Biological Resources Report for the City of Carlsbad Orion Center Project Carlsbad, California Project Number EIA-15-02

Prepared for
RNT Architects
363 Fifth Avenue, Suite 202
San Diego, CA 92101
Contact: Mr. Rick España

Prepared by
RECON Environmental, Inc.
3111 Camino del Rio North, Suite 600
San Diego, CA 92108
P 619.308.9333

RECON Number 7663
November 2, 2022

Kayo Valenti, Biologist

TABLE OF CONTENTS

FIGURES

TABLES

TABLE OF CONTENTS (cont.)

PHOTOGRAPHS

ATTACHMENTS

Acronyms and Abbreviations

CEQA	California Environmental Quality Act
CFGC	California Fish and Game Code
City	City of Carlsbad
GPS	global positioning system
HMP	Habitat Management Plan
MHCP	Multiple Habitat Conservation Plan
project	City of Carlsbad Orion Center Project
SANDAG	San Diego Association of Governments
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
Zone	Local Facilities Management Zone

1.0 Summary of Findings

The City of Carlsbad Orion Center project (project) is located at 2600 Orion Way, Carlsbad, California. This report describes the existing biological conditions, sensitive biological resources with potential to occur, impacts, and mitigation measures associated with construction of the project.

The following three vegetation communities/land cover types occur within the proposed impact area of the project site: eucalyptus woodland, disturbed land, and urban/developed. No mitigation is required for impacts to urban/developed lands, eucalyptus woodland, and disturbed lands (City of Carlsbad 2004).

No sensitive plant species were observed within the project site during the general biological survey. No sensitive plant species are expected to occur within the project site.

While no sensitive wildlife species were observed within the project site during the general biological survey, there is potential for the following sensitive species to occur within the impact area: Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), Cooper's hawk (*Accipiter cooperii*), and nesting bird species. No impacts are anticipated to occur to Belding's orange-throated whiptail and no mitigation would be required. The project has a potential to cause direct impacts to raptors (including Cooper's hawk) and nesting bird species. The project has potential to cause indirect impacts to raptors, coastal California gnatcatcher (*Polioptila californica californica*), and southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) that could occur in the adjacent lands, outside of the impact area. Mitigation is required for potential direct and indirect impacts to sensitive and nesting bird species.

The Mandana Preserve (a proposed Hardline Preserve) occurs 400 feet northwest of the project site. The Draft North County Multiple Species Conservation Plan Preserve Area occurs beyond the northern and eastern boundaries of the project site. The proposed impact area would not extend beyond the existing chain link fence that separates the currently developed area from the North County Multiple Species Conservation Plan (MSCP) Preserve Area. Therefore, the project would not impact the North County MSCP Preserve Area or Habitat Management Plan (HMP) future Hardline Preserve.

The project site occurs largely within developed land bound by chain link fencing. North and east beyond the chain link fencing is a canyon which provides a movement corridor for wildlife species. However, no impacts would occur to vegetation associated with the canyon. Therefore, the project would not impact a functioning wildlife corridor and no mitigation would be required.

2.0 Introduction

The purpose of this biological resources report is to (1) document the existing biological conditions within the project survey area; (2) evaluate the survey area and the vicinity for the potential to support sensitive biological resources; (3) provide an impact analysis based on the potential impacts

associated with the project; and (4) provide a discussion of avoidance, minimization, and mitigation measures that may be required to reduce those impacts to below a level of significance.

The City of Carlsbad (City) Orion Center Project (project) is located at 2600 Orion Way in the city of Carlsbad, California (Figure 1). The project site is in the Agua Hedionda land grant of the U.S. Geological Survey (USGS) 7.5-minute topographical map, San Luis Rey quadrangle (USGS 1997; Figure 2). The project site occurs at the top of a mesa with Carlsbad Oaks North County Preserve occurring to the north and east, and commercial development to the south and west (Figure 3).

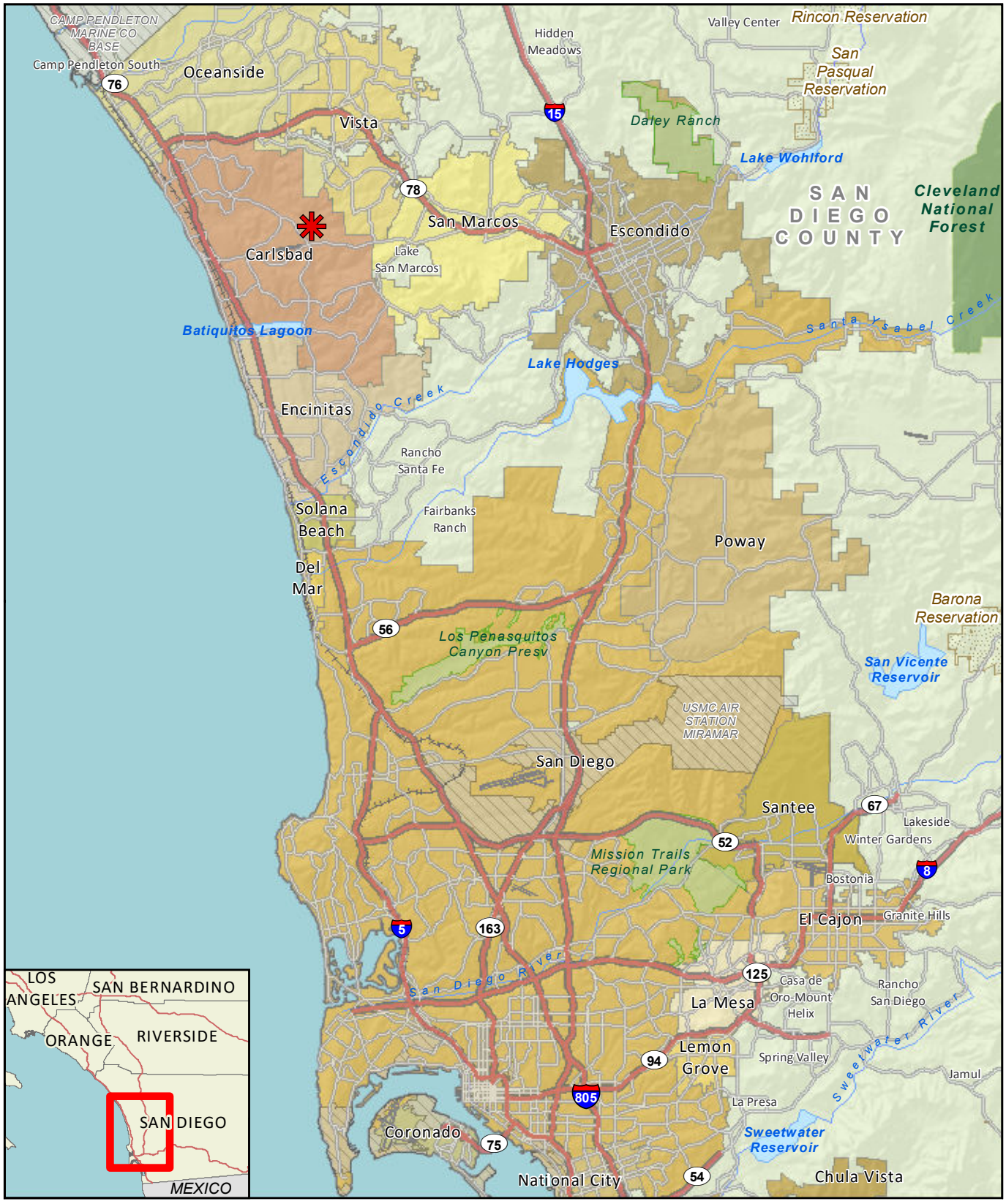
The majority of the project site is currently asphalt-paved, with several islands with ornamental trees scattered throughout, and an existing, tall, chain link fence along the edge of Carlsbad Oaks North County Preserve. The Preserve is located adjacent to the project site at its northern and eastern edges. No impacts are proposed beyond the chain link fence that separates the currently developed area from the Preserve.

The project would construct a new operations master planned facility that would efficiently accommodate existing and future needs of the following City departments and divisions: (1) Construction Management and Inspection Division; (2) Public Works Fleet and Facilities Division (Street, Storm Drain, Facilities and Fleet Maintenance); (3) Public Works Utilities Division (Water, Recycled Water, Wastewater Collection and Operations, Utilities Engineering and Asset Management); and (4) Parks and Recreation Department (Parks and Tree Maintenance). The proposed project would free up the following three existing sites in the city of Carlsbad for redevelopment: the Public Works Utilities Division at 5950 El Camino Real; the Public Works Fleet and Facilities Division at 205 Oak Avenue; and the Parks and Tree Maintenance Division of the Parks and Recreation Department at 1166 Carlsbad Village Drive. However, these three abandoned sites would remain vacated and unchanged until redevelopment were proposed and approved as separate actions independent of this project. The proposed facility would accommodate 143 staff members from these existing facilities. The new operations facility would be constructed at the intersection of Orion Street and Orion Way.

The project site is located within the boundaries of the final Multiple Habitat Conservation Plan (MHCP), which is a multi-jurisdictional habitat conservation plan that was prepared for seven north San Diego County jurisdictions: Oceanside, Carlsbad, Encinitas, San Marcos, Vista, Solana Beach, and Escondido (San Diego Association of Governments [SANDAG] 2003). More specifically, the project site falls within the City's MHCP Subarea Plan, which is the City's Habitat Management Plan (HMP; City of Carlsbad 2004).

The HMP designates a natural habitat preserve system and provides a regulatory framework for determining impacts and designating mitigation associated with projects in the city of Carlsbad. The Mandana Preserve (a proposed Hardline Preserve) occurs 400 feet northwest of the project boundary (Figure 4). The Draft North County MSCP Preserve Area occurs beyond the northern and eastern project boundary and is associated with Carlsbad Oaks North County Preserve (see Figure 4).

The impact analysis and recommended mitigation in this document are based on the MHCP, HMP, California Environmental Quality Act (CEQA) requirements, and the City's Guidelines for Biological Studies (City of Carlsbad 2008).



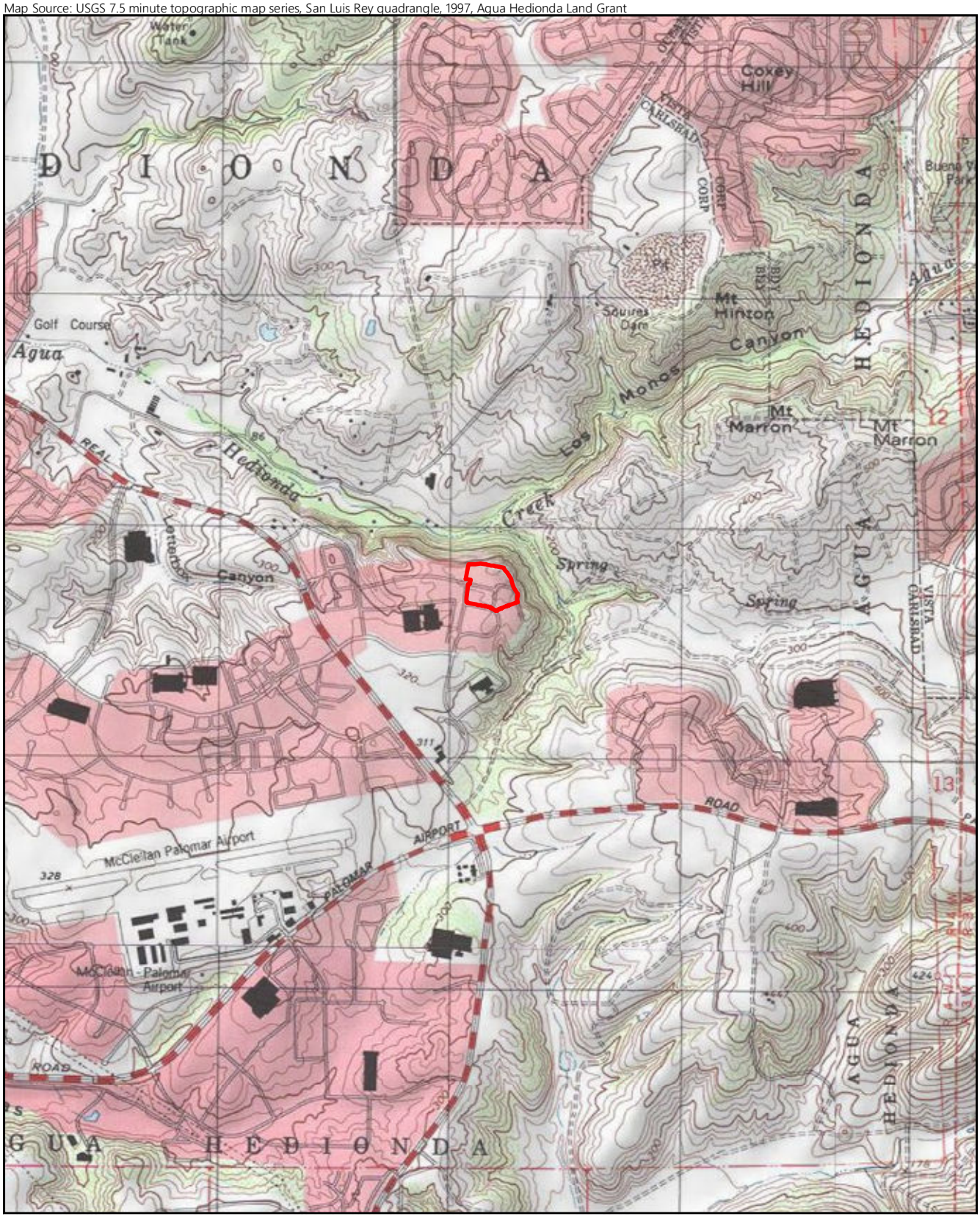
Project Location

RECON

M:\JOBS4\7663\common_gis\fig1.mxd 11/24/2021 bma

FIGURE 1
Regional Location

Map Source: USGS 7.5 minute topographic map series, San Luis Rey quadrangle, 1997, Agua Hedionda Land Grant



RECON

M:\JOBS4\7663\common_gis\fig2.mxd 11/24/2021 bma

FIGURE 2
Project Location on USGS Map

Image Source: NearMap (flown September 2021)

RECON

M:\JOBS4\7663\common_gis\fig3_bioltr.mxd 11/24/2021 bma

FIGURE 3
Project Location on Aerial Photograph

Image Source: NearMap (flown September 2021)

0 Feet 200

Project Boundary

Survey Area

City of Carlsbad HMP

Mandana Preserve (Future Hardline)

North County Draft MSCP

Preserve Area

FIGURE 4

Project in Relation to City of Carlsbad HMP and Draft North County MSCP

RECON

M:\JOBS4\7663\common_gis\fig4_bioltr.mxd 11/24/2021 bma

3.0 Methods and Survey Limitations

RECON Environmental, Inc. (RECON) conducted an analysis of existing sensitive species data recorded within two miles of the project site. This analysis included searches of the U.S. Fish and Wildlife (USFWS) all-species occurrence database (USFWS 2018a) and critical habitat portal (USFWS 2018b), the SanBIOS database (County of San Diego 2018), and the California Natural Diversity Database (California Department of Fish and Wildlife [CDFW] 2018a). Background research to assess the existing biological conditions also included a review of online aerial satellite imagery (Google Earth 2018), USGS topographic map (USGS 1997), and U.S. Department of Agriculture (USDA) soil survey maps (USDA 1973).

RECON biologist Kayo Valenti conducted a general biological survey of the project site on April 12, 2018 between 8:10 a.m. and 1:00 p.m. to map existing vegetation communities, identify plant and animal species on the site, and conduct an assessment of potentially occurring sensitive species. Weather conditions during the survey consisted of cloud cover of 95 percent clearing to 0 percent, winds of 0 to 4 mile per hour, and air temperature or 58 to 64 degrees Fahrenheit. The survey area consisted of the project footprint at the time of the survey and the surrounding 100-foot radius. The project footprint was revised in November 2021 to remove project impacts outside the chain link fence along the northern portion of the project area. The survey was conducted on foot by meandering throughout the survey area where slope and vegetation density allowed access. Areas that were too steep or densely vegetated were viewed using binoculars from the closest accessible areas. The Carlsbad Police Department property, which occurs in the southeastern portion of the project site, was avoided due to restricted area signs posted. The vegetation east beyond a chain link fence and downslope of the Police Department could not be surveyed due to the restricted access, chain link fence, and steep slopes. The biologist covered the majority of the project site to assess pockets of vegetation for potential suitable wildlife habitat. Digital photographs of representative areas were taken during the survey.

Vegetation communities and land cover types were mapped on a 1-inch-equals-100-feet scale aerial photograph (flown February 2018) of the survey area, with assistance of a sub-meter-accurate global positioning system (GPS) unit. Dominant plant species within each vegetation community were noted. Vegetation community classifications follow Holland (1986) as modified by Oberbauer (2008).

Plant species observed within the survey area were recorded; however, a complete inventory of non-native ornamental species was not recorded. The survey also included a directed search for sensitive plants that would have been apparent during the time of the survey, and sensitive plant species were recorded using GPS. Floral nomenclature follows the Jepson Manual (Baldwin et al. 2012) as updated by the Jepson Flora Project (Jepson Flora Project (eds.) 2019). In instances where common names were not provided in this resource, common names were obtained from Rebman and Simpson (2014). Additional common names were obtained from the USDA maintained database (USDA 2013) or the Sunset Western Garden Book (Brenzel 2001) for ornamental/horticultural plants.

Animal species observed directly or detected from calls, tracks, scat, nests, or other sign were noted. Zoological nomenclature for birds is in accordance with the Chesser et al. (2018) and Unitt (2004); and for invertebrates with San Diego Natural History Museum (2002).

Determination of the potential occurrence for listed, sensitive, or noteworthy species is based upon known ranges and habitat preferences for the species (Jennings and Hayes 1994; Unitt 2004; CDFW 2018b-e; California Native Plant Society [CNPS] 2018; Reiser 2001).

4.0 Results

4.1 Physical Characteristics

The project site is located northeast of the intersection of Orion Way and Orion Street, with Carlsbad Oaks North County Preserve to the north and east, and the Safety Training Center and Police Department to the south (see Figure 3). The project site is predominately developed, with several islands with ornamental trees scattered throughout. Carlsbad Oaks North County Preserve is a vegetated, undeveloped canyon following the stream course of Agua Hedionda Creek, extending from the Rancho Carlsbad Golf Course east to Buena Vista Park, near Melrose Drive. The project site is further surrounded by a mosaic of industrial development and open space.

The majority of the survey area comprises an existing light industrial development, while the northern and eastern portions of the survey area consist of steep north- and northeast-facing slopes extending into Carlsbad Oaks North County Preserve, which contains several ridgelines and erosional features that lead downslope and connect to Agua Hedionda Creek 0.1 mile north of the project site. The highest elevation within the survey area is approximately 382 feet above mean sea level within the industrial development, which sits at the northeastern edge of a mesa, and the lowest elevation is approximately 270 feet above mean sea level within Carlsbad Oaks North County Preserve in the northeast portion of the survey area (USGS 1997).

Three soil series—Cieneba coarse sandy loam, Las Flores loamy fine sand, and terrace escarpments—are mapped within the survey area (USDA 1973). Characteristics of these soil types are summarized below from the report *Soil Survey of San Diego Area, California* (USDA 1973).

Cieneba coarse sandy loam is formed from material weathered from granitic rock, occurring on hills and mountains. The topsoil is very shallow and somewhat excessively drained. This soil type occurs along the eastern edge of the survey area.

Las Flores loamy fine sand occurs on gently to strongly sloping marine terraces. The topsoil is moderately well-drained. This soil type occurs within the majority of the project site, excluding the eastern edge and northwestern tip.

Terrace escarpments consist of steep faces that separate the terraces from the lower lying land. This soil type occurs at the northwestern tip of the project site.

4.2 Botanical Resources – Flora

The following six vegetation communities and land cover types were identified in the approximate 14.22-acre survey area: Diegan coastal sage scrub (Group C or D habitat depending on gnatcatcher occupancy), disturbed coastal sage scrub (Group D habitat; due to the disturbed nature of this habitat

it would not be considered suitable gnatcatcher habitat), southern mixed chaparral (Group D habitat), eucalyptus woodland (Group F habitat), disturbed land (Group F habitat), and urban/developed land (Figure 5; Table 1). Photographs 1 through 8 show typical conditions of these communities within the survey area.

A total of 68 plant species were identified on-site and are listed in Attachment 1. Of this total, 42 (62 percent) are species native to southern California, and 26 (38 percent) are introduced species.

Table 1
Vegetation Communities/Land Cover Types within the Survey Area

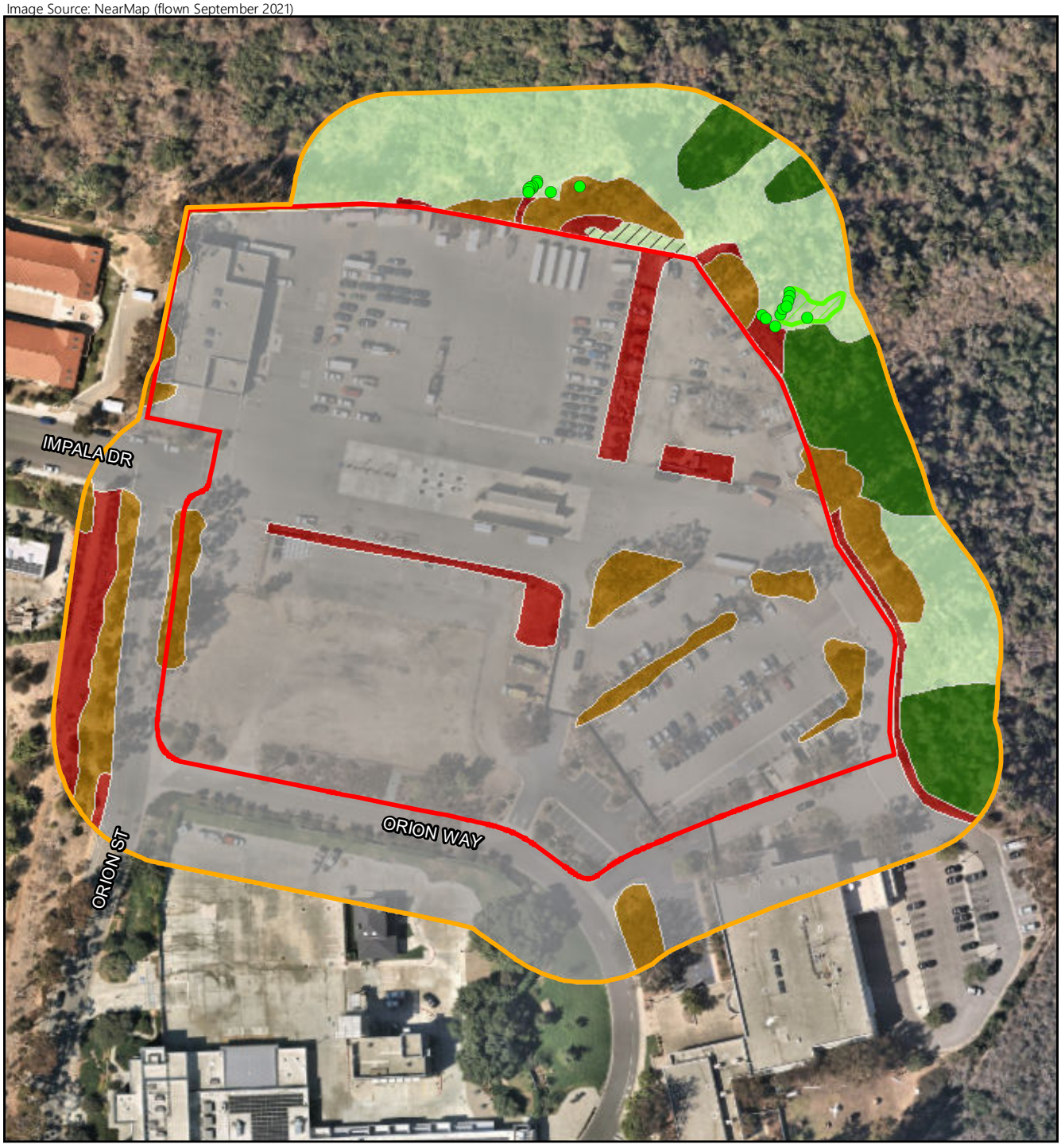
Community or Type (Holland Code as modified by Oberbauer)	City of Carlsbad Group[a]	Acres
Diegan coastal sage scrub (32500)	C or D[b]	1.61
Disturbed coastal sage scrub (32500)	D	0.03
Southern mixed chaparral (37120)	D	0.75
Eucalyptus woodland (79100)	F	1.02
Disturbed land (11300)	F	0.65
Urban/developed land (12000)	N/A	10.15
Total		**14.22[c]**

[a]Group (type of habitat) taken from Table 11 in the City of Carlsbad HMP.
[b]Habitat Group C or D, depending on gnatcatcher occupancy.
[c]Rounding error represented.
N/A = not applicable

4.2.1 Diegan Coastal Sage Scrub (1.61 acres)

Diegan coastal sage scrub consists of low-growing, aromatic, drought-deciduous soft-woody shrubs that have an average height of approximately three to four feet, and characteristically occupies drier south- and west-facing slopes and occasionally north-facing slopes (Holland 1986). Diegan coastal sage scrub occurs outside of the project site along the northern boundary and in the eastern portion of the survey area, generally near the upper portion of the steep slope and on the top of the ridgelines that run downslope north and east of the project (see Figure 5). The vegetation in the survey area is dominated by California sagebrush (*Artemisia californica*) and also contains white sage (*Salvia apiana*), California adolphia (*Adolphia californica*), and California buckwheat (*Eriogonum fasciculatum*) (see Photographs 1 4, 5, and 8). The Diegan coastal sage scrub occurs on the edge of development but as part of a large expanse of undeveloped land and is dominated by mature, native shrubs; therefore, it is considered high-quality habitat for wildlife. If the habitat is occupied by coastal California gnatcatcher, it is considered a Group C habitat under the City's Guidelines for Biological Studies (2008). If the habitat is not occupied by coastal California gnatcatcher it is considered a Group D habitat (City of Carlsbad 2008).

Image Source: NearMap (flown September 2021)



0 Feet 150

Project Impact Boundary
Survey Area
California Adolphia

Vegetation Communities and Land Cover Types

Southern Mixed Chaparral
Diegan Coastal Sage Scrub
Disturbed Coastal Sage Scrub
Disturbed Land
Eucalyptus Woodland
Urban/Developed

RECON

M:\JOBS4\7663\common_gis\fig5_bioltr.mxd 11/24/2021 bma

FIGURE 5
Existing Biological Resources and Impacts

PHOTOGRAPH 1

View of Diegan Coastal Sage Scrub, Facing Northeast, Taken at the Northeastern Portion of the Survey Area on April 12, 2018

PHOTOGRAPH 2

View of Disturbed Coastal Sage Scrub, Facing West, Taken at the Northeastern Portion of the Survey Area on April 12, 2018

PHOTOGRAPH 3

View of Southern Mixed Chaparral, Facing Southwest, Taken at the Northeastern Portion of the Survey Area on April 12, 2018

PHOTOGRAPH 4

View of Steep Slopes with Diegan Coastal Sage Scrub in the Background and Southern Mixed Chaparral in the Foreground, Facing Northwest, Taken at the Northeastern Portion of the Survey Area on April 12, 2018

PHOTOGRAPH 5

View of Steep Slopes with Diegan Coastal Sage Scrub and Southern Mixed Chaparral, Facing Southeast, Taken at the Northern Tip of the Project Area on April 12, 2018

PHOTOGRAPH 6

View of Eucalyptus Woodland, Facing Southeast, Taken at the Northeastern Portion of the Survey Area on April 12, 2018

PHOTOGRAPH 7

View of Disturbed Habitat, Facing Northwest, Taken at the Southern Edge of the Impound Lot on April 12, 2018

PHOTOGRAPH 8

View of California Adolphia Patch that Occurs Downslope of the Project Boundary, Facing Northeast, Taken at the Northeastern Portion of the Survey Area on April 12, 2018

4.2.2 Disturbed Coastal Sage Scrub (0.03 acre)

Disturbed coastal sage scrub occurs outside of the project site as a small patch in the northern portion of the survey area, between the existing development and a patch of eucalyptus woodland (see Figure 5). The vegetation in the survey area is dominated by California buckwheat, and sub-dominated by Perez's marsh-rosemary (*Limonium perezii*) (see Photograph 2). This area may have been trimmed in the past year or two as the California buckwheat individuals and other shrubs are sparse and shorter (approximately two feet tall) than in the intact Diegan coastal sage scrub. As a result of this apparent trimming, this vegetation would not typically be sufficient cover for nesting gnatcatchers. Therefore, this habitat is not expected to be occupied by coastal California gnatcatcher and would be considered a Group D habitat (City of Carlsbad 2008).

4.2.3 Southern Mixed Chaparral (0.75 acre)

Southern mixed chaparral is dominated by broad-leaved sclerophyllous shrubs or small trees, and characteristically occupies protected north-facing and canyon slopes or ravines where more mesic conditions are present (Holland 1986). Southern mixed chaparral occurs in the eastern portion of the survey area on steep, generally north to northeast facing slopes (see Figure 5). Dominant shrubs within the survey area include lemonade berry (*Rhus integrifolia*), toyon (*Heteromeles arbutifolia*), mission manzanita (*Xylococcus bicolor*), and scrub oak (*Quercus berberidifolia*). The vegetation is dense, and for the most part contains no understory cover (see Photographs 3, 4, and 5). The southern mixed chaparral occurs outside of the project site on the edge of development but as part of a large expanse of undeveloped land and is dominated by mature, native shrubs; therefore, it is considered high-quality habitat for wildlife. Southern mixed chaparral is a Group D habitat under the City's Guidelines for Biological Studies (2008).

4.2.4 Eucalyptus Woodland (1.02 acres)

Eucalyptus woodland occurs in patches scattered throughout the survey area (see Figure 5). This vegetation community is dominated by eucalyptus trees, mainly sugar gum (*Eucalyptus cladocalyx*) (see Photograph 6). Although this community occurs in patches, it is composed of tall mature trees on the edge of open space habitat and would therefore be considered moderate-quality nesting habitat for raptors. Eucalyptus woodland is a Group F habitat under the City's Guidelines for Biological Studies (2008).

4.2.5 Disturbed Land (0.65 acre)

Disturbed land occurs as patches or strips of vegetation throughout the survey area (see Figure 5). The strips of disturbed land within the larger developed area contain scattered non-native ruderal plant species such as short-pod mustard (*Hirschfeldia incana*), prickly sow thistle (*Sonchus asper*), and tocalote (*Centaurea melitensis*) (see Photograph 7). The areas of disturbed land in the northern portion of the survey area consist of a gravel pedestrian trail and areas dominated by an ornamental shrub vanilla-scented wattle (*Acacia redolens*). The disturbed land provides low-quality habitat due to the prevalence of non-native ruderal species or an ornamental shrub, and due to frequent human

activity. Disturbed land is considered a Group F habitat under the City's Guidelines for Biological Studies (2008).

4.2.6 Urban/Developed Land (10.15 acres)

Urban/developed land occurs as the dominant land cover type within the survey area, primarily within the project site, and includes paved portions of the industrial lot, the Police Department, Safety Training Center, and paved streets (including vegetation that has been installed along the streets, but excluding eucalyptus trees). Urban/developed land is not a sensitive vegetation community and is not assigned to a habitat group under the City's Guidelines for Biological Studies (2008).

4.3 Zoological Resources – Fauna

A total of 18 animal species were detected within the wildlife survey area, including 2 invertebrates and 16 birds.

Wildlife species observed are largely characteristic of scrub and chaparral communities and are commonly observed within the urban-wildland interface. These species include Anna's hummingbird (*Calypte anna*), California scrub-jay (*Aphelocoma californica*), Bewick's wren (*Thryomanes bewickii*), lesser goldfinch (*Spinus psaltria hesperophilus*), northern mockingbird (*Mimus polyglottos polyglottos*), and house finch (*Haemorhous mexicanus frontalis*). A complete list of the wildlife species detected within the survey area is provided in Attachment 2.

4.4 Sensitive Biological Resources

4.4.1 Sensitivity Criteria

For purposes of this report, species will be considered sensitive if they are: (1) identified as Listed Species Covered by the HMP (City of Carlsbad 2004 and 2008); (2) listed by state or federal agencies as threatened or endangered or are proposed for listing; (3) considered rare, endangered, or threatened by CDFW (2018b-e); (4) included on CNPS California Rare Plant Ranks 1, 2, 3, or 4 (CNPS 2018); or (5) considered a covered species or a narrow endemic species in the City of Carlsbad (City of Carlsbad 2004 and 2008).

Sensitive vegetation communities are vegetation assemblages, associations, or subassociations that either have cumulative losses throughout the region, have relatively limited distribution, support or potentially support sensitive species, have particular value to other wildlife, or have a combination of these characteristics. Typically, sensitive vegetation communities are considered sensitive whether or not they have been disturbed. Sensitive vegetation communities are regulated by various local, state, and federal resource agencies. For purposes of this report, sensitive vegetation communities include those identified as Group A through E habitats by the HMP (City of Carlsbad 2004).

Impacts to sensitive biological resources or habitats that support a listed species or act as a corridor for listed species are considered significant impacts.

Raptors (birds of prey) and active raptor nests are protected by the California Fish and Game Code (CFGC) 3503.5, which states that it is "unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird" unless authorized (State of California 1991). In addition, active avian nests are covered by the CFGC 3503, which states that it is "unlawful to take, possess, or needlessly destroy the nest or eggs of any bird" unless authorized (State of California 1991).

Wetlands and riparian habitats that are subject to federal and state jurisdiction pursuant to the federal Clean Water Act and the CFGC are considered sensitive resources (City of Carlsbad 2008).

4.4.2 Sensitive Vegetation Communities

Two sensitive vegetation communities were mapped within the survey area, but outside of the project site—Diegan coastal sage scrub (including disturbed coastal sage scrub) and southern mixed chaparral (see Figure 5). As mentioned above, Diegan coastal sage scrub is either considered a Group C habitat or a Group D habitat, depending if the habitat is occupied by coastal California gnatcatcher, per the City's Guidelines for Biological Studies (2008). The disturbed coastal sage scrub and southern mixed chaparral are considered Group D habitats.

4.4.3 Sensitive Plant Species

One sensitive plant species, California adolphia (*Adolphia californica*), was observed within the survey area, outside of and just north of the project site boundary (see Figure 5; Photograph 8). Attachment 3 summarizes this species and other potentially occurring sensitive plant species. No additional sensitive plant species were observed or are expected to occur within the immediate project site. Additional sensitive plant species that have a potential to occur within the inaccessible sections of the steep canyon, adjacent to the project site, are discussed in Attachment 3 but not in the report, as they are not expected to occur within the project site.

California adolphia is a CNPS California Rare Plant Rank 2B.1 species (CNPS 2018); therefore, it is seriously endangered in California, but common elsewhere. This small shrub in the buckthorn family (Rhamnaceae) has spiny stems that are identifiable at close range year-round. This species generally occurs in Diegan coastal sage scrub, near the edge of chaparral, particularly in dry canyons or washes. Its range is limited to San Diego County and northern Baja California, Mexico and occurs at elevations below 1000 feet. In San Diego County, it is found from the Carlsbad area south into Proctor Valley and the Otay area (Beauchamp 1986).

Two small patches of California adolphia were mapped within the survey area. One patch totaling approximately 50 individuals was observed beyond the chain link fence outside the northeastern portion of the project site within the Diegan coastal sage scrub (see Figure 5). Additionally, approximately nine individuals were observed beyond the chain link fence outside the northern portion of the project site, within Diegan coastal sage scrub and eucalyptus woodland (see Figure 5). No California adolphia individuals occur within the project site itself, as there is no suitable habitat and the plant would have been apparent at the time of the survey, given the conspicuous form and size of the species.

4.4.4 Sensitive Wildlife Species

No sensitive wildlife species were observed within the survey area. However, the following six sensitive wildlife species have a moderate to high potential to occur in the survey area: Belding's orange-throated whiptail, Cooper's hawk, coastal California gnatcatcher, southern California rufous-crowned sparrow, San Diego desert woodrat (*Neotoma lepida intermedia*), and southern mule deer. Attachment 4 summarizes these species and assesses the potential for other sensitive wildlife species to occur.

a. Belding's Orange-throated Whiptail

Belding's orange-throated whiptail is a CDFW watch list species and a HMP List 1 species (CDFW 2018b; City of Carlsbad 2004). This species ranges from the coast to the Peninsular mountain ranges from Orange and southwestern San Bernardino counties to the tip of Baja California, Mexico (Stebbins 2003). It occurs in a variety of habitats and is most common in sandy areas of low, open sage scrub or chaparral, particularly where there is California buckwheat, sage (*Salvia* spp.), or chamise (*Adenostoma fasciculatum*; Lemm 2006). This species feeds primarily on the western subterranean termite (*Reticulitermes hesperus*; Bostic 1966). It is active during spring and summer but largely dormant during the fall and winter when temperatures drop (Jennings and Hayes 1994). Breeding occurs from May through July. The decline of this species is attributed to habitat loss and fragmentation (McGurty 1980).

This species has been reported within two miles of the project site (CDFW 2018a). The canyon in the northern and eastern portions of the survey area supports coastal sage scrub and chaparral with loose soil to support this species. Additionally, this habitat has connectivity to a larger expanse of open space habitat. There is high potential for this species to occur within the coastal sage scrub (Diegan and disturbed) and chaparral of the survey area. The disturbed habitat connected to the canyon within the project site provides marginally suitable habitat for the species. Therefore, there is low potential for this species to occur within the project site.

b. Cooper's Hawk

Cooper's hawk is a CDFW watch list species (nesting) and a HMP List 1 (CDFW 2018b; City of Carlsbad 2004). The Cooper's hawk year-round range extends throughout most of the United States. Its wintering range extends south to Central America, and its breeding range extends north to southern Canada (Curtis et al. 2006). Breeding birds are widespread over San Diego County's coastal slope and most abundant in lowland and foothill canyons and in urban areas. It is a common breeder in both oak and willow riparian woodlands and urban environments, with eucalyptus trees used nearly as often as oaks (Unitt 2004). Additionally, this species has been known to nest within planted trees, including pine (Unitt 2004). Breeding occurs from February to August, and nests are typically located high in the tree but under the canopy. This hawk forages primarily on medium-sized birds but is also known to eat small mammals such as chipmunks and other rodents (Curtis et al. 2006). Although urbanization and loss of habitat have contributed to the decline of this species, the Cooper's hawk acclimation to city living over the last few decades has generously increased their numbers (Unitt 2004).

Although this species has not been reported within two miles of the project site, the mature eucalyptus trees adjacent to Carlsbad Oaks North County Preserve provide suitable nesting habitat for the species and the canyon provides suitable foraging opportunities. Thus, there is moderate potential for this species to nest within the survey area and project site.

c. Coastal California Gnatcatcher

Coastal California gnatcatcher is federally listed as threatened, a CDFW species of special concern, and a HMP List 1 species (CDFW 2018c; City of Carlsbad 2004). The coastal California gnatcatcher is a non-migratory, resident species found on the coastal slopes of southern California, ranging from Ventura County southward through Los Angeles, Orange, Riverside, and San Diego counties into Baja California, Mexico (Atwood and Bontrager 2001; USFWS 2010). Coastal California gnatcatchers typically occur in or near mature sage scrub habitat (Atwood and Bontrager 2001). This vegetation generally comprises low (less than 3 feet) shrub and sub-shrub species. Gnatcatchers tend to defend breeding territories ranging in size from 2 to 14 acres (USFWS 2010). Breeding occurs from February through August. This species' ideal host shrub is California sagebrush, but it is also found nesting in coast California buckwheat, common encelia (*Encelia californica*), and broom baccharis (*Baccharis sarothroides*) (Unitt 2004). Other habitats used by coastal California gnatcatcher include chaparral, grassland, and riparian scrub; disturbed habitats are used where they occur adjacent to sage scrub (Atwood and Bontrager 2001). The coastal California gnatcatcher diet consists mainly of less mobile small arthropods, such as leafhoppers, spiders, beetles, and true bugs. The primary cause of decline in the coastal California gnatcatcher population is habitat loss and degradation from urban and agricultural development, wildfires, and grazing.

This species has been reported within two miles of the project site (CDFW 2018a; County of San Diego 2018; USFWS 2018a). The project site occurs at the top of a mesa with a steep canyon occurring to the north and east which contains Diegan coastal sage scrub and chaparral vegetation. The Diegan coastal sage scrub within the survey area is dominated by California sagebrush, which provides suitable nesting habitat for the species. There is a moderate potential for this species to nest within the survey area. This species is not expected to occur within the project site, as no suitable habitat occurs.

d. Southern California Rufous-Crowned Sparrow

Southern California rufous-crowned sparrow is a CDFW watch list species and a HMP List 1 species (CDFW 2018b; City of Carlsbad 2004). This subspecies of rufous-crowned sparrow is a San Diego County resident and ranges throughout southern California from Los Angeles County to Baja California, Mexico (Collins 1999). Southern California rufous-crowned sparrows are found in sage scrub, broken or burned chaparral habitats, and grasslands with scattered shrubs. The species exhibits a strong preference for moderate to steep, south-facing, dry, rocky slopes with a 50 percent cover of low shrubs (Unitt 2004; Collins 1999). Breeding occurs from March through June, and pair-bonds are formed that may last year-round (Collins 1999). Loss of habitat due to urbanization and habitat fragmentation has decreased the amount of suitable habitat for southern California rufous-crowned sparrows (Unitt 2004).

This species has been reported within two miles of the project site (CDFW 2018a; County of San Diego 2018). The project site occurs at the top of a developed mesa with a steep canyon to the north and east dominated by coastal sage scrub and chaparral vegetation. The Diegan coastal sage scrub occurring within the canyon provides potentially suitable nesting habitat for the species. Therefore, there is a moderate potential for this species to nest within the survey area. This species is not expected to occur within the project site, as no suitable habitat occurs.

e. San Diego Desert Woodrat

The San Diego desert woodrat is a CDFW species of special concern (CDFW 2018b). Its range extends through coastal areas from the San Francisco Bay well into Baja California, inland to the desert slopes of the Transverse and Peninsular ranges (Tremor et al. 2017). The San Diego desert woodrat occurs in a variety of habitats including coastal sage scrub, chaparral, pinyon-juniper woodland, and desert scrub with a preference for rock outcrops (Bond 1977; Tremor et al. 2017). The middens (nests) of this species are small and typically found in yuccas, at the base of shrubs and cacti, or in talus or rock outcrops (Tremor et al. 2017). Middens can be occupied by multiple generations and have been documented as old as 200 to 400 years of age. The breeding season for the San Diego desert woodrat is from October to May. Their diet consists of a variety of plant species and many parts of the plant including buds, fruits, seeds, bark, leaves, and young shoots (Brylski 1983). Threats to this species include habitat degradation and loss of habitat.

This species has been reported within two miles of the project site (CDFW 2018a; County of San Diego 2018). The canyon north and east of the developed mesa contains suitable moderate to dense canopy chaparral and Diegan coastal sage scrub preferred by the species. Although no yuccas, cacti, or rock outcrops were noted within the survey area, the steep slopes and inaccessible portions may have limited the detection of these features. This species has a moderate potential to occur and nest in the Diegan coastal sage scrub and chaparral within the survey area. This species is not expected to occur within the project site, as no suitable habitat occurs within the project site.

f. Southern Mule Deer

Southern mule deer is a MHCP covered species (SANDAG 2003). Southern mule deer are presently widespread throughout undeveloped portions of San Diego County, ranging from Marine Corps Base Camp Pendleton to the Laguna Mountains, Sweetwater River, and Otay Lakes at elevations of 400 to 3,600 feet (Bleich and Holl 1982). Resident and migratory populations are present throughout California. This species requires relatively large, undisturbed tracts of chaparral, coastal sage scrub, and mixed grassland/shrub habitats. Breeding usually occurs between November and February, with the fawning period between June and August. The diet of the southern mule deer consists of forbs, grasses, and nuts. Although the species is not threatened with extinction within its range, urbanization and habitat fragmentation could result in local extirpation without appropriate conservation measures.

Although this species has not been reported within two miles of the project site, the canyon within the survey area contains and is connected to a suitable large expanse of open space habitat to support this species. There is moderate potential for this species to use the Diegan coastal sage scrub and chaparral in the survey area as foraging habitat; however, breeding and fawning in the vicinity

would likely occur in more protected portions of Carlsbad Oaks North County Preserve. This species is not expected to occur within the project site, as no suitable habitat occurs within the project site. Additionally, the chain link fence that separates the project site from the canyon would prevent any potential individuals from entering the project site.

4.5 City of Carlsbad HMP

4.5.1 Functions of the HMP

The City HMP is a comprehensive, citywide program identifying how the City, in cooperation with federal and state wildlife agencies, can preserve the diversity of habitat and protect sensitive biological resources within the city of Carlsbad while allowing for additional development consistent with the City General Plan and Growth Management Plan (City of Carlsbad 2004).

4.5.2 City of Carlsbad HMP Preserve System

The City HMP has established a preserve system to provide adequate conservation for listed and covered species. The preserve system includes existing hardline preserve areas (existing dedicated open space), proposed hardline preserve areas (proposed open space), and proposed standards areas (planned open space). These open space areas, combined with addition of other lands (e.g., disturbed lands) into the preserve system, will result in conservation of approximately 6,400 acres, or 74 percent of the remaining habitat within the city. Disturbed lands and other lands provide opportunities for the City to grow the preserve lands. Development within an existing or proposed Hardline Preserve is mostly prohibited (City of Carlsbad 2004).

4.5.3 Project Site in Relation to HMP Preserve System

The Mandana Preserve (a proposed Hardline Preserve) occurs 400 feet northwest of the project site (see Figure 4).

In addition, the Draft North County MSCP Preserve Area occurs just outside of the northern and eastern project boundary (see Figure 4).

4.5.4 Wildlife Movement Corridors

Wildlife movement corridors are defined as areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features such as canyon drainages, ridgelines, or areas with vegetation cover provide corridors for wildlife travel. Wildlife movement corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high population density areas; and facilitate the exchange of genetic traits between populations (Beier and Loe 1992). Designated wildlife movement corridors are considered sensitive by resource and conservation agencies.

The project site is situated on the mesa above Carlsbad Oaks North County Preserve, which includes Agua Hedionda Creek. The creek and canyon provide a movement corridor for large wildlife;

however, the project site occurs on the edge of the canyon within a fenced, previously developed property. The project site would not serve as a movement corridor for large wildlife due to the existing tall chain link fence that separates the project site from the Preserve.

5.0 Evaluation of Project Impacts

The biological impacts for this project were assessed according to the City's Biology Guidelines (City of Carlsbad 2008), HMP (City of Carlsbad 2004), and CEQA. Mitigation is required for impacts that are considered significant under these guidelines.

Project implementation would result in permanent direct impacts, as well as potential indirect impacts. Permanent direct impacts are shown as "Project Impact Boundary" on Figure 5. Impacts are considered direct when they result in a physical change (e.g., vegetation removal, grubbing, grading, excavation) of the environment. Indirect impacts are secondary changes in the environment that are caused by a project but occur later in time or at a different place. For example, generation of dust, noise, lighting, and erosion could result in indirect impacts to plants, wildlife, and/or waterways.

5.1 Impacts to Vegetation Communities/ Land Cover Types

Impacts to vegetation communities/land cover types from the project would total 8.53 acres and would include impacts to eucalyptus woodland, disturbed land, and urban/developed land (Figure 5; Table 2). All impacts would occur within the "project impact boundary" shown on Figure 5. Therefore, there would be no impacts outside of this boundary, and all impacts would be considered permanent. No impacts to Diegan coastal sage scrub, disturbed coastal sage scrub, or southern mixed chaparral would occur. Impacts to urban/developed land, eucalyptus woodland, and disturbed land would not be considered significant and would not require mitigation. Eucalyptus woodland and disturbed land are Group F non-sensitive habitats. No mitigation is required by the City for City project impacts to Group F habitats.

Table 2
Impacts to Vegetation Communities/Land Cover Types within the Project

Community or Type (Holland Code as modified by Oberbauer)	Permanent Direct Impacts* (acres)
Diegan coastal sage scrub (32500)	—
Disturbed coastal sage scrub (32500)	—
Southern mixed chaparral (37120)	—
Eucalyptus woodland (79100)	0.39
Disturbed land (11300)	0.29
Urban/developed land (12000)	7.85
Total	**8.53**
*Permanent direct impacts are shown as Project Impact Boundary on Figure 5.	

5.2 Impacts to Sensitive Plant Species

No impacts to sensitive plant species are anticipated and no mitigation is required.

5.3 Impacts to Sensitive Wildlife Species

The project has potential to impact sensitive avian species and nesting avian species covered by the CFGC 3503 and 3503.5. No impacts are anticipated to occur to sensitive reptile or mammal species.

5.3.1 Impacts to Sensitive Reptile Species

Belding's orange-throated whiptail has a low potential to occur within the disturbed habitat connected to the canyon within the project site. However, this marginally suitable habitat presents a small fraction of the habitat available for the species. Additionally, this species is anticipated to disperse to avoid potential direct impacts. Therefore, no impacts are anticipated to occur to this species and no species-specific mitigation would be required.

5.3.2 Impacts to Sensitive Bird Species

The project may result in direct or indirect impacts to sensitive bird species or to bird species covered by the CFGC 3505 and 3503.5 that have moderate to high potential to occur within and/or adjacent to the proposed impact area.

Raptors (including Cooper's hawk) have the potential to nest in the eucalyptus woodland of the proposed impact area. If raptor nests are identified in any trees within the project site, any trimming or cutting of these trees during the nesting season (February 1 to August 15) would be considered a direct impact. Additionally, increased noise levels due to construction could result in indirect impacts to nesting raptors. Impacts to raptors that adversely affect nesting success would be considered significant and would require avoidance, minimization, and/or mitigation measures.

Coastal California gnatcatcher has moderate potential to forage and nest within the Diegan coastal sage scrub directly adjacent to the proposed impact area. Thus, increased construction noise levels during the coastal California gnatcatcher's nesting season (February 15 through August 15) could result in indirect impacts to nesting coastal California gnatcatcher. Impacts to this species that adversely affect nesting success would be considered significant and would require avoidance, minimization, and/or mitigation measures.

Nesting bird species (including southern California rufous-crowned sparrow) covered under the CFGC 3503 and 3503.5 and the HMP have potential to be impacted by the project if construction occurs within the general bird breeding season (February 15 to August 31). The eucalyptus trees within the project site provide suitable raptor nesting habitat. Direct impacts to nesting birds would be considered significant and require avoidance, minimization, and/or mitigation measures.

5.4 City of Carlsbad HMP Preserve System

The proposed impact area would not extend beyond the existing chain link fence that separates the currently developed area from the North County MSCP Preserve Area. Therefore, the project would not impact the North County MSCP Preserve Area or HMP future Hardline Preserve.

5.4.1 Wildlife Corridors

The project site occurs within a previously developed property, adjacent to Carlsbad Oaks North County Preserve. There will be no project impacts within the adjacent habitat, and the developed area will remain fenced off from the habitat. Therefore, the project would not impact a functioning wildlife corridor.

6.0 Mitigation Measures

Mitigation is required for all project impacts that are determined to be significant under the City HMP, the City's Guidelines for Biological Studies, and CEQA. For the project, this would include impacts to sensitive or listed species. The project design includes avoidance of the canyon outside of the developed and disturbed areas at the top of the mesa. Thus, impacts to sensitive biological resources would be largely minimized.

6.1 Mitigation for Impacts to Vegetation Communities/Land Cover Types

The project would not result in direct impacts to sensitive vegetation communities and no mitigation would be required.

6.2 Mitigation for Impacts to Sensitive Plants

The project would not result in impacts to sensitive plant species and no mitigation would be required.

6.3 Mitigation for Impacts to Sensitive Wildlife

6.3.1 Sensitive Reptile Species

No impacts to sensitive reptile species are anticipated and no mitigation would be required.

6.3.2 Sensitive Bird Species

Potential direct and indirect impacts to sensitive bird species, including Cooper's hawk, coastal California gnatcatcher, southern California rufous-crowned sparrow, and nesting avian species,

would require mitigation measures per the City's Guidelines for Biological Studies (2008) and HMP (City of Carlsbad 2004).

Coastal California Gnatcatcher. The following mitigation measures would be required should activities such as construction occur during the coastal California gnatcatcher breeding season (February 15 through August 15) within 500 feet of potential coastal California gnatcatcher breeding habitat (i.e., coastal sage scrub):

- A qualified biologist will conduct a single pre-construction survey in appropriate habitat within 500 feet of project activities no more than 3 days before the start of construction.

If coastal California gnatcatcher is not identified, then no further species-specific mitigation would be required. If coastal California gnatcatcher is identified during the survey, the following additional mitigation measures would be required during the coastal California gnatcatcher breeding season:

- The City will be notified immediately if coastal California gnatcatcher or other listed species is located during the pre-construction survey.
- Fencing or other measures will be installed by a qualified biologist within a buffer of at least 500 feet from active nests. No work would be conducted within the buffer until the nest is no longer active or noise attenuation measures can be implemented to ensure that construction noise would not impact nesting success (see following measure).
- During the breeding season, construction noise will be measured regularly to maintain a threshold at or below 60 A-weighted decibels hourly average noise level within 500 feet of breeding habitat occupied by the coastal California gnatcatcher. If noise levels supersede the threshold, the construction array will be changed, or noise attenuation measures will be implemented (City of Carlsbad 2008).

Raptors and Nesting Birds. The following mitigation measures would be required should activities such as vegetation removal or grading occur during the general bird breeding season (February 15 through August 31), which includes Cooper's hawk and southern California rufous-crowned sparrow:

- A qualified biologist shall conduct a survey for active nests within appropriate habitat for nesting raptors and birds in the project site as well as an additional 500-foot survey buffer within three days of vegetation removal or construction.
- If nests of federally or state listed birds, raptors, or other sensitive species are located, a protective buffer will be established around the nest by a qualified biologist. Buffer width for raptors and listed species will be 500 feet. Buffer width for other nesting species will be determined by a qualified biologist on a case-by-case basis. All construction activity will be prohibited within this area until the young have successfully fledged, and the nest is no longer active.

6.4 Mitigation for Impacts to Habitat Management Plan Preserve and Wildlife Corridors

The proposed impact area would not extend beyond the existing chain link fence that separates the currently developed area from the North County MSCP Preserve Area. Consequently, the project would not impact the HMP future Hardline Preserve or North County MSCP Preserve Area and no mitigation is required. Additionally, the project would remain in compliance with the HMP adjacency standards to fire management; erosion control; landscaping restrictions; fencing, signs, and lighting; and predator and exotic species control. As the project is proposed on previously developed land and no new development is planned beyond the existing chain link fence, the project would not be subject to any new brush management requirements. Construction would comply with best management practices to prevent erosion off-site and ensure that no new surface drainage is directed into the preserve. The proposed landscape plan does not include the introduction of non-native, invasive plant species from container stock or hydroseeded material adjacent to the preserve. No irrigation is proposed adjacent to the preserve. No native plant landscaping cultivars of coastal sage scrub and chaparral species would be taken from central or northern California locations, or from islands off the coast of southern California to avoid genetic contamination of native plant species. Existing chain link fencing that separates the project from the preserve would remain intact restricting access into the preserve. All proposed lighting adjacent to the preserve would be focused downward and shielded. No exotic species or non-native predators would be introduced. Therefore, the project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. The project would not cause impacts to a wildlife corridor and no mitigation would be required.

7.0 References Cited

American Ornithologists' Union
2017 Checklist of North and Middle American Birds. 7th ed. of the *Check-list of North American Birds* and its supplements through the 58th. http://checklist.aou.org/taxa/. July.

Atwood, J. L., and D. R. Bontrager
2001 California Gnatcatcher (*Polioptila californica*). In *The Birds of North America,* no. 574, edited by A. Poole, P. Stettenheim, and F. Gill, pp. 1-31. The Birds of North America, Inc., Philadelphia.

Baker, R. J., L. C. Bradley, R. D. Bradley, J. W. Dragoo, M. D. Engstrom, R. S. Hoffmann, C. Jones, C. A. Jones, F. Reid, and D. W. Rice
2003 Revised Checklist of North American Mammals North of Mexico. Occasional Papers, Museum of Texas Tech University No. 229. December.

Baldwin, B. G., D. Goldman, D. J, Keil, R. Patterson, T. J. Rosatti, and D. Wilken (Editors)
2012 The Jepson Manual: Vascular Plants of California. Second edition, thoroughly revised and expanded. University of California Press, Berkeley, Los Angeles, and London. January.

Beauchamp, R. M.
1986 *A Flora of San Diego County*. Sweetwater Press, National City.

Beier, P., and S. Loe
1992 A Checklist for Evaluating Impacts to Wildlife Movement Corridors. Wildlife Society Bulletin 20:434-440.

Bleich, V. C., and S. A. Holl
1982 Management of Chaparral Habitat for Mule Deer and Mountain Sheep in Southern California. In Proceedings of the Symposium on Dynamics and Management of Mediterranean-type Ecosystems, technical coordinators C. E. Conrad and W. C. Oechel, pp. 247-254. June 22-26, 1981, San Diego, CA. General Technical Report PSW-58. Pacific Southwest Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture, Berkeley.

Brenzel, K. N.
2001 *Sunset Western Garden Book*. Sunset Publishing. Menlo Park, California.

Bond, Suzanne I.
1977 An Annotated List of the Mammals of San Diego County, California. San Diego Society of Natural History Transactions 18(14):229-248.

Bostic, D. L.
1966 Food and Feeding Behavior of the Lizard, *Cnemidophorus hyperythrus beldingi*. Southwest Naturalist 11: 275-289.

Brylski, P.
1983 California Habitat Relationships System, California Department of Fish and Game, California Interagency Wildlife Task Group. Available from [www.dfg.ca.gov/whdab/html/M094.html] (copyright 2003).

California Department of Fish and Wildlife (CDFW)
2018a California Natural Diversity Database, a Natural Heritage Program. Department of Fish and Wildlife, Biogeographic Data Branch, Sacramento. Accessed in April 2018.

2018b Special Animals. Natural Diversity Database. Department of Fish and Wildlife. April.

2018c State and Federally Listed Endangered and Threatened Animals of California. Natural Diversity Database. Department of Fish and Wildlife. May.

2018d State and Federally Listed Endangered, Threatened, and Rare Plants of California. Natural Diversity Database. Department of Fish and Wildlife. April.

2018e Special Vascular Plants, Bryophytes, and Lichens List. Natural Diversity Database. Department of Fish and Wildlife. April.

California Native Plant Society (CNPS)
2018 Rare Plant Program. Inventory of Rare and Endangered Plants of California (online edition, v8-03). Sacramento, CA. Accessed May 2018. Available at http://www.rareplants.cnps.org.

California, State of
1991 Fish and Game Code of California. Gould Publications, Inc.

Carlsbad, City of
2004 Habitat Management Plan for Natural Communities in the City of Carlsbad. November.

2008 Guidelines for Biological Studies. Prepared for City of Carlsbad Planning Department by Technology Associates (TAIC). September.

Chesser, R. T., K. J. Burns, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, P. C. Rasmussen, J. V. Remsen, Jr., D. F. Stotz, B. M. Winger, and K. Winker
2018 Check-list of North American Birds (online). American Ornithological Society. http://checklist.aou.org/taxa

Collins, Paul W.
1999 Rufous-crowned Sparrow (*Aimophila ruficeps*). The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Accessed on November 11, 2013 at the Birds of North America Online Database: http://bna.birds.cornell.edu/bna/species/472.

Crother, B. I., J. Boundy, J. A. Campbell, K. De Quieroz, D. Frost, D. M. Green, R. Highton, J. B. Iverson, R. W. McDiarmid, P. A. Meylan, T. W. Reeder, M. E. Seidel, S. G. Tilley, D. B. Wake, F. T. Burbrink, F. Kraus, J. R. Mendelson III, and R. A. Pyron
2012 Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with comments regarding confidence in our understanding. Seventh edition. Society for the Study of Amphibian and Reptiles. Herpetological Circular No. 39. August.

Curtis, Odette E., R. N. Rosenfield, and J. Bielefeldt
2006 Cooper's Hawk (*Accipiter cooperii*). The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available at the Birds of North America Online Database: Accessed October 19. https://birdsna.org/Species-Account/bna/species/coohaw.

Eriksen, Clyde, and Denton Belk
1999 *Fairy Shrimp of California's Puddles, Pools, and Playas.* Mad River Press, Eureka.

Garrett, K., and J. Dunn
1981 *Birds of Southern California: Status and Distribution*. Los Angeles Audubon Society, Artisan Press, Los Angeles.

Google Earth
2018 Google Earth. Site imagery from 2010 to 2018. Accessed at: earth.google.com.

Holland, R. F.
1986 Preliminary Descriptions of the Terrestrial Natural Communities of California. Nongame-Heritage Program, California Department of Fish and Game. October.

Jennings, M. R., and M. P. Hayes
1994 Amphibian and Reptile Species of Special Concern in California. Final report submitted to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, CA. Contract number 8023.

Jepson Flora Project (eds.)
2019 Jepson eFlora, http://ucjeps.berkeley.edu/eflora/.

Lemm, J. M.
2006 *Field Guide to Amphibians and Reptiles of the San Diego Region*. University of California Press.

McGurty, B. M.
1980 Preliminary Review of the Status of the San Diego Horned Lizard, *Phrynosoma coronatum blainvillei*, and the Orange-throated Whiptail, *Cnemidophorus hyperythrus beldingi*. Report for the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California, under Contract.

Oberbauer, Thomas, Meghan Kelly, and Jeremy Buegge
2008 *Draft Vegetation Communities of San Diego County*. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California," Robert F. Holland, Ph.D., October 1986. March.

Rebman, J. P., and M. G. Simpson
2014 Checklist of the Vascular Plants of San Diego County, 5th edition. San Diego Natural History Museum.

Reiser, C. H.
2001 Rare Plants of San Diego County. Aquafir Press. July.

San Diego Association of Governments (SANDAG)
2003 Final MHCP Plan. March.

San Diego, County of
2018 SanBIOS points. SanGIS Data Warehouse. San Diego Geographic Information Source – JPA. Modified from the Biological Observation Database. Department of Planning and Land Use. Accessed May. Available at http://www.sangis.org/download/index.html.

San Diego Natural History Museum (SDNHM)
2002 Butterflies of San Diego County, prepared by Michael Klein. Revised September 2002. http://www.sdnhm.org/science/entomology/projects/checklist-of-butterflies-of-san-diego-county/.

Stebbins, R. C.
2003 *A Field Guide to Western Reptiles and Amphibians*. 3rd ed. Houghton Mifflin, Boston.

Tremor, Scott, D. Stokes, W. Spencer, J. Diffendorfer, H. Thomas, S. Chivers, and P. Unitt, eds.
2017 San Diego County Mammal Atlas. San Diego Natural History Museum.

Unitt, P. A.
2004 *San Diego County Bird Atlas*. San Diego Natural History Museum.

U.S. Department of Agriculture (USDA)
1973 *Soil Survey, San Diego Area, California*. Edited by Roy H. Bowman. Soil Conservation Service and Forest Service. December.

2013 Plants Database. Accessed from http://plants.usda.gov.

U.S. Fish and Wildlife Service (USFWS)
2010 Coastal California gnatcatcher (*Polioptila californica californica*) 5-year Review: Summary and Evaluation U.S. Fish and Wildlife Service. September.

2018a All Species Occurrences GIS Database. Carlsbad Fish and Wildlife Office. Downloaded May.

2018b Critical Habitat Portal. Available at: http://www.fws.gov/endangered/what-we-do/critical-habitats.html. Accessed April.

U.S. Geological Survey (USGS)
1997 San Luis Rey quadrangle 7.5-minute topographic map.

ATTACHMENTS

ATTACHMENT 1

Plant Species Observed

Attachment 1 Plant Species Observed			
Scientific Name	Common Name	Habitat	Origin
FERNS			
POLYPODIACEAE	**POLYPODY FAMILY**		
Polypodium californicum Kaulf.	California polypody	DCSS	N
PTERIDACEAE	**BRAKE FAMILY**		
Pentagramma triangularis (Kaulf.) Yatsk. Windham & E. Wollenw.	goldback fern	DCSS	N
GYMNOSPERMS			
PINACEAE	**PINE FAMILY**		
Pinus sp.	pine	U/D	I
ANGIOSPERMS: MONOCOTS			
AGAVACEAE	**AGAVE FAMILY**		
Chlorogalum parviflorum S. Watson	small-flower soap-plant, amole	DCSS	N
POACEAE (GRAMINEAE)	**GRASS FAMILY**		
Bromus diandrus Roth	ripgut grass	DCSS, DH	I
Bromus madritensis L. ssp. *rubens* (L.) Husn.	red brome	DCSS, DH	I
Ehrharta erecta Lam.	panic veldt grass	DCSS	I
Schismus barbatus (L.) Thell.	Mediterranean schismus	DH	I
Stipa [=*Nassella*] *lepida* Hitchc.	foothill needle grass	DCSS, EW	N
THEMIDACEAE	**BRODIAEA FAMILY**		
Dichelostemma capitatum (Benth.) Alph. Wood	blue dicks	DCSS	N
ANGIOSPERMS: DICOTS			
ADOXACEAE	**ADOXA FAMILY**		
Sambucus nigra L. ssp. *caerulea* (Raf.) Bolli [=*Sambucus mexicana*]	blue elderberry	DCSS	N
ANACARDIACEAE	**SUMAC OR CASHEW FAMILY**		
Malosma laurina Nutt. ex Abrams	laurel sumac	DCSS	N
Rhus integrifolia (Nutt.) Benth. & Hook. f. ex Rothr.	lemonade berry	DCSS, SMC, EW, DH	N
Toxicodendron diversilobum (Torr. & A. Gray) Greene	western poison oak	SMC	N
APIACEAE (UMBELLIFERAE)	**CARROT FAMILY**		
Bowlesia incana Ruiz & Pav.	American bowlesia	DCSS	N

Attachment 1 Plant Species Observed			
Scientific Name	Common Name	Habitat	Origin
ASTERACEAE	**SUNFLOWER FAMILY**		
Artemisia californica Less.	California sagebrush	DCSS, CSSD, EW, DH	N
Baccharis pilularis DC.	chaparral broom, coyote brush	DH	N
Baccharis salicifolia (Ruiz & Pav.) Pers. ssp. *salicifolia*	mule fat, seep-willow	DH	N
Centaurea melitensis L.	tocalote, Maltese star-thistle	DH	I
Deinandra sp.	tarplant	DCSS	N
Eriophyllum confertiflorum (DC.) A. Gray var. *confertiflorum*	long-stem golden-yarrow	DCSS	N
Glebionis coronaria (L.) Spach [=*Chrysanthemum coronarium*]	garland, crown daisy	DH	I
Helminthotheca [=*Picris*] *echioides* (L.) Holub	bristly ox-tongue	DH, DCSS	I
Heterotheca grandiflora Nutt.	telegraph weed	DH	N
Lactuca serriola L.	prickly lettuce	DH	I
Matricaria discoidea [=*Chamomilla suaveolens*] DC.	pineapple weed, rayless chamomile	DH	I
Pseudognaphalium biolettii Anderb. [=*Gnaphalium bicolor*]	bicolor cudweed	DCSS	N
Sonchus asper (L.) Hill ssp. *asper*	prickly sow thistle	DH	I
Sonchus oleraceus L.	common sow thistle	DCSS	I
BORAGINACEAE	**BORAGE FAMILY**		
Eucrypta chrysanthemifolia (Benth.) Greene	eucrypta	DCSS	N
Pholistoma auritum (Lindl.) Lilja var. *auritum*	fiesta flower	DCSS	N
BRASSICACEAE (CRUCIFERAE)	**MUSTARD FAMILY**		
Brassica nigra (L.) W.D.J. Koch	black mustard	DCSS	I
Hirschfeldia incana (L.) Lagr.-Fossat	short-pod mustard	DH	I
Lepidium didymium L.	lesser swine cress	DH	I
CACTACEAE	**CACTUS FAMILY**		
Opuntia littoralis (Engelm.) Cockerell.	coast prickly-pear, shore cactus	DCSS	N
CAPRIFOLIACEAE	**HONEYSUCKLE FAMILY**		
Lonicera subspicata Hook. & Arn.	southern honeysuckle	DCSS	N
CHENOPODIACEAE	**GOOSEFOOT FAMILY**		
Chenopodium album L.	lamb's quarters, pigweed	DH	I
Salsola tragus L.	Russian thistle, tumbleweed	DH	I

Attachment 1 Plant Species Observed			
Scientific Name	Common Name	Habitat	Origin
CRASSULACEAE	**STONECROP FAMILY**		
Crassula connata (Ruiz & Pav.) A. Berger	pygmy-weed	DH, DCSS	N
Dudleya edulis (Nutt.) Moran	lady fingers	DCSS	N
Dudleya pulverulenta (Nutt.) Britton & Rose	chalk lettuce, chalk dudleya	DCSS	N
CUCURBITACEAE	**GOURD FAMILY**		
Marah macrocarpa (Greene) Greene	wild cucumber	DCSS	N
ERICACEAE	**HEATH FAMILY**		
Xylococcus bicolor Nutt.	mission manzanita	DCSS, SMC	N
FABACEAE (LEGUMINOSAE)	**LEGUME FAMILY**		
Acacia redolens Maslin	vanilla-scented wattle	DH, U/D	I
Acmispon glaber (Vogel) Brouillet [=*Lotus scoparius*]	deerweed, California broom	DCSS	N
Melilotus indicus (L.) All.	sourclover	DH	I
FAGACEAE	**OAK FAMILY**		
Quercus agrifolia Née	coast live oak, encina	SMC, DH	N
Quercus berberidifolia Liebm.	scrub oak	SMC, DCSS	N
GERANIACEAE	**GERANIUM FAMILY**		
Erodium cicutarium (L.) L'Hér. ex Aiton	redstem filaree	DH	I
GROSSULARIACEAE	**GOOSEBERRY FAMILY**		
Ribes speciosum Pursh	fuchsia-flowered gooseberry	DCSS, SMC	N
LAMIACEAE	**MINT FAMILY**		
Salvia mellifera Greene	black sage	DCSS	N
MONTIACEAE	**MONTIA FAMILY**		
Claytonia perfoliata Donn ex Willd.	miner's lettuce	DCSS	N
MYRTACEAE	**MYRTLE FAMILY**		
Eucalyptus sp.	gum tree		I
Eucalyptus cladocalyx F. Muell.	sugar gum	EW	I
Melaleuca viminalis (Sol. ex Gaertn.) Bymes	weeping bottlebrush	U/D	I
MYRSINACEAE	**MYRSINE FAMILY**		
Lysimachia [=*Anagallis*] *arvensis* (L.) U. Manns & Anderb.	scarlet pimpernel	DH	I

Attachment 1 Plant Species Observed			
Scientific Name	Common Name	Habitat	Origin
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**		
Bougainvillea sp. Comm. ex Juss.	bougainvillea	U/D	I
Mirabilis laevis [=*Mirabilis californica*] (Benth.) Curran var. *crassifolia* (Choisy) Spellenb.	wishbone bush	DCSS	N
PHRYMACEAE [=SCROPHULARIACEAE]	**HOPSEED FAMILY**		
Mimulus aurantiacus Curtis	bush monkey-flower	DCSS	N
PLUMBAGINACEAE	**LEADWORT FAMILY**		
Limonium perezii (Stapf) F.T. Hubb.	Perez's marsh-rosemary	CSSD, DH, DCSS	I
POLYGONACEAE	**BUCKWHEAT FAMILY**		
Eriogonum fasciculatum Benth.	California buckwheat	DCSS, CSSD, EW, DH	N
RHAMNACEAE	**BUCKTHORN FAMILY**		
Adolphia californica S. Watson	California adolphia, spineshrub	DCSS, EW	N
Rhamnus ilicifolia Kellogg	hollyleaf redberry	DCSS, SMC	N
ROSACEAE	**ROSE FAMILY**		
Adenostoma fasciculatum Hook. & Arn.	chamise, greasewood	DCSS	N
Heteromeles arbutifolia (Lindl.) M. Roem.	toyon, Christmas berry	DCSS, SMC, DH, EW, CSSD	N
RUBIACEAE	**MADDER FAMILY**		
Galium angustifolium Nutt. ex A. Gray ssp. *angustifolium*	narrow-leaf bedstraw	DCSS	N
Galium aparine L.	goose grass, stickywilly	DH	N
URTICACEAE	**NETTLE FAMILY**		
Urtica dioica L. ssp. *holosericea* (Nutt.) Thorne	hoary nettle	DH	N

HABITATS

CSSD = Coastal Sage Scrub (Disturbed)
DCSS = Diegan Coastal Sage Scrub
DH = Disturbed Habitat
EW = Eucalyptus Woodland
SMC = Southern Mixed Chaparral
U/D = Urban/Developed

ORIGIN

N = Native to locality
I = Introduced species from outside locality

ATTACHMENT 2

Wildlife Species Observed

Attachment 2 Wildlife Species Observed				
Scientific Name	Common Name	Occupied Habitat	On-Site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence
INVERTEBRATES (Nomenclature for butterflies from San Diego Natural History Museum 2002)				
PIERIDAE	**WHITES & SULPHURS**			
Anthocharis sara sara	Pacific Sara orangetip	DCSS		O
NYMPHALIDAE	**BRUSH-FOOTED BUTTERFLIES**			
Vanessa atalanta rubria	red admiral	DCSS		O
BIRDS (Nomenclature from Chesser et al. 2018 and Unitt 2004)				
CATHARTIDAE	**NEW WORLD VULTURES**			
Cathartes aura	turkey vulture	FO	F / M, S	O
ACCIPITRIDAE	**HAWKS, KITES, & EAGLES**			
Buteo jamaicensis	red-tailed hawk	FO	F / Y	O
TROCHILIDAE	**HUMMINGBIRDS**			
Calypte anna	Anna's hummingbird	DCSS, SMC	F / Y	O
TYRANNIDAE	**TYRANT FLYCATCHERS**			
Tyrannus vociferans vociferans	Cassin's kingbird	U/D	F / Y	O
CORVIDAE	**CROWS, JAYS, & MAGPIES**			
Aphelocoma californica	California scrub-jay	SMC	F / Y	O
Corvus brachyrhynchos hesperis	American crow	U/D, EW	C / Y	O
Corvus corax clarionensis	common raven	U/D, EW	F / Y	O
HIRUNDINIDAE	**SWALLOWS**			
Stelgidopteryx serripennis	northern rough-winged swallow	FO	F / S	O
TROGLODYTIDAE	**WRENS**			
Thryomanes bewickii	Bewick's wren	DCSS	F / Y	O
TIMALIIDAE	**BABBLERS**			
Chamaea fasciata henshawi	wrentit	DCSS	F / Y	V

Attachment 2 Wildlife Species Observed				
Scientific Name	Common Name	Occupied Habitat	On-Site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence
MIMIDAE	**MOCKINGBIRDS & THRASHERS**			
Mimus polyglottos polyglottos	northern mockingbird	U/D	F / Y	O
Toxostoma redivivum redivivum	California thrasher	SMC	F / Y	O
EMBERIZIDAE	**EMBERIZIDS**			
Melozone [=*Pipilo*] *crissalis*	California towhee	DCSS, DH	F / Y	O
Pipilo maculatus	spotted towhee	DCSS	F / Y	V
FRINGILLIDAE	**FINCHES**			
Spinus [=*Carduelis*] *psaltria hesperophilus*	lesser goldfinch	DCSS	C / Y	O
Haemorhous [=*Carpodacus*] *mexicanus frontalis*	house finch	DCSS, U/D	F / Y	O

HABITATS ABUNDANCE (birds only; based on Garrett and Dunn 1981)

DCSS = Diegan Coastal Sage Scrub
DH = Disturbed Habitat
EW = Eucalyptus Woodland
FO = Flying overhead
SMC = Southern Mixed Chaparral
U/D = Urban/Developed

C = Common to abundant; almost always encountered in proper habitat, usually in moderate to large numbers
F = Fairly common; usually encountered in proper habitat, generally not in large numbers

EVIDENCE OF OCCURRENCE

O = Observed
V = Vocalization

SEASONALITY (birds only)

M = Migrant; uses site for brief periods of time, primarily during spring and fall months
S = Spring/summer resident; probable breeder on-site or in vicinity
Y = Year-round resident; probable breeder on-site or in vicinity

ATTACHMENT 3

Sensitive Plant Species Observed or with the Potential for Occurrence

Attachment 3 Sensitive Plant Species Observed or with the Potential for Occurrence							
Scientific Name Common Name	Sensitivity Code & Status State/ Federal Status	 CNPS Rank	 City of Carlsbad	Habitat Preference/ Requirements	Verified On-Site Yes/No	Potential to Occur On-Site	Factual Basis for Determination of Occurrence Potential
ANGIOSPERMS: DICOTS							
CHENOPODIACEAE GOOSEFOOT FAMILY							
Atriplex pacifica south coast saltbush	–/–	1B.2	–	Annual herb; coastal bluff scrub, coastal dunes, coastal sage scrub, playas; blooms March–October; elevation less than 500 feet.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a). However, alkaline and clay soils typically preferred by the species do not occur within the survey area.
ASTERACEAE SUNFLOWER FAMILY							
Artemisia palmeri San Diego sagewort	–/–	4.2	–	Perennial deciduous shrub; riparian, mesic, sandy areas; blooms May–September; elevation less than 3,000 feet.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a). The survey area does not contain riparian habitat that this species is typically associated with.
Corethrogyne [=*Lessingia*] *filaginifolia* var. *linifolia* Del Mar Mesa sand aster	–/–	1B.1	NE, HMP List 3	Perennial herb; coastal bluff scrub, openings in southern maritime chaparral and coastal sage scrub; sandy soil; blooms May–September; elevation less than 500 feet. San Diego County endemic.	No	Not expected within the project site. Moderate potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a). As the survey was conducted during the blooming period of this perennial species, it would likely have been observed if present. However, this low growing species could be hidden in steep inaccessible sections within the canyon portion of the survey area outside of the project site.
Hazardia orcuttii Orcutt's hazardia	CT/–	1B.1	NE, HMP List 1	Perennial evergreen shrub; often in clay soils in grassy edges of chaparral and coastal scrub; blooms August–October; elevation 280 feet. Known in California from only	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a). This perennial evergreen shrub would likely have been observed if present. While this low growing species could be hidden

Attachment 3 Sensitive Plant Species Observed or with the Potential for Occurrence							
Scientific Name Common Name	Sensitivity Code & Status			Habitat Preference/ Requirements	Verified On-Site Yes/No	Potential to Occur On-Site	Factual Basis for Determination of Occurrence Potential
	State/ Federal Status	CNPS Rank	City of Carlsbad				
				five occurrences all of which are in San Diego County. Additional populations occur in Baja California, Mexico.			in the steep inaccessible sections within the canyon portion of the survey area outside of the project site, it is not expected to occur due to the lack of clay soils.
Isocoma menziesii var. *decumbens* decumbent goldenbush	–/–	1B.2	–	Perennial shrub; chaparral, coastal sage scrub; sandy soils, often in disturbed areas; blooms April–November; elevation less than 500 feet.	No	Not expected within the project site; Moderate potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a). This perennial evergreen shrub would likely have been observed if present. However, this low growing species could occur within the steep inaccessible sections of the canyon portion of the survey area outside of the project site.
Iva hayesiana San Diego marsh-elder	–/–	2B.2	HMP List 3	Perennial herb; marshes and swamps, playas, riparian areas; blooms April–September; elevation below 1,700 feet.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a). The survey area does not contain mesic conditions that this species typically prefers.
Leptosyne [=*Coreopsis*] *maritima* sea-dahlia	–/–	2B.2	–	Perennial herb; coastal bluff scrub, coastal sage scrub; blooms March–May; elevation less than 500 feet.	No	Not expected within the project site; Low potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a). As the survey was conducted during the blooming period of this perennial species, it would likely have been observed if present. However, this low growing species could be hidden in steep inaccessible sections within the canyon portion of the survey area outside of the project site. The survey area lacks the preferred habitat of sandstone cliffs near the ocean.

Attachment 3 Sensitive Plant Species Observed or with the Potential for Occurrence							
Scientific Name Common Name	Sensitivity Code & Status			Habitat Preference/ Requirements	Verified On-Site Yes/No	Potential to Occur On-Site	Factual Basis for Determination of Occurrence Potential
	State/ Federal Status	CNPS Rank	City of Carlsbad				
BORAGINACEAE BORAGE FAMILY							
Cryptantha wigginsii Wiggins' cryptantha	–/–	1B.2	–	Annual herb; coastal sage scrub; often on clay soils; blooms February–June; elevation 65-900 feet. Discovered in San Diego County in 2010.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a). However, clay soils do not occur within the survey area.
Harpagonella palmeri Palmer's grapplinghook	–/–	4.2	–	Annual herb; chaparral, coastal sage scrub, valley and foothill grasslands; clay soils; blooms March–May; elevation less than 3,200 feet. Inconspicuous and easily overlooked.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a). However, clay soils do not occur within the survey area.
CRASSULACEAE STONECROP FAMILY							
Dudleya blochmaniae ssp. *blochmaniae* Blochman's dudleya	–/–	1B.1	HMP List 1	Perennial herb; coastal sage scrub, coastal bluff scrub, chaparral, grasslands; often in shallow clay soils, blooms April–June; elevation less than 1,500 feet.	No	Not expected within the project site; Low potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a). This species was not observed and is not expected to occur within the project site. However, this small species could be hidden in steep inaccessible sections within the canyon portion of the survey area outside of the project site. The survey area lacks clay soils often preferred by the species.

Attachment 3 Sensitive Plant Species Observed or with the Potential for Occurrence							
Scientific Name Common Name	Sensitivity Code & Status State/ Federal Status	CNPS Rank	City of Carlsbad	Habitat Preference/ Requirements	Verified On-Site Yes/No	Potential to Occur On-Site	Factual Basis for Determination of Occurrence Potential
Dudleya viscida sticky dudleya	–/–	1B.2	HMP List 2	Coastal sage scrub, mesic, north-facing slopes in shade; gabbroic rock; blooms May–June; elevation less than 1,800 feet. California endemic. Known from San Diego, Riverside, and Orange counties.	No	Not expected within the project site; Low potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a). This species was not observed and is not expected to occur within the project site. However, this inconspicuous species could occur in the steep inaccessible sections within the canyon portion of the survey area outside of the project site. The survey area lacks mesic conditions and gabbroic rock that this species is often found in.
ERICACEAE HEATH FAMILY							
Arctostaphylos glandulosa ssp. *crassifolia* Del Mar manzanita	–/FE	1B.1	NE, HMP List 3	Perennial evergreen shrub; southern maritime chaparral; sandy soil; blooms December–April; elevation less than 1,200 feet.	No	Not expected within the project site; High potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a). This species was not observed during the survey and is not expected to occur within the project site. However, this species has a high potential to occur in the steep inaccessible chaparral habitat of the canyon within the survey area, outside of the project site, that could not be observed with binoculars due to access restrictions. The canyon contains sandy soils and plant species that were documented as co-occurring in the recorded occurrences, including one record that occurs 300 feet southeast of the project site (CDFW 2018a).

Attachment 3 Sensitive Plant Species Observed or with the Potential for Occurrence							
	Sensitivity Code & Status						
Scientific Name Common Name	State/ Federal Status	CNPS Rank	City of Carlsbad	Habitat Preference/ Requirements	Verified On-Site Yes/No	Potential to Occur On-Site	Factual Basis for Determination of Occurrence Potential
Comarostaphylis diversifolia ssp. *diversifolia* summer holly	–/–	1B.2	HMP List 3	Perennial evergreen shrub; chaparral; blooms April–June; elevation 100–2,600 feet.	No	Not expected within the project site; High potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a). This species was not observed during the survey and is not expected to occur within the project site. However, this species has a high potential to occur in the steep inaccessible chaparral habitat of the canyon within the survey area, outside of the project site, that could not be observed with binoculars due to access restrictions. The canyon contains sandy soils and plant species that were documented as co-occurring in the recorded occurrences, including one record that occurs 500 feet southeast of the project site (CDFW 2018a).
EUPHORBIACEAE SPURGE FAMILY							
Euphorbia misera cliff spurge	–/–	2B.2	HMP List 1	Shrub; coastal sage scrub, maritime succulent scrub, coastal bluff scrub; blooms December–August; elevation less than 2,000 feet.	No	Not expected within the project site; Low potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a). This species was not observed and is not expected to occur within the project site. However, this species has a low potential to occur in the steep inaccessible coastal sage scrub habitat of the canyon within the survey area, outside of the project site. The survey area did not appear to contain open scrub with cobbles

Attachment 3 Sensitive Plant Species Observed or with the Potential for Occurrence							
Scientific Name Common Name	Sensitivity Code & Status State/ Federal Status	 CNPS Rank	 City of Carlsbad	Habitat Preference/ Requirements	Verified On-Site Yes/No	Potential to Occur On-Site	Factual Basis for Determination of Occurrence Potential
							and cactus, which it typically preferred by the species.
FAGACEAE **OAK FAMILY**							
Quercus dumosa Nuttall's scrub oak	–/–	1B.1	HMP List 1	Perennial evergreen shrub; closed-cone coniferous forest, coastal chaparral, coastal sage scrub; sandy and clay loam soils; blooms February–March; elevation less than 1,300 feet.	No	Not expected within the project site; High potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a). This species was not observed during the survey and is not expected to occur within the project site. However, this species has a high potential to occur in the steep inaccessible chaparral habitat of the canyon within the survey area, outside of the project site that could not be observed with binoculars due to access restrictions. The canyon contains sandy loam soils and plant species that were documented as co-occurring in the recorded occurrences, including one record last observed in 2015 that occurs within an inaccessible portion of the survey area, east of the project site (CDFW 2018a).
LAMIACEAE **MINT FAMILY**							
Acanthomintha ilicifolia San Diego thornmint	CE/FT	1B.1	NE, HMP List 2	Annual herb; chaparral, coastal sage scrub, and grasslands; friable or broken clay soils; blooms April–June; elevation less than 3,200 feet.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a). However, clay soils do not occur within the survey area.

Attachment 3 Sensitive Plant Species Observed or with the Potential for Occurrence							
Scientific Name Common Name	Sensitivity Code & Status State/ Federal Status	CNPS Rank	City of Carlsbad	Habitat Preference/ Requirements	Verified On-Site Yes/No	Potential to Occur On-Site	Factual Basis for Determination of Occurrence Potential
RHAMNACEAE **BUCKTHORN FAMILY**							
Adolphia californica California adolphia	–/–	2B.1	–	Perennial deciduous shrub; Diegan coastal sage scrub and chaparral; blooms December–May; elevation 100–2,500 feet.	Yes	Not expected within the project site; Observed within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a). Two small populations of this species were observed within the survey area. A small, dense population occurs within the northeastern portion of the survey area. Several individuals were observed within the northern portion of the survey area.
Ceanothus verrucosus wart-stemmed ceanothus	–/–	2B.2	HMP List 2	Perennial evergreen shrub; chaparral; blooms December–April; elevation less than 1,300 feet.	No	Not expected within the project site; Moderate potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a). This species was not observed during the survey and is not expected to occur within the project site. However, this species has a moderate potential to occur in the steep inaccessible chaparral habitat of the canyon within the survey area, outside of the project site that could not be observed with binoculars due to access restrictions. The closest recorded occurrence is 0.62 mile south of the project site, largely within a developed area.

Attachment 3 Sensitive Plant Species Observed or with the Potential for Occurrence							
Scientific Name Common Name	Sensitivity Code & Status State/ Federal Status	CNPS Rank	City of Carlsbad	Habitat Preference/ Requirements	Verified On-Site Yes/No	Potential to Occur On-Site	Factual Basis for Determination of Occurrence Potential
ANGIOSPERMS: MONOCOTS							
THEMIDACEAE BRODIAEA FAMILY							
Bloomeria [=*Muilla*] *clevelandii* San Diego goldenstar	–/–	1B.1	–	Perennial herb (bulbiferous); chaparral, coastal sage scrub, valley and foothill grassland, vernal pools; clay soils; blooms May; elevation 170–1,500 feet.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a). However, clay soils and grassland or open coastal sage scrub habitat typically preferred by the species do not occur within the survey area.
Brodiaea filifolia thread-leaved brodiaea [=thread-leaf brodiaea]	CE/FT	1B.1	NE, HMP List 3	Perennial herb (bulbiferous); cismontane woodland, coastal sage scrub, playas, valley and foothill grassland, vernal pools; often clay soils; blooms March–June; elevation less than 43,800 feet. California endemic. Known from San Diego, Riverside, Orange, Los Angeles, and San Bernardino counties.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a; USFWS 2018a). However, no vernal pools are present, and suitable clay soils do not occur within the survey area.
Brodiaea orcuttii Orcutt's brodiaea	–/–	1B.1	–	Perennial herb (bulbiferous); closed cone coniferous forest, chaparral, meadows and seeps, valley and foothill grassland, vernal pools; mesic, clay soil; blooms May–July; elevation less than 5,600 feet.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a). However, mesic conditions with clay soils do not occur within the survey area.

Attachment 3
Sensitive Plant Species Observed or with the Potential for Occurrence

FEDERAL CANDIDATES AND LISTED PLANTS

FE = Federally listed endangered
FT = Federally listed threatened

STATE LISTED PLANTS

CE = State listed endangered
CT = State listed threatened

CALIFORNIA NATIVE PLANT SOCIETY (CNPS): CALIFORNIA RARE PLANT RANKS (CRPR)

1B = Species rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing.
2B = Species rare, threatened, or endangered in California but more common elsewhere. These species are eligible for state listing.
4 = A watch list of species of limited distribution. These species need to be monitored for changes in the status of their populations.
.1 = Species seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat).
.2 = Species fairly threatened in California (20-80% occurrences threatened; moderate degree and immediacy of threat).

CITY OF CARLSBAD

HMP = Habitat Management Plan
List 1 = Species proposed for coverage under the Carlsbad Subarea Plan
List 2 = Species coverage contingent on other Multiple Habitat Conservation Plan Subarea plans being permitted
List 3 = Species coverage contingent upon funding for management of conserved areas
NE = Narrow Endemic Species in the Multiple Habitat Conservation Plan

ATTACHMENT 4

Sensitive Wildlife Species Occurring or with the Potential to Occur

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
INVERTEBRATES (Nomenclature from Eriksen and Belk 1999)					
BRANCHINECTIDAE **FAIRY SHRIMP**					
San Diego fairy shrimp *Branchinecta sandiegonensis*	FE, NE, HMP List 3	Vernal pools.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a; USFWS 2018a). There are no vernal pools in the survey area.
REPTILES (Nomenclature from Crother et al. 2012)					
IGUANIDAE **IGUANID LIZARDS**					
Coast horned lizard *Phrynosoma blainvillii* [= *P. coronatum* coastal population]	CSC	Chaparral, coastal sage scrub with fine, loose soil. Partially dependent on harvester ants for forage.	No	Not expected within the project site; Low potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a). The canyon north and east of the developed mesa supports coastal sage scrub; however, the steep slopes and dense vegetation cover provide only marginal quality habitat for the species.

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
TEIIDAE **WHIPTAIL LIZARDS**					
Belding's orange-throated whiptail *Aspidoscelis hyperythra beldingi*	WL, HMP List 1	Chaparral, coastal sage scrub with coarse sandy soils and scattered brush.	No	Low potential within the project site; High potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a). The canyon within the survey area, north and east of the project site, supports coastal sage scrub and chaparral with loose soil to support this species. The disturbed habitat connected to the canyon within the project site provides marginally suitable habitat for the species.
COLUBRIDAE **COLUBRID SNAKES**					
Coast patch-nosed snake *Salvadora hexalepis virgultea*	CSC	Grasslands, chaparral, sagebrush, desert scrub. Found in sandy and rocky areas.	No	Not expected within the project site; Low potential within the survey area.	This species has been observed within two miles of the project site (CDFW 2018a). The canyon within the survey area provides potentially suitable chaparral habitat and the potential to support prey species such as whiptail lizards (*Aspidoscelis* spp.). However, the lack of rock areas in the survey area reduces the potential for occurrence.

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
Two-striped gartersnake *Thamnophis hammondii*	CSC, *	Permanent freshwater streams with rocky bottoms. Mesic areas.	No	Not expected on project site or survey area.	This species has been observed within two miles of the project site (County of San Diego 2018). While this species could occur in Agua Hedionda Creek to the north, there are no suitable mesic areas within the survey area to support this species.
CROTALIDAE RATTLESNAKES					
Red diamond rattlesnake *Crotalus ruber*	CSC	Desert scrub and riparian, coastal sage scrub, open chaparral, grassland, and agricultural fields. Prefers abundant rock outcrops.	No	Not expected within the project site; Low potential within the survey area.	Although this species has not been reported within two miles of the project site, the canyon within the survey area, north and east of the project site, contains marginally suitable coastal sage scrub and is connected to a large expanse of open space habitat to support this species. However, the lack of abundant rock outcrops in the survey area reduces the potential for occurrence.

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
BIRDS (Nomenclature from Chesser et al. 2018 and Unitt 2004)					
ACCIPITRIDAE **HAWKS, KITES, & EAGLES**					
Cooper's hawk (nesting) *Accipiter cooperii*	WL, HMP List 1	Mature forest, open woodlands, wood edges, river groves. Parks and residential areas.	No	Moderate potential within project site and survey area.	Although this species has not been reported within two miles of the project site, the mature eucalyptus trees within the survey area and project site provide suitable nesting habitat for the species and the canyon provides suitable foraging opportunities.
Northern harrier (nesting) *Circus hudsonius*	CSC	Coastal lowland, marshes, grassland, agricultural fields. Migrant and winter resident, rare summer resident.	No	Not expected on project site or survey area.	Although this species has been reported within two miles of the project site (County of San Diego 2018), no suitable marsh, grassland, or agricultural fields are present. The site occurs at the top of a mesa with a steep canyon occurring to the north and east which contains coastal sage scrub and chaparral vegetation. The survey area does not contain suitable open low-growing habitat preferred by the species for foraging.

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
White-tailed kite (nesting) *Elanus leucurus*	CFP, *	Nest in riparian woodland, oaks, sycamores. Forage in open, grassy areas. Year-round resident.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a). However, the project site occurs at the top of a mesa with a steep canyon occurring to the north and east containing coastal sage scrub and chaparral vegetation. The survey area does not contain suitable open habitat for foraging or suitable woodland habitat for breeding.
RALLIDAE RAILS, GALLINULES, & COOTS					
Light-footed Ridgway's rail *Rallus* ***obsoletus*** [=*longirostris*] *levipes*	FE, CE, CFP, HMP List 1	Salt marshes supporting *Spartina foliosa*. Localized resident.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (USFWS 2018a). However, the project site does not contain suitable marsh habitat.
STRIGIDAE TYPICAL OWLS					
Western burrowing owl (burrow sites) *Athene cunicularia hypugaea*	CSC	Grassland, agricultural land, coastal dunes. Require rodent burrows. Declining resident.	No	Not expected on project site or survey area.	This species has been observed within two miles of the project site (County of San Diego 2018). The project site does not contain grassland or agricultural land preferred by the species.

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
VIREONIDAE VIREOS					
Least Bell's vireo (nesting) *Vireo bellii pusillus*	FE, CE, HMP List 1	Willow riparian woodlands. Summer resident.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a; County of San Diego 2018; USFWS 2018a). There may be site suitable riparian habitat along Agua Hedionda Creek, which occurs 0.1 mile north of the project site. However, no riparian habitat is present in the survey area.
ALAUDIDAE LARKS					
California horned lark *Eremophila alpestris actia*	WL	Sandy shores, mesas, disturbed areas, grasslands, agricultural lands, sparse creosote bush scrub.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a). However, the survey area does not contain suitable open disturbed areas such as grassland or agricultural land preferred by the species.

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
SYLVIIDAE GNATCATCHERS					
Coastal California gnatcatcher *Polioptila californica californica*	FT, CSC, HMP List 1	Coastal sage scrub, maritime succulent scrub. Resident.	No	Not expected within the project site; Moderate potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a; County of San Diego 2018; USFWS 2018a). The steep canyon slopes in the northern and eastern portions of the survey area support suitable coastal sage scrub vegetation, which provides potentially suitable nesting habitat for the species. No suitable habitat occurs within the project site.
EMBERIZIDAE EMBERIZIDS					
Southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	WL, HMP List 1	Coastal sage scrub, chaparral, grassland. Resident.	No	Not expected within the project site; Moderate potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a; County of San Diego 2018). The steep canyon slopes in the northern and eastern portions of the survey area contain coastal sage scrub and chaparral vegetation, which may provide suitable nesting habitat for the species. No suitable habitat occurs within the project site.

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
MAMMALS (Nomenclature from Baker et al. 2003)					
PHYLLOSTOMIDAE **NEW WORLD LEAF-NOSED BATS**					
Mexican long-tongued bat *Choeronycteris mexicana*	CSC	Roosts in oak or oak-conifer woodlands, semi desert grasslands, thorn shrub, and tropical deciduous forest. Generally associated with streams or riparian habitat. Feeds on nectar and pollen of night-blooming agave and cactus. Sightings in San Diego County very rare. Migratory	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (County of San Diego 2018). However, the survey area does not contain suitable nectar or roosting habitat. This species is not expected to occur in the project site.
VESPERTILIONIDAE **VESPER BATS**					
Townsend's western big-eared bat *Corynorhinus townsendii townsendii*	CSC	Found in a variety of habitats, arid and mesic, such as coniferous forests, deserts, prairies, riparian habitats, coastal habitats, and agricultural areas. Individual or colonial. Extremely sensitive to disturbance. Presence strongly tied to presence of caves and mines for roosting.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (County of San Diego 2018). However, the project site does not contain suitable cave or mines for roosting. Additionally, this species is sensitive to human disturbances.

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
MOLOSSIDAE FREE-TAILED BATS					
Pocketed free-tailed bat *Nyctinomops femorosaccus*	CSC	Observed in a variety of habitats, including desert scrub and pine-oak forests. Observed foraging over stock ponds and other water bodies. Feeds on large moths and beetles.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (County of San Diego 2018). However, the survey area is primarily developed and does not provide suitable foraging or roosting opportunities for this species.
LEPORIDAE RABBITS & HARES					
San Diego black-tailed jackrabbit *Lepus californicus bennettii*	CSC	Open areas of scrub, grasslands, agricultural fields.	No	Not expected within the project site; Low potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a; County of San Diego 2018). The coastal sage scrub and chaparral vegetation within the survey area lacks sufficient open areas required by the species. No suitable habitat occurs within the project site. Additionally, the chain link fence that separates the project site from the canyon would prevent any potential individuals from entering the project site.

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
HETEROMYIDAE POCKET MICE & KANGAROO RATS					
Dulzura pocket mouse *Chaetodipus californicus femoralis*	CSC	It occurs along the edges of chaparral, grassland, and sage scrub, and is, particularly attracted to chaparral-grassland ecotones with gravelly soil and sunny openings. Most common in inland valleys and foothills throughout San Diego County and on the coast in North County. Less common on the coast in the southern part of the county.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a; County of San Diego 2018). The survey area does not contain grassland habitat with sufficient openings to support this species.
Northwestern San Diego pocket mouse *Chaetodipus fallax fallax*	CSC	Found throughout San Diego County, with the exception of flat lowlands in Anza Borrego Desert. Prefers shrubby habitats with loose and sandy soils, often with rock outcrops. Habitat for this species is most often sparse or disturbed coastal sage scrub or grasslands.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (CDFW 2018a). The project site lacks open, rocky habitat preferred by this species.

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
MURIDAE **OLD WORLD MICE & RATS**					
San Diego desert woodrat *Neotoma lepida intermedia*	CSC	Coastal sage scrub and chaparral, where there are large rock outcrops. Middens generally made within rocky ledges or large cracks, or beneath large shrubs or cactus. Widespread throughout San Diego County, though more common in the eastern portion of the county, where habitat is less disturbed.	No	Not expected within the project site; Moderate potential within the survey area.	This species has been reported within two miles of the project site (CDFW 2018a; County of San Diego 2018). The canyon north and east of the developed mesa contains suitable moderate to dense canopy chaparral and coastal sage scrub preferred by the species. No suitable habitat occurs within the project site.
MUSTELIDAE **WEASELS, OTTERS, & BADGERS**					
American badger *Taxidea taxus*	CSC	Grasslands, Sonoran desert scrub.	No	Not expected on project site or survey area.	This species has been reported within two miles of the project site (County of San Diego 2018); however, the occurrence is dated 1971. No grassland or desert scrub habitat preferred by the species is present within the survey area.

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
CERVIDAE DEER					
Southern mule deer *Odocoileus hemionus fuliginata*	MHCP	Many habitats.	No	Not expected within the project site; Moderate potential within the survey area.	Although this species has not been reported within two miles of the project site, the canyon within the survey area contains and is connected to a suitable large expanse of open space habitat to support this species. No suitable habitat occurs within the project site. Additionally, the chain link fence that separates the project site from the canyon would prevent any potential individuals from entering the project site.

Attachment 4
Sensitive Wildlife Species Occurring or with the Potential to Occur

STATUS CODES

Listed/Proposed

FE = Listed as endangered by the federal government
FT = Listed as threatened by the federal government
CE = Listed as endangered by the state of California

CITY OF CARLSBAD

HMP = Habitat Management Plan
List 1 = Species proposed for coverage under the Carlsbad Subarea Plan
List 3 = Species coverage contingent upon funding for management of conserved areas
MHCP = Multiple Habitat Conservation Plan Proposed Covered Species List
NE = Narrow Endemic Species in the Multiple Habitat Conservation Plan

Other

CFP = California fully protected species
CSC = California Department of Fish and Wildlife species of special concern
WL = California Department of Fish and Wildlife watch list species
* = Taxa listed with an asterisk fall into one or more of the following categories:

- Taxa considered endangered or rare under Section 15380(d) of CEQA guidelines
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range
- Population(s) in California that may be peripheral to the major portion of a taxon's range but which are threatened with extirpation within California
- Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands)