan.

Education

Sanderling Waldorf School Project, Waldorf in North Coastal Inc., Encinitas, California. Managed development of a school project on a site with coastal California gnatcatcher (*Polioptila californica californica*) and willow flycatcher (*Empidonax traillii*) in the vicinity. Coordinated with the wildlife agencies, California Coastal Commission, and City of Encinitas to determine ideal avoidance and minimization of potential impacts to biological resources. Prepared a wetlands buffer reduction memo, biological technical report, and coastal sage scrub restoration plan.

Eastside Center and Westside Center Project, Victor Valley Community College District, San Bernardino County, California. Assisted in conducting special-status plant species surveys at both the Eastside Center and Westside Center project sites in the Mojave Desert.

Energy

Tehachapi Renewable Transmission Project, Southern California Edison (SCE), Los Angeles and San Bernardino Counties, California. Served as biological monitor for construction-related activities for the project. Attended a construction monitoring workshop and worker environmental awareness program/safety training. Construction monitoring activities included morning and evening sweeps of the construction areas and monitoring crews for compliance during tower setup activities. Other activities included establishing environmentally sensitive areas for active nests and monitoring and updating active nests. Reported new observed nests. Field Reporting Environmental Database reports were completed each day to discuss daily monitoring activities and nest updates.

Mohave Generating Station, SCE, Laughlin, Nevada. In 2009, conducted a general biological resources assessment of the approximately 2,500-acre project site that included the use of wildlife cameras and Anabat equipment for detection of bat species. Desert tortoise (*Gopherus agassizii*) was a species of concern for this project; although, no burrows or individuals were detected during the assessment.

Hazard Tree Removal Project, SCE, San Bernardino County, California. Conducted nocturnal and diurnal surveys for arroyo toad (*Bufo californicus*), California red-legged frog (*Rana draytonii*), and mountain yellow-legged frog (*Rana muscosa*) in selected drainages within the San Bernardino Mountains and San Jacinto Mountains. The surveys support implementation of a bark beetle tree removal project along existing power lines within San Bernardino County. The surveys were conducted to ensure avoidance of impacts to special-status amphibian species and their habitats. Surveys were negative.

Proposed Grid Reliability Maintenance Project, Intake 16 kV Cutover, SCE, Kern and Tulare Counties, California. Prepared for and conducted botanical surveys along a transmission route requiring maintenance.

Tehachapi Renewable Transmission Project, SCE, Southern California. Performed focused surveys for special-status plant species and conducted vegetation mapping and tree inventory. This included familiarity with the local flora, use of specific field mapping and rare plant forms, and use of a YUMA Geographic Positioning System.

Deteriorated Pole Replacement Project, SCE, San Bernardino County, California. Independently conducted a special-status plant species survey at Newberry Springs on lands administered by the Bureau of Land Management. Conducted a literature review and revised the report based on findings.

Double Transmission Line, SCE, San Bernardino County, California. Assisted with special-status plant species surveys along an existing transmission line to provide data in cases where emergency work that impacted special-status plant species would need to be conducted. Involved working in sensitive habitat areas, including pebble plains and areas with carbonate soils.

Devers–Palo Verde No. 2 500 kV Transmission Line, SCE, Riverside County, California. Assisted in field surveys for desert tortoise, Palm Springs round-tailed ground squirrel (*Spermophilus tereticaudus chlorus*), and Coachella Valley fringe-toed lizard (*Uma inornata*). Although surveys for these species were negative, future surveys on this project resulted in incidental detection of desert tortoise. Also assisted in field surveys for special-status plants and bats. Conducted focused burrowing owl (*Athene cunicularia*) surveys that included a habitat assessment and resulted in visual observation of the species and active burrows. Conducted jurisdictional delineations. Maintained a database of and reviewed collected data and prepared various reports that discussed the results of surveys.

Desert Renewable Energy Conservation Plan, California Energy Commission and Aspen Environmental Group, Southern California. Contributed to development of a plan in which renewable energy and transmission development projects in California's deserts will conserve natural communities and species pursuant to the California Natural Community Conservation Planning Act and the federal Endangered Species Act. Wrote sections of the baseline biology report, developed a species matrix used to determine species coverage, researched species information to write detailed species profiles, and reviewed species habitat models that were created in a geographic information system.

Hazard Tree Removal Project, SCE, Southern California. Provided monitoring for the cutting of hazard trees to protect biological resources in the surrounding areas for this project. Biological resources included sensitive vegetation communities as well as habitat for special-status wildlife and plant species.

Municipal

South Shore of Agua Hedionda Lagoon Trail Project, City of Carlsbad, California. Managed a trail project located in the coastal zone south of Agua Hedionda Lagoon. Biological surveys included vegetation mapping, jurisdictional delineation, focused gnatcatcher surveys, focused riparian bird surveys, and focused burrowing owl surveys. Prepared a biological technical report documenting survey results and proposing avoidance, minimization, and mitigation measures to reduce significant impacts to biological resources.

First San Diego River Improvement Project, City of San Diego, California. Prepared a biological technical report for a dredging project located in the San Diego River. Report was consistent with the City of San Diego's 2018 Biology Guidelines.

Mitigation Services, City of San Diego, California. Developed a tool used to track and calculate mitigation needs.

Wilson Creek Basin III, City of Yucaipa, California. Conducted rare plant surveys.

As-Needed Environmental Services, City of San Diego, California. Led and conducted rare plant surveys over approximately 250 acres. Incorporated rare plant data into the biological technical report.

Resource Management

Talbert Regional Park Master Plan Project, Orange County Public Works, Costa Mesa, California. Conducted rare plant surveys at Talbert Regional Park.

Woolly Star Preserve Area Slender-Horned Spineflower Surveys, County of San Bernardino, San Bernardino County, California. Reviewed the 2020 report documenting patch variability and distribution of the federally endangered slender-horned spineflower (*Dodecahema leptoceras*) within and outside of the Woolly Star Preserve Area. Document review included placing results in the context of the Santa Ana River Wooly Star Preserve Area Final Multi-Species HMP and interpreting results in the context of the slender-horned spineflower's life history and environmental conditions.

Middle Canyon Spring, Newhall Land and Farming Company, Los Angeles County, California. Manages long-term monitoring of a unique spring habitat that supports special-status Newhall sunflower (*Helianthus inexpectatus*). Monitoring includes annual leaf area index measurements, annual vegetation relevé plots, quarterly photo documentation, and an annual census of the Newhall sunflower. Reporting includes annual data analysis and comparison of that data to previous trends and management thresholds.

Habitat Monitoring Program, Yucaipa Valley Water District, Yucaipa, California. Led and conducted a long-term vegetation monitoring program in the San Timoteo Creek study area over several years to evaluate the potential impact to riparian habitat resulting from the reduced discharge of recycled water to San Timoteo Creek. Prepared biological components of the annual reports for submittal to the U.S. Environmental Protection Agency and U.S. Fish and Wildlife Service that document the findings from the previous water year and evaluate conditions relative to the baseline condition.

Encinitas Rail Trail, KTU&A, San Diego County, California. Conducted rare plant surveys and a review of potentially jurisdictional resources along the rail line.

Malibu Campgrounds, Mountains Recreation & Conservation Authority (MRCA), County of Los Angeles, California. Assisted with special-status plant species surveys for the development of an interconnected system of trails.

Simon and Gower Preserves, County of San Diego, California. Assisted with special-status plant species surveys. Also assisted with synthesizing the data collected and preparing a biological resources report.

Otay Preserve, County of San Diego, California. Assisted with special-status plant species surveys. Surveys involved hiking in steep, rough terrain and collecting standardized data on field maps. Prepared a draft of the existing conditions report.

Spineflower Conservation Plan, Newhall Land and Farming Company, Los Angeles County, California. Acts as interim preserve manager for a series of spineflower preserves near Santa Clarita, California. Management includes quarterly monitoring, annual quantitative monitoring coordination and data analysis, coordination of technical advisory subgroup members and adaptive management working group members, and reporting to document compliance with the incidental take permit and Spineflower Conservation Plan. Develops annual work plans that include adaptive management, such as focused weed treatment, and implements management actions. Conducts Argentine ant monitoring. Assisted with preparation of a spineflower pollination study in 2019. Between 2011 and 2021, organized and assisted with plant surveys to document the extent and conditions of spineflower populations and prepared a report describing the methods and results of these surveys.

Foothill/Trabuco Specific Plan, Property Owners Consortium, Orange County, California. Compiled a list of species proposed for coverage under a habitat conservation plan as well as the data contributing to the analysis of the selection criteria.

Management Action Plan, Rancho Mission Viejo Land Trust, Orange County, California. Led and performed vegetation monitoring within riparian/wetland, oak woodlands, and coastal sage scrub habitats following an established protocol involving various methods and quantitative assessments of vegetation characteristics. Aided in developing the digital data collection platform, analyzing the data, and preparing the report. Led and performed monitoring of Argentine ants in 2019, including data analysis and reporting. Assisted with avian point counts in 2021.

Nelson-Sloan Quarry Reclamation Project, URS, San Diego, California. Performed focused surveys for special-status plant species and coordinated vegetation mapping and a jurisdictional delineation. The methods and results of these studies were then incorporated into a biological technical report.

Del Dios, Escondido Creek, and San Luis Rey Preserves, County of San Diego, California. Coordinated and assisted with special-status plant species surveys on three preserves in San Diego County. Also assisted with organizing the data collected and preparing existing conditions biological reports that included all surveys conducted.

Transportation

Mid-Coast Corridor Transit Project, San Diego Association of Governments and California Department of Transportation, San Diego County, California. Assisted with preparation of a conceptual alternatives biological resources screening analysis, which involved synthesizing information gathered from various databases. Conducted special-status plant species surveys and a jurisdictional delineation for portions of the project area. Assisted with a jurisdictional delineation for portions of the project area.

Tribal

Sycuan 2016 Natural Resources Management Plan Monitoring, Sycuan Band of the Kumeyaay Nation, San Diego County, California. Led an effort to map vegetation—in accordance with *A Manual of California Vegetation II*—over approximately 1,000 acres and helped to refine long-term vegetation monitoring procedures and implement them in the field at more than 20 data stations. Data was collected to support updating the Coastal Sage Scrub Area Specific Adaptive Management Plans.

Tribal Environmental Assessment, Sycuan Band of the Kumeyaay Nation, San Diego County, California. Assisted with a jurisdictional delineation to determine the extent of areas along an approximately 5,000-linear-foot reach of the North Fork Sweetwater River that may be subject to the regulations of the U.S. Army Corps of Engineers.

Water/Wastewater

Lake Drive Storm Drain Improvements Project, City of Encinitas, Encinitas, California. Conducted rare plant surveys and vegetation mapping on a coastal site in Encinitas dominated by southern maritime chaparral and coastal sage scrub. Assisted in coastal California gnatcatcher surveys.

San Joaquin Habitat Conservation Plan, California Department of Water Resources (DWR), Central Valley, California. Coordinated vegetation mapping over thousands of acres in accordance with CDFW's Natural Communities List and *A Manual of California Vegetation*. Conducted quality assurance/quality control on the vegetation map. Coordinated reporting. Also conducted jurisdictional delineation and focused surveys for blunt-nosed leopard lizard (*Gambelia sila*).

Delta Field Division Habitat Conservation Plan, DWR, Delta Region, California. Conducted rare plant surveys.

Delta Dams Safety of Dams, DWR, Delta Region, California. Coordinated vegetation mapping in accordance with CDFW's Natural Communities List and *A Manual of California Vegetation*. Also coordinated rare plant surveys.

Master Storm Water System Maintenance Program, San Bernardino County Flood Control District, San Bernardino County, California. Wrote the 2081 incidental take permit application for the Master Storm Water System Maintenance Program. The permit application sought take for or assumed avoidance of seven wildlife species and eight plant species.

Regional Brineline Extension Project, Yucaipa Valley Water District, Riverside and San Bernardino Counties, California. Assisted with preparation of permit applications to the U.S. Army Corps of Engineers, CDFW, and Santa Ana Regional Water Quality Control Board for extension of the existing Santa Ana Regional Interceptor pipeline by approximately 14 miles, where proposed directional drilling would create potential temporary impacts to jurisdictional water resources.

Foothill Feeder EIR and Permitting, Metropolitan Water District of Southern California, Santa Clarita, California. Assisted with preparation of the biological technical report and EIR biota section.

Project J-600 San Dieguito Pump Station, Santa Fe Irrigation District, San Diego County, California. Managed a project where netting was installed and is regularly monitored to prevent nesting in the project vicinity during the nesting bird season. Project was in compliance with the Migratory Bird Treaty Act.

Capital Improvement Project, Santa Fe Irrigation District, San Diego County, California. Managed a project involving regular nesting bird surveys and coastal California gnatcatcher monitoring.

San Timoteo Creek Alternative Discharge Outfall, Yucaipa Valley Water District, Riverside and San Bernardino Counties, California. In 2011, conducted biological construction monitoring for the construction of the nonpotable water outfall on San Timoteo Creek to ensure compliance with conditions within the Section 1602 Streambed Alteration Agreement. Monitoring included photo documentation and completion of a detailed SOR.

San Diego River and San Vicente Creek Biological and Groundwater Resources Baseline Study, San Diego Public Utilities Department, California. Conducted vegetation mapping along a riparian corridor to facilitate future monitoring and management of biological and groundwater resources during operation of planned groundwater production wells. Prepared a draft of the botanical report to be included as an appendix to the baseline study.

Seeley Wastewater Reclamation Facility Improvements Project, Seeley County Water District, Imperial County, California. Assisted with special-status plant species surveys along the New River on a project in which upgrades to the wastewater treatment plant would affect discharges to the river.

North Agua Hedionda Interceptor Project, City of Carlsbad, California. In 2009, served as lead biological monitor for the installation of underground sewer piping. Conducted preconstruction vegetation mapping and assisted in California gnatcatcher monitoring during the breeding season. Attended weekly construction meetings when necessary and submitted regular SORs as well as a final monitoring report demonstrating compliance with permits. The project required monitoring for approximately 2 months, which served to protect native vegetation and an active gnatcatcher nest.

Cornerstone Lands at Lower Otay Reservoir, San Diego Public Utilities Department, California. Organized and conducted vernal pool plant surveys and documented the methods and results of the surveys in a letter report.

Coastal Treatment Plant Export Sludge Force Main Project, South Orange County Wastewater Authority, Orange County, California. Assisted with special-status plant species surveys at Aliso and Wood Canyons Wilderness Park.

Tijuana River Valley Emergency Maintenance Project, City of San Diego Stormwater Department, California. In 2010, served as a project biologist and was responsible for conducting construction monitoring and ensuring permit compliance for channel maintenance activities. Maintenance activities included using large earthmoving machinery to remove a vast amount of trash and several hundred thousand tons of sediment material from the river valley to create new, large drainage channels within the Tijuana River Valley to better direct stormwater and reduce flooding during storm events. Wrote weekly SORs based on other biologists' daily notes and wrote a final monitoring report that included impact analyses and demonstrated permit compliance. Field monitoring on the project totaled approximately 1 week.

Plano-Tijeras Force Main Spill Site Project, Santa Margarita Water District, Orange County, California. Conducted construction monitoring to ensure permit compliance for sewage spill site remediation activities and berm reconstruction. Wrote daily SORs and provided photo documentation. Participation in project lasted less than 1 week.

Specialized Training

- "SWAMP Bioassessment Procedures: Benthic Macroinvertebrate, Algae and Physical Habitat Field Training," Dudek, September 22, 2021.
- "Measuring & Monitoring Plant Populations," California Native Plant Society, April 24–26, 2019.
- "San Diego Management and Monitoring Program's (SDMMP) Inspect and Manage (IMG) Rare Plant Training," San Diego Management and Monitoring Program. March 2, 2016.
- "Wetland Delineation," Wetland Training Institute Inc, July 25–29, 2011.
- Vegetation Mapping Workshop, California Native Plant Society, CDFW, and Aerial Information Systems, January 31–February 2, 2011.
- Tehachapi Renewable Transmission Project Construction Monitoring Workshop, ICF International, December 1, 2010.
- Worker Environmental Awareness Program/Safety Training Session, Burns & McDonnell Engineering Inc, December 9, 2010.
- "Plant Terminology and Identification in San Diego County," Friends of the Jepson Herbarium, Instructor: Michael G. Simpson, March 21–22, 2008.
- "Plant Families Identification," Rancho Santa Ana Botanical Garden, Instructor: Bob Allen, March 8, 2009.
- "Introduction to Morphology and Identification of Flowering Plants," Friends of the Jepson Herbarium, Instructors: Anna Larsen and Bianca Knoll Nakayama, April 10–13, 2009.
- "Field and Herbarium Identification of Southern California Manzanitas," Rancho Santa Ana Botanical Garden, Instructor Bart O'Brien, February 6, 2010.
- "Conifers of Southern California," Rancho Santa Ana Botanical Garden, Instructor: Lorrae Fuentes, March 6, 2010.
- "Flora of Joshua Tree National Park," Desert Institute, Instructor: Allan Schoenherr, March 20–21, 2010.

Christopher Oesch

HABITAT RESTORATION SPECIALIST, BIOLOGIST

Christopher Oesch is a habitat restoration specialist and biologist with 18 years' experience working on a variety of habitat restoration and aquatic bioassessment projects with Dudek. He is routinely involved in project management, writing and preparation of conceptual mitigation plans and annual biological monitoring reports, biological inventories, aquatic bioassessments, and other field data collection, as well as long-term biological and construction monitoring.

Mr. Oesch has experience on a variety of habitat restoration projects involving freshwater marsh, salt marsh, riparian, urbanized/disturbed, chaparral, stream channel, and coastal sage scrub habitats. He leads Dudek's Southern California benthic macroinvertebrate (BMI) aquatic bioassessment group.

Dudek Project Experience

Development

Wetland and Upland Mitigation Planning – Coastal Treatment Plant Export Sludge Force Main Replacement Project, South Orange County Wastewater Authority, Laguna Niguel, California. Designed a riparian establishment and restoration project to provide suitable riparian habitat while also being resistant to the invasive shothole borer (*Apate terebrans*). This included preparation of a conceptual habitat restoration plan and evaluating existing invasive shothole borer data for the wilderness park. Designed upland restoration site consisting of native grasses and coastal sage scrub species. These habitat restoration efforts are to provide mitigation for impacts associated with the replacement of roughly 16,600 linear feet of existing sludge force main and the installation of channel bank stabilization along the lower reach of Aliso Creek within the biologically and culturally sensitive Aliso and Wood Canyons Wilderness Park.

Aquatic Bioassessment Monitoring Program – San Marcos Creek Walk Project, San Marcos, California. Performed BMI and algae sampling per the Surface Water Ambient Monitoring Program (SWAMP) protocol along San Marcos Creek for the purpose of monitoring effects on the stream from channel reconfiguration and wetland mitigation efforts. Sampling occurs at three locations: upstream, on site, and downstream. Dudek also coordinated with the Regional Water Quality Control Board to optimize the intent of the permit conditions.

Education

Humboldt State University
MS, Environmental Systems, 2003

Eastern Mennonite University
BA, Sustainable Agriculture Development, 1998

Certifications

SWAMP Bioassessment Procedures: Benthic Macroinvertebrate and Algae, CDFW College of Bioassessment, 2011

Basic Wetland Delineation Training, Portland State University, 2006

Wetland Plants of the Pacific Northwest, Portland State University, 2019

Hydric Soils of the Pacific Northwest, Portland State University, 2019

California Rapid Assessment Method for Wetlands Riverine, SCCWRP, 2006

Arid West Regional Supplement Seminar and Field Practicum, Wetland Training Institute, 2010

Aquatic Bioassessment Based Habitat Assessment Protocol Development – Santa Ana Sucker Translocation Plan, San Bernardino Valley Municipal Water District, San Bernardino, California. Functioned as field lead biologist for the team developing site evaluation protocol, utilizing aquatic bioassessment and algae to estimate the feasibility of a reach to support the translocation of the sucker. Included development of scoring system for in-stream life-stage specific habitat for the sucker, and implementation of spring/fall aquatic bioassessments.

Aquatic Bioassessment Study – Trabuco, Orange County Public Works, Orange County, California. Monitored BMI community structure along Trabuco Creek in Orange County. This involved sampling BMI from three pre-defined reaches to characterize BMI communities above and below the mitigation project.

Lake Val Sereno/La Jolla Crossroads Off-Site Mitigation, Garden Communities, Encinitas, California. Project monitor for the La Jolla Crossroads off-site mitigation located at Lake Val Sereno. This project involves the enhancement of 5.37 acres of freshwater wetlands to fulfill the requirements of the following agency permits: U.S. Army Corps of Engineers (ACOE) Nationwide Permit 12; California Department of Fish and Wildlife (CDFW) 1601 agreement; and Regional Water Quality Control Board 401 certification. Duties included advising on the removal of exotic and invasive plant species, documenting progress of planted native species, collecting quantitative transect data, and recommending courses of action to improve site success in meeting performance standards.

Tentative Parcel Map 26363 – Wetland Creation, Enhancement, and Exotic Removal, Newhall Land and Farming Company, Santa Clarita, California. Provided on-site mitigation for the Valencia Commerce Center development. Responsible for site evaluation, conceptual design, and construction documents for creation and enhancement of native riparian vegetation communities, as well as invasive species control in the approximately 50-acre reach of Castaic Creek. Conducted site reconnaissance and mapping of existing vegetation communities and determined potential locations for vegetation community creation and restoration. Efforts also included mapping of existing invasive species, including the giant reed (*Arundo donax*) and tamarisk (*Tamarix ramosissima*). A conceptual restoration plan for creation, enhancement, and exotic species control for the project area was developed that included strategic placement and layout of native vegetation community creation and enhancement plots in locations suited to the dynamic fluvial activity of Castaic Creek. The mitigation program also included quantification of existing invasive vegetation, an initial removal strategy, recommendations for long-term control, and an adaptive management strategy as a restoration contingency.

Aquatic Bioassessment Study – Rare Habitat Baseline Study, Newhall Land and Farming Company, Santa Clarita, California. Implementing methods for monitoring baseline hydrologic conditions in a spring with a rare plant and rare snail. This includes sampling BMI and algae communities using modified SWAMP protocol, and coordinating laboratory analysis, as well as agency reporting.

Poggi Creek Streambed Modification, Otay Ranch Company, Chula Vista, California. Conceptual plan designer for a streambed erosion control project. This grade control structure design uses a low-profile, biodegradable approach to avoid being classified as channel fill. The intended purpose is to prevent streambed scour, encourage sediment deposition, and promote native freshwater plant species establishment.

Torrey Hills Basin Unit 7 Wetland Mitigation, Newland Communities, San Diego County, California. Project monitor for site involving the creation of approximately 3 acres of wetland habitat to mitigate for impacts from the adjacent Torrey Hills housing development. Duties included advising on the removal of exotic and invasive plant species, documenting progress of planted native species, collecting quantitative transect data, and recommending courses of action to troubleshoot hydrologic adversities in the performance of the basin's morphology.

Meadowbrook Villages Development Wetland Mitigation Project, Stewardship Foundation, Escondido, California. Assisted in design of the stormwater detention/wetland creation basin for a retirement development. The basin created opportunity for on-site wetland mitigation and provided increased storm flow storage capacity along Reidy Creek to prevent flooding. Additionally, assisted in preliminary soil sampling and biotic surveying.

Vista Sorrento Parkway Alkali Marsh Mitigation Project, Newland Communities, San Diego, California. Biological monitor responsible for collecting transect data and making recommendations on weed removal and native plant mortality. The project entails creation/enhancement of 1 acre of coastal sage scrub, mulefat scrub (*Baccharis salicifolia*), and salt marsh habitats as mitigation for impacts from the California Department of Transportation Right-of-Way Project.

Rolling Hills Ranch Wetland Mitigation Project, Otay Ranch Company, Chula Vista, California. Assisted in annual monitoring efforts and transect data collection for 2 acres of created wetland habitat. This creation area was in mitigation for the surrounding Rolling Hills Ranch housing development.

Green Valley Mobile Home Park Slope Stabilization Project, Green Valley Mobile Home Park, City of Vista, California. Project monitor for streamside mitigation project that includes freshwater marsh, riparian, and disturbed habitats. This project is designed to fulfill requirements of CDFW 1603 and ACOE 404 permits. Mitigation was triggered when the mobile home park owners placed riprap along the stream banks, covering freshwater marsh habitat and disturbing hydrology. Monitoring duties include recommendations on weed removal, native plantings, and general maintenance.

Summit Ridge Business Park Mitigation Project, Pacific Property Management LLC, San Diego, California. Biological monitor for 10 acres of coastal sage scrub with a 1-acre freshwater marsh component. This project is mitigation for the development of the Summit Ridge Business Park. Duties included biotic surveys, transect data collection, weed removal recommendations, and native plant species survival monitoring.

Newhall Ranch Chorizanthe Seed Collection, Newhall Ranch Company, Santa Clarita, California. Collected seed of the rare and endangered San Fernando Valley spineflower (*Chorizanthe parryi fernandina*). Polygons of spineflower locations were mapped using GPS. Teams then returned to collect seed.

Altair Housing Development, William Lyon Homes Inc., Santee, California. Served as biological monitor for the on-site wetland mitigation creation. This project is in mitigation for non-vegetated, non-wetland waters of the U.S. jurisdictional to ACOE and the Regional Water Quality Control Board. Biological monitoring includes direction to the maintenance contractor regarding weed control, native plant establishment, and erosion control.

Vernal Pool Mitigation, Manzanita Partners LLC, Carlsbad, California. Served as biological monitor for the vernal pool and coastal sage scrub mitigation project. This project included enhancement and creation of vernal pools within a historical vernal pool area. By the end of the monitoring period, a majority of the pools contained fairy shrimp. Tasks included quadrat date collection and qualitative monitoring.

Energy

Bark Beetle Hazard Tree Removal, Southern California Edison (SCE), San Bernardino and San Jacinto Mountains, California. Performed preliminary mapping of special-status biological resources present within areas scheduled to be accessed by SCE tree crews for removal of trees affected by bark beetle infestation where trees may pose a hazard to power transmission infrastructure. In addition, performed regulatory compliance monitoring for tree removal crews. Tasks included coordination with SCE and tree removal crews, as well as monitoring of tree removal work for regulatory compliance.

Emergency Forest Fire Transmission Infrastructure Repair Monitoring, SCE, San Gabriel, California. Performed regulatory compliance monitoring for replacement of power transmission infrastructure damaged by fire and/or other natural disasters. Tasks included familiarization with regulatory permits, coordination with SCE and emergency repair crews, and field monitoring during repair work for compliance.

Municipal

Aquatic Bioassessment Study – Woodward Mitigation Site, Newhall Land and Company, San Marcos, California. Monitoring BMI community structure before, during, and after mitigation project along a tributary to San Marcos Creek (5-year study). This involves sampling BMI from three pre-defined reaches to characterize BMI communities above and below the mitigation project, as well as characterizing water quality parameters (i.e., 4,4 DDE, total phosphorus, pH, electrical conductivity, turbidity, dissolved oxygen, temperature).

Famosa Slough Salt Marsh/Sorrento Creek Dredging Mitigation, City of San Diego, California. Authored a conceptual plan for a 0.5 acre enhancement area of salt marsh. This enhancement was to fulfill mitigation requirements from the Sorrento Creek maintenance dredging performed by the City of San Diego Engineering and Capital Projects Department. This project was designed to fulfill the criteria of permits CDFW 1601 and ACOE 404. The enhancement area included middle and lower salt marsh plant species, bordered by a coastal sage scrub habitat buffer strip.

Las Virgenes Creek Hardscape Naturalization Proposal, City of Calabasas, California. Assisted in a proposal for the naturalization of a section of concrete hardscape channel along Las Virgenes Creek (see Mr. Oesch's thesis work). Goals of the naturalization include creating sediment deposition sufficient to grow wetland plant species, adding topography to the channel bottom and sides that would encourage a more natural hydrologic regime, and achieving these goals while passing floodwater efficiently in order to not promote flooding.

Los Peñasquitos Lagoon Salt Marsh Mitigation Project, City of San Diego, California. Assisted in the biological monitoring of native salt marsh and coastal sage scrub habitat, including transect data collection, advisement on remedial plantings, and non-native plant removal.

Carroll Canyon Emergency Maintenance Sewer Project, Metropolitan Wastewater Department, City of San Diego, California. Assisted in designating access routes around sensitive habitat for City of San Diego vehicles to gain access to sewer cleanout locations.

Sorrento Valley Utilities Improvement, City of San Diego, California. Monitored work crews in the removal of non-native plant species in biologically sensitive salt marsh, freshwater marsh, and coastal sage scrub habitats.

Tecolote Canyon Tree-of-Heaven Removal Project, City of San Diego, California. Monitored work crews in removal of tree-of-heaven (*Ailanthus altissima*) and other exotics from a section of Tecolote Canyon. Monitoring duties included advisement of routes of least impact to surrounding native habitats, felling trees, and cutting biomass dispersal.

Sorrento Creek Channel Maintenance Dredging Project, City of San Diego, California. Monitored City of San Diego work crews in removal of sediment from the channel bottoms of Carroll Canyon, Los Peñasquitos, and Sorrento creeks. Monitoring was purposed to ensure the least possible impacts to surrounding vegetation and aquatic and terrestrial animal habitats. The project site contained potential clapper rail (*Rallus longirostris*) habitat, which required flushing prior to beginning work in the channel areas. Duties also included taking water samples daily and testing for total suspended solids to ensure that discharge downstream of the project met total suspended solids level requirements.

Buena Vista Creek Bike Path, City of Vista, California. Performed ACOE jurisdictional wetland delineation, vegetation mapping, non-native vegetation GPS locating/mapping, and preparation of a conceptual wetlands mitigation plan. This project involves the creation of a cycling and pedestrian path along portions of Buena Vista Creek in the City of Vista. Within the study area, the project will involve construction of the path, stream bank erosion protection, removal of non-native trees and vegetation, and creation and enhancement of CDFW and ACOE jurisdictional vegetation communities.

Carlsbad Golf Course Ground and Surface Water Sampling, City of Carlsbad, California. Performed water sampling of both groundwater (i.e., sampling wells) and surface water (i.e., stream flow) for regulatory requirements by the California Coastal Commission. Testing constituents included pH, conductivity, nitrate, nitrite, dissolved oxygen, total phosphorus, total suspended solids, and bioassay.

Carlsbad Golf Course Wetland and Upland Mitigation Monitoring, City of Carlsbad, California. Performed qualitative and quantitative biological data collection for coastal sage scrub and wetland mitigation. This project involved creation and enhancement of native upland and wetland vegetation communities, located within non-fairway portions of the golf course as on-site mitigation for impacts to native vegetation communities. Monitoring includes quarterly qualitative monitoring and annual quantitative transect data collection.

Mission Trails Stream Scour Study, San Diego County Water Authority, San Diego County, California. Designed and conducted a streambed scour monitoring program to achieve compliance with the Regional Water Quality Control Board monitoring requirements for installation of an Arizona-style stream crossing. This included a pre-impact baseline study and 5 years of annual monitoring and reporting following installation of the stream crossing. This study examined what effects, if any, the crossing will have on stream channel morphology, flow, deposition, and scour within the study zone.

El Cuervo Norte Wetland Mitigation Project, City of San Diego, California. Performed biological monitoring for the approximately 30-acre wetland mitigation site. This project provided wetland mitigation for multiple impacts to CDFW and ACOE jurisdictional wetland resources exacted by the implementation of State Route 56. This project provided critical habitat corridor linkage and habitat extension for wetland wildlife. Duties included transect data collection, qualitative monitoring, and project management.

L-Ditch Soil Remediation Habitat Replacement, San Diego Unified Port District, City of Chula Vista, California. Conducted preliminary site surveys for habitat replacement locations and authored the conceptual salt marsh habitat replacement plan. This project involved the remediation of contaminated soil located within a tidal ditch along San Diego Bay, and replacement of the tidal salt marsh vegetation communities at an off-site location.

Transportation

As-Needed Environmental Services Rail Project – Aquatic Bioassessment Study of Carroll Canyon Creek, Sorrento to Miramar, Double Track Phase 1, San Diego, California. Monitoring BMI community structure along Carroll Canyon Creek in San Diego. This involves sampling BMI from three pre-defined reaches to characterize BMI communities above and below the mitigation project, as well as characterizing water quality parameters (i.e., 4,4 DDE, total phosphorus, pH, electrical conductivity, turbidity, dissolved oxygen, temperature)

Harmony Grove Off-Site Mitigation for Sprinter Rail Line, North County Transit District, San Marcos, California. Served as biological monitor for the wetland and oak mitigation site at Harmony Grove. This wetland creation site serves as off-site mitigation for impacts to jurisdictional wetland resources exacted during the construction of the Sprinter Rail Line. Project tasks included transect data collection, qualitative monitoring, and project coordination.

Tribal

Multiple Environmental and Engineering Services, Sycuan Tribe, El Cajon, California. Performed various environmental consulting services for the Sycuan Tribe related to open space preserve management, water treatment, casino expansion, road widening, and utilities. The Sycuan reservation and land holdings are located in the Harbison Canyon area east of El Cajon and include tribal dwellings, tribal infrastructure, and a casino. Tasks have included ACOE regulatory compliance monitoring, mitigation monitoring, stormwater protection prevention plan monitoring, revegetation plan design, biological surveys, jurisdictional wetland delineations, rare plant surveys, and biological constraints studies.

Water/Wastewater

Lake Skinner Water Treatment Plant, Temecula, California. Performed regulatory compliance monitoring for construction of an ozone treatment facility, including wetland mitigation installation compliance monitoring. This project included the expansion of the existing chlorine-based water-treatment facility to include an ozone-filtration component. Tasks included contractor coordination, vegetation impact monitoring, erosion control monitoring, and general regulatory compliance.

Upper Chiquita Reservoir, Santa Margarita Water District, Orange County, California. Performed regulatory compliance monitoring during initial grading and construction of an emergency water storage reservoir. In addition, authored the conceptual mitigation plan to compensate temporary impacts. This project involved the excavation of an existing box canyon and construction of a dam face to create a water-storage reservoir. Tasks also included coordination with contractor, client, and project engineers.

Relevant Previous Experience

Agricultural Support/Development Project, Mennonite Central Committee, El Peten, Guatemala. Coordinated an agricultural support and development project for several Mayan indigenous communities in the Peten region of Guatemala. Worked with government officials to import agricultural supplies from Belize, traveled between site locations, and explored possibilities for reestablishing crops. The project was necessitated by crops lost to fire and drought.

Rose Creek Habitat Enhancement Plan, Nature School, San Diego, California. Mapped 13 acres of the Rose Creek riparian corridor directly east of Interstate 5. Plants and habitat were located using GPS and a biotic survey was taken.

Specialized Training

- State Water Resources Control Board Training Academy/California Department of Fish and Wildlife, Professional Certificate of Completion, SWAMP Bioassessment Procedures: BMI and Algae Sample Collection, 2012
- Associated General Contractors, San Diego Chapter, Professional Certificate of Training Completion, Qualified Stormwater Pollution Prevention Plan Practitioner under the California Construction General Permit Training, 2012
- Wetland Training Institute, Professional Certificate of Completion, Arid West Regional Supplement Seminar and Field Practicum, 2011
- Southern California Coastal Water Research Project, Practitioner Certification, California Rapid Assessment Method for Wetlands, 2009

- Portland State University/Wetland Training Institute, Professional Certificate of Completion, Basic Wetland Delineation Training, 2005

Publications

Oesch, C.E. 2012. Water Quality Permitting Enters SWAMP Territory, Encinitas, California, USA. Dudek News. February 2012.

Oesch, C.E. 2012. Water Bugs are Target of New Water Quality Sampling Requirement, Los Angeles, California, USA. Water Reuse Newsletter, Los Angeles Chapter, Vol.3, Issue 3. December 2012.

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