BASELINE BIODIVERSITY REPORT
LUSARDI CREEK PRESERVE ADDITION

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Acronyms and Abbreviations

°F	degrees Fahrenheit
Addition	Lusardi Creek Preserve Additional Parcel
AMSL	above mean sea level
Anabats	Anabat II bat detectors
CAL FIRE	California Department of Forestry and Fire Protection
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	County of San Diego
DPR	County of San Diego Department of Parks and Recreation
CRPR	California Rare Plant Rank
FMP	Framework Management Plan
GPS	Global Positioning System
mph	miles per hour
MHPA	Multi-habitat Preservation Area
MSCP	Multiple Species Conservation Program
NVCS	National Vegetation Classification System
Preserve	Lusardi Creek Preserve
RMP	Resource Management Plan
SDMMP	San Diego Management and Monitoring Program
MSCP Subarea Plan	Multiple Species Conservation Program County Subarea Plan
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VCM	Vegetation Classification Manual for Western San Diego County

Summary

In 2013, the County of San Diego Department of Parks and Recreation acquired a 31.1-acre property (referred to as the Addition within this report; assessor's parcel number 269-100-29) to expand the existing approximately 193-acre Lusardi Creek Preserve (referred to as the Preserve within this report). This expanded preserved lands within the Multiple Species Conservation Program County Subarea Plan (Subarea Plan) preserve system.

Baseline biodiversity resource surveys were conducted for the Preserve (ICF Jones & Stokes 2008). A cultural resource survey was also conducted for the Preserve, and a Resource Management Plan was prepared and finalized in 2009 (County of San Diego [County] 2009).

The Addition is in the Lake Hodges segment of the Subarea Plan (County 1997) (Figure 3 [in Chapter 1]). The majority of the Addition is designated as Hardline Preserve.

ICF conducted a baseline biological inventory study in 2018 at the Addition that included the following: (1) vegetation surveys with habitat community, rare plant, and invasive non-native plant species mapping components; (2) butterfly surveys and habitat assessments; (3) herpetofauna surveys, including box traps and nocturnal pedestrian surveys; (4) ornithological surveys, including diurnal and nocturnal surveys; and (5) mammal surveys, including small mammal trapping, camera stations for medium to large mammals, and active and passive bat surveys.

This report summarizes all survey methodologies and data collected during the 2018 survey period. It also provides recommendations for management of Multiple Species Conservation Program–covered plant and animal species.

The Addition includes the following 15 plant alliances/associations, groups, or land cover types: chamise chaparral (*Adenostoma fasciculatum* Alliance), coastal sagebrush scrub (*Artemisia californica* Alliance), Menzies' goldenbush scrub (*Isocoma menziesii* Alliance), lemonadeberry scrub (*Rhus integrifolia Association)*, eucalyptus forests and woodlands (*Eucalyptus* [*globulus*, *camaldulensis*] Semi-natural Stands), arroyo willow riparian forests and woodlands (*Salix lasiolepis* Alliance), mulefat thickets (*Baccharis salicifolia* Association), arrow weed thickets (*Pluchea serricea* Association), cattail marshes (*Typha* [*angustifolia, domingensis, latifolia*] Alliance), annual brome grasslands (Mediterranean California Naturalized Annual and Perennial Grassland Semi-natural Stands), upland mustards (*Brassica nigra* Semi-natural Stand Type), pampas grass patches (Naturalized Warm-temperate Riparian and Wetland Semi-natural Stands), giant reed breaks (*Arundo donax* Semi-natural Stands), disturbed habitat, and developed lands.

The current survey effort documented 13 vegetation associations/alliances, plus two landcover types and 159 plant and animal species within the Addition. Specifically, the surveys detected 91 plant species and 71 wildlife species. Of these species, six plants are considered special status, and one is covered by the MSCP: San Diego barrel cactus (*Ferocactus viridescens*). Eight special-status wildlife species were detected during the surveys, three of which are covered by the MSCP: Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), least Bell's vireo (*Vireo bellii pusilis*), and southern mule deer (*Odocoileus hemionus fuliginata*).

Chapter 1
Introduction

1.1 Purpose of the Project

In 2013, the County of San Diego Department of Parks and Recreation (DPR) acquired a 31.1-acre property (referred to as the Addition within this report; assessor's parcel number 269-100-29) to expand the existing approximately 193-acre Lusardi Creek Preserve (referred to as the Preserve within this report) (Figures 1 and 2).

Baseline biodiversity resource surveys (ICF Jones & Stokes 2008) and cultural resources surveys were conducted for the Preserve in 2008. A Resource Management Plan (RMP) was prepared and finalized for the Preserve in 2009 by County of San Diego Department of Parks and Recreation (County of San Diego Department of Parks and Recreation [DPR] 2009). Baseline biological resources surveys were conducted within the Addition in 2018 to identify and map existing biological resources.

This report provides information that will be used in an update to the RMP. The area-specific management directives will provide the framework for monitoring and managing the Addition's resources.

1.2 Multiple Species Conservation Program Context

The Addition is in the Lake Hodges segment of the Multiple Species Conservation Program County Subarea Plan (Subarea Plan) (County 1997) (Figure 3). The majority of the Addition is designated as Hardline Preserve. The mesa in the northeast portion of the Addition is within the Santa Fe Valley "D" designation (Figure 3). These areas were known to support sensitive biological resources during Multiple Species Conservation Program (MSCP) planning. The Santa Fe Valley "D" designation allows for very limited habitat disturbance for the placement of a single-family residence.

The Addition connects the San Dieguito River Valley to conserved lands to the east-southeast, including the City of San Diego Black Mountain Open Space Preserve (Figure 4).

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Figure 1
Regional Location Map
Lusardi Creek Preserve Addition

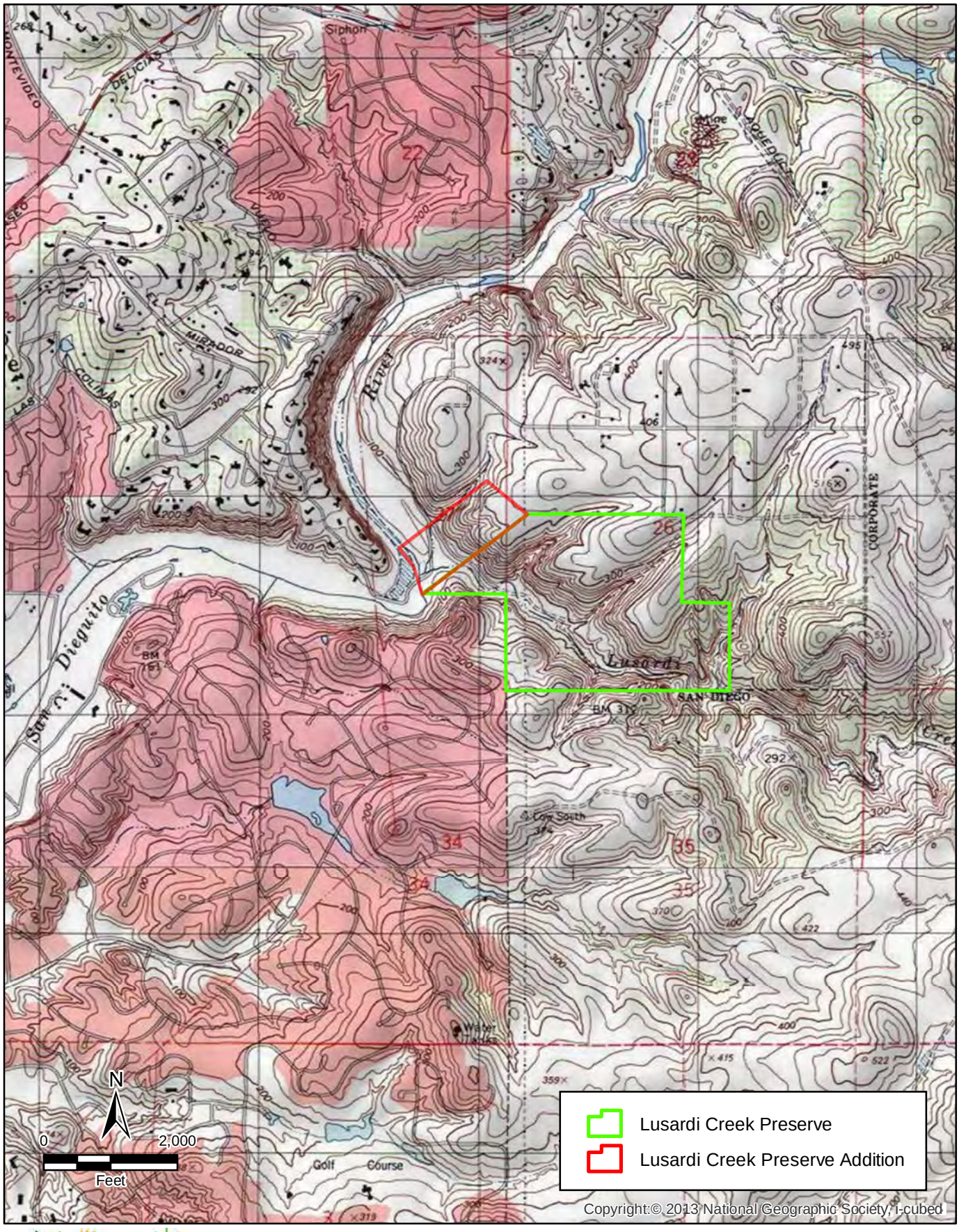

Figure 2
Project Vicinity Map
Lusardi Creek Peserve Addition

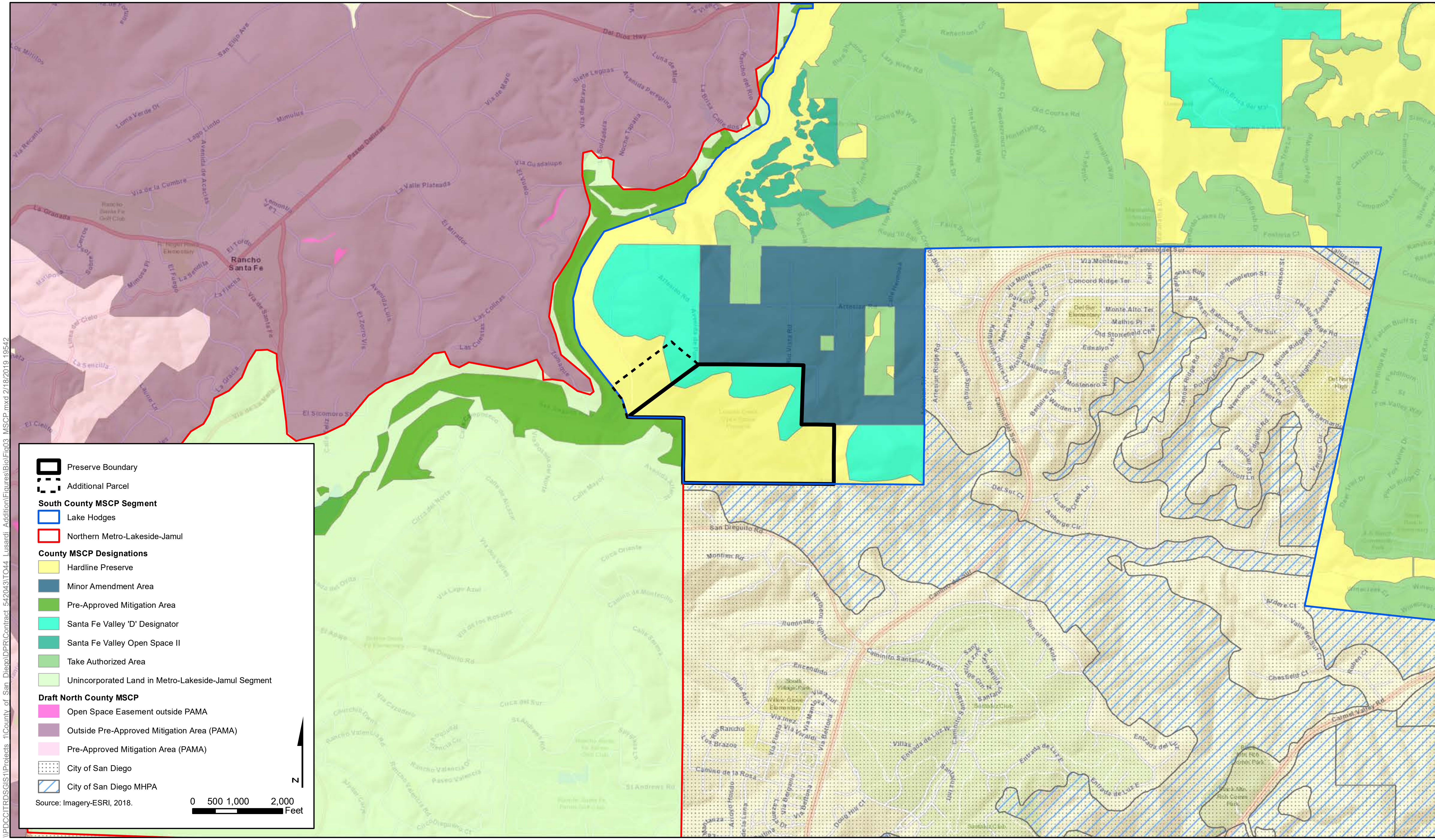

Figure 3
MSCP Designations
Lusardi Creek Preserve Addition

Chapter 2
Study Area Description

2.1 Project Location

The Addition is an expansion of Lusardi Creek Preserve and is located just east of the community of Rancho Santa Fe, north of the community of Black Mountain Ranch, west of the community of Rancho Bernardo, and south of Del Dios Highway within an unincorporated area of San Diego County (Figures 1 and 2). Lusardi Creek Preserve can be accessed from Rio Vista Road. The Addition is bisected by Artesian Road. The Preserve can be found on the U.S. Geological Survey (USGS) Rancho Santa Fe 7.5-minute quadrangle map in Township 13 South, Range 3 West, Section 27 (Figure 2).

2.2 Geographical Setting

The Addition is in the central coast area of San Diego County. The natural setting of the Addition consists of rolling uplands and mesas that are cut by numerous canyons, ravines, and drainages. Hillsides and a mesa are found on the northeastern half of the Addition, and a floodplain terrace is found on the southwestern half. A dirt utility road at the base of a hill on the Addition bisects these landforms. Elevations on the Addition range from 50 feet above mean sea level (AMSL) on the southwest edge, along the San Dieguito River, to 320 feet AMSL at the mesa's edge on the northeast side.

2.3 Geology and Soils

Several general soil associations are represented within the Addition: Olivenhain series, San Miguel-Exchequar, Terrace escarpments, and Tujunga series (Figure 5) (U.S. Department of Agriculture [USDA] 1973).

The ***Olivenhain*** soil series is characterized by well-drained, moderately deep to deep cobbly loams, usually on slopes ranging from 2 to 50 percent. Specifically, it is found on dissected marine terraces at elevations ranging from 30 to 183 meters (100 to 600 feet). The surface layer is usually 25 centimeters (10 inches) thick and moderately acidic. The cobbly loam topsoil is brown or reddish-brown. The very cobbly clay and clay loam subsoil is reddish-brown, red, or pink in color; strongly acidic; and about 81 centimeters (32 inches) thick. The substratum is pinkish-white in color and strongly acidic. Runoff is medium to rapid, and the erosion hazard is moderate to high. The specific soil type found in the Addition is Olivenhain cobbly loam (2 to 9 percent slopes and 9 to 30 percent slopes). Within the Addition, Olivenhain soils support Diegan coastal sage scrub and chamise chaparral vegetation communities.

The ***San Miguel-Exchequer*** soil series is characterized by well-drained silt loams over metavolcanic rock, usually on slopes ranging from 9 to 70 percent. These soils are located in mountain uplands at elevations between 122 meters (400 feet) and 1,006 meters (3,300 feet). The series consists of 50 percent San Miguel silt loam, 40 percent Exchequer silt loam, and 10 percent

rock outcrops. The surface layer is usually yellow-red silt, sandy loam underlain by clay and then metavolcanic rock. Permeability is slow to moderate, and runoff is medium to rapid. The specific soil type found in the Addition is San Miguel-Exchequer rocky silt loam (9 to 70 percent slopes). Within the Addition, Diegan coastal sage scrub is found on San Miguel-Exchequer soils.

Terrace escarpments are steep to very steep escarpments that occur on the even fronts of terraces or alluvial fans. This soil is usually found between narrow floodplains and adjacent uplands or on the steep sides of drainage ways. Non-native grassland and Diegan coastal sage scrub occur on terrace escarpment soils within the Addition.

The ***Tujunga*** soil series is characterized by very deep, excessively drained sands that are derived from recent granitic alluvium and usually found on slopes ranging from 0 to 5 percent. These soils are found on alluvial fans and floodplains between sea level and 457 meters (1,500 feet) AMSL. The surface layer is usually brown sand, approximately 36 centimeters (14 inches) thick, over pale brown coarse sand that is more than 152 centimeters (60 inches) thick. Permeability is rapid in this soil, and runoff is very slow. The specific soil type found in the Addition is Tujunga sand (0 to 5 percent slopes), which occurs at the confluence of Lusardi Creek with the San Dieguito River.

Vegetation communities occurring on these soils in the Addition include southern arroyo willow riparian forest, mule-fat scrub, arrow weed scrub, freshwater marsh, non-native riparian, giant reed–dominated riparian, coastal scrub, eucalyptus woodland, and non-native grassland.

2.4 Climate

A semi-permanent high-pressure cell over the Pacific Ocean dominates San Diego County's climate. This cell drives onshore circulation, maintaining clear skies for much of the year. Summers in the Addition are typically warm and dry, while winters are mild with occasional rain (USDA 1973). In a normal year, precipitation averages 12 to 15 inches and falls mostly in the winter and spring.

A predominant feature of the local climate is the sea-breeze/land-breeze cycle. During the daytime, particularly in the summer, onshore winds move inland with speeds of approximately 7 to 10 miles per hour (mph). Easterly land breezes of approximately 2 to 4 mph often occur at night. The surrounding rugged terrain, which induces turbulence in the airflow, modifies the influence of this cycle. In addition, this cycle is periodically affected by land airflows that dominate weather patterns. The most widely recognized of these are the Santa Ana winds, during which strong, hot, dry easterly winds prevail for 2 to 3 days.

2.5 Hydrology

The Addition is situated within the San Dieguito River watershed, along the San Dieguito River, approximately 1 mile downstream from Lake Hodges (Figure 6). Designated beneficial uses for the San Dieguito River and its tributaries in Hydrologic Unit Basin 5.11 include contact water recreation, non-contact water recreation, warm freshwater habitat, cold freshwater habitat, wildlife habitat, and spawning, reproduction, and/or early development. Potential beneficial uses include agricultural supply and industrial process supply (California Regional Water Quality Control Board, San Diego Region 2016). The low-flow channel of the San Dieguito River is within the southwestern boundary of the Addition. Lusardi Creek enters the Addition and merges with the San Dieguito River

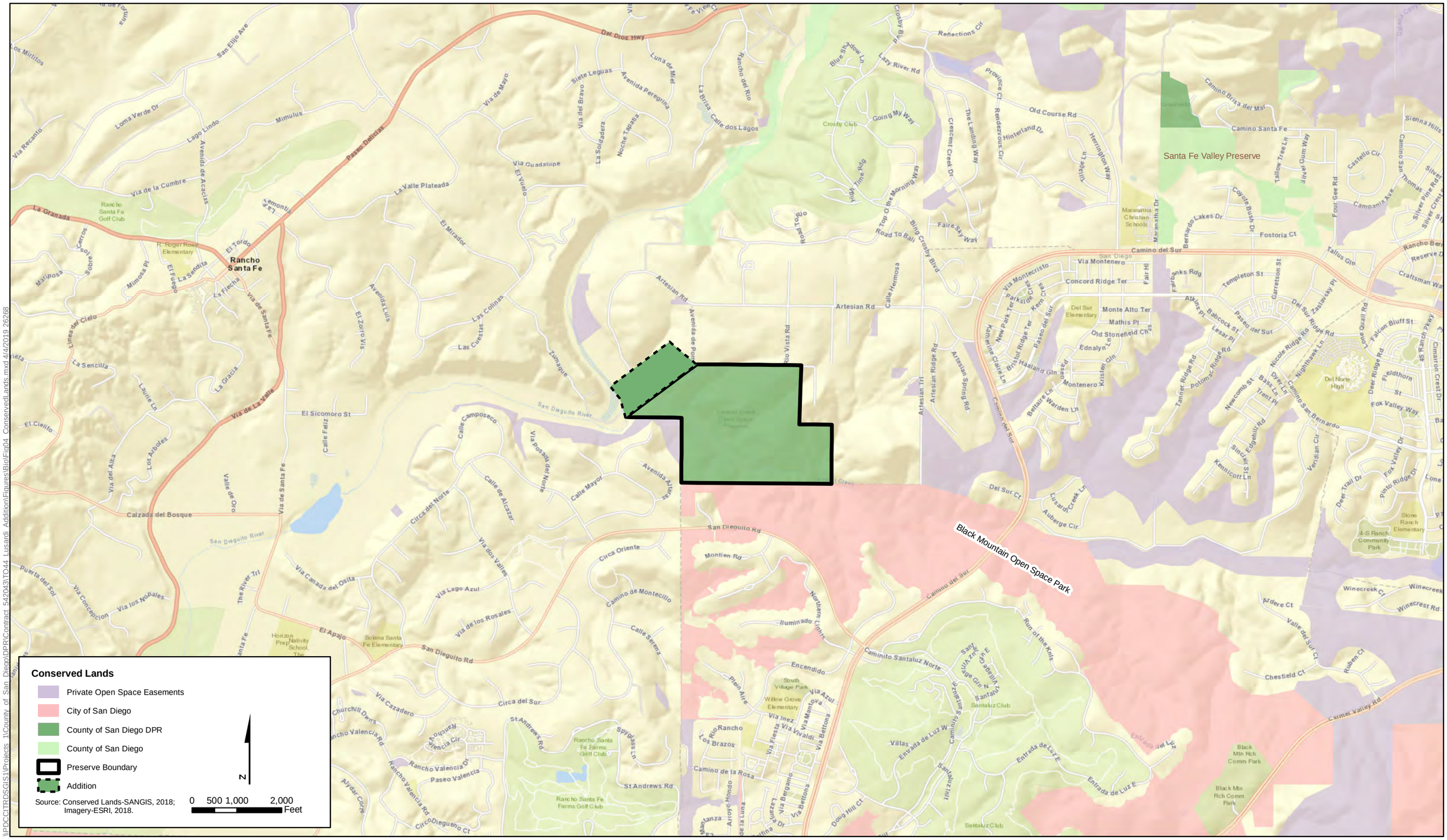

Figure 4
Conserved Lands
Lusardi Creek Preserve Addition

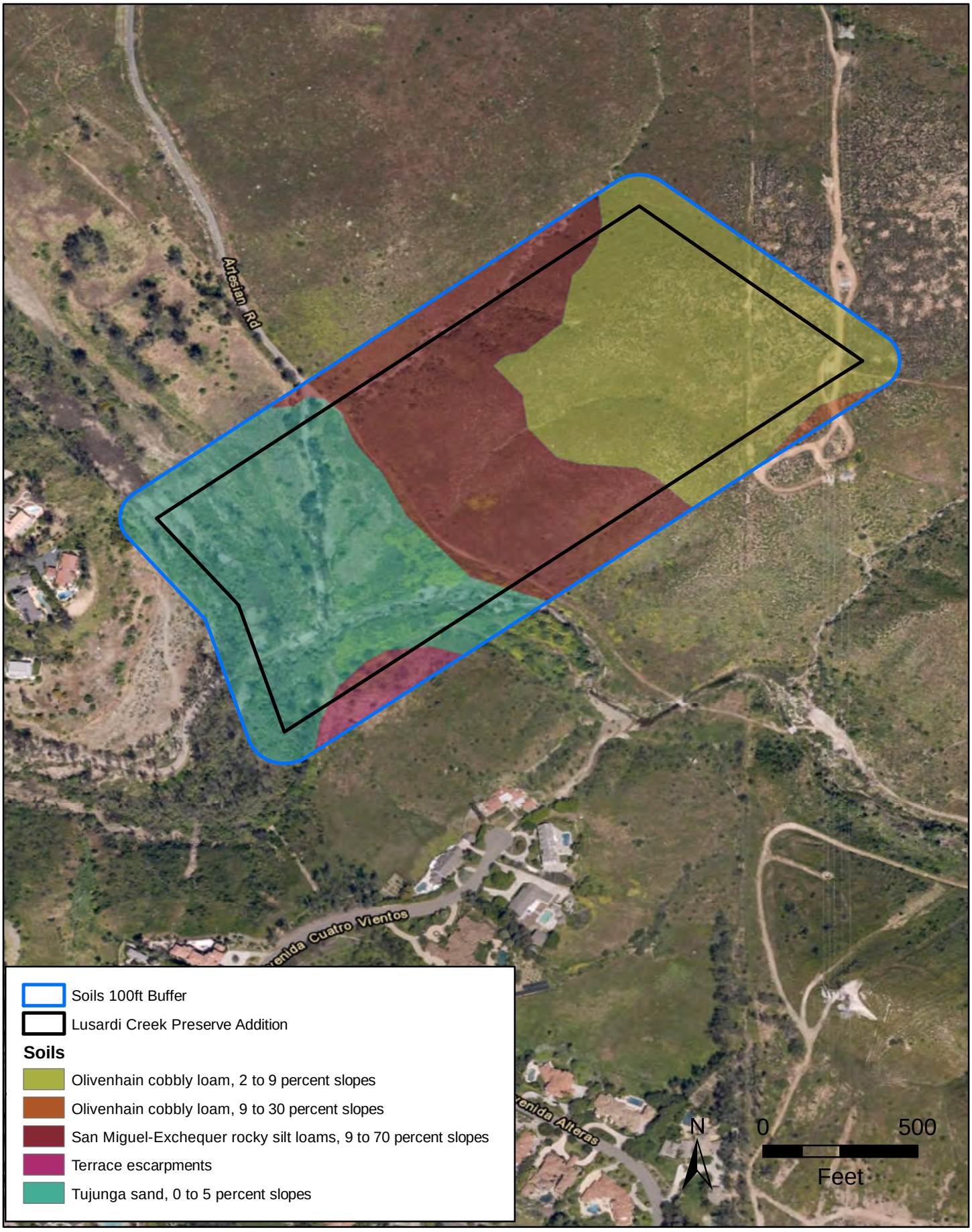

Figure 5
Soils
Lusardi Creek Preserve Addition

in the southern portion of the Addition. A small ephemeral drainage exists at the center of the site, flowing from northeast, at the mesa top, to southwest. A larger ephemeral drainage exists along the northwest boundary of the site and merges with the San Dieguito River near the confluence with Lusardi Creek (Figure 6).

FEMA assigns flood hazard severity risk zones over lands. Areas within A and AE are considered Special Flood Hazard Areas. The San Dieguito River within the Addition is mapped as a Flood Zone A, and San Dieguito Creek is mapped as Flood Zone AE. These areas are subject to inundation by a 1-percent-annual-chance flood event. The remainder of the Addition is mapped as Flood Zone X and is considered to have minimal flood hazard and is outside of the 0.2 percent annual chance floodplain.

2.6 Fire History

The Addition is dominated by grasslands and scrub communities, which are naturally maintained by infrequent fires. If the natural fire cycle is suppressed, these vegetation communities can become senescent, declining in both health and diversity. If fire frequency is increased, vegetation could shift toward disturbed grassland or opportunistic pioneering shrub communities. The fire cycles in the area are affected by actions within and adjacent to the Addition. Surrounding development and brush management actions associated with urban development have altered fire cycles throughout most of western San Diego County. According to County fire burn data (SanGIS 2018), the entirety of the Addition burned in an unnamed fire in 1943 and the Witch Fire in 2007. The riparian areas burned in the Bernardo Fire in 2014 (Figure 7).

The 2007 and 2014 fires were close together temporally; therefore, further burns at this interval would have the potential to negatively affect native habitats and the species upon which they rely. Any burns in the next 10 to 20 years would result in an unnaturally high fire frequency and have the potential to negatively affect native vegetation communities. The Addition and adjacent Preserve connect City of San Diego Multi-habitat Preservation Areas (MHPAs) to the San Dieguito River, areas that otherwise would be largely surrounded by residential and rural residential communities. If fires burn through the Addition and Preserve, the fires would have the potential to result in the extirpation of local populations of sensitive and MSCP covered plant and animal species. Furthermore, the recolonization of burned areas by native vegetation is constrained by the surrounding development.

2.7 Trails and Roads

The Preserve and the Addition are open to the public. A dirt road within a San Diego Gas & Electric easement provides access to the Preserve from Artesian Road. This dirt road generally separates the floodplain area in the Addition from the hillside. A gate restricts vehicular access to the dirt road from Artesian Road. Two dirt roads are present on the hilltop on the northeast side of the Addition.

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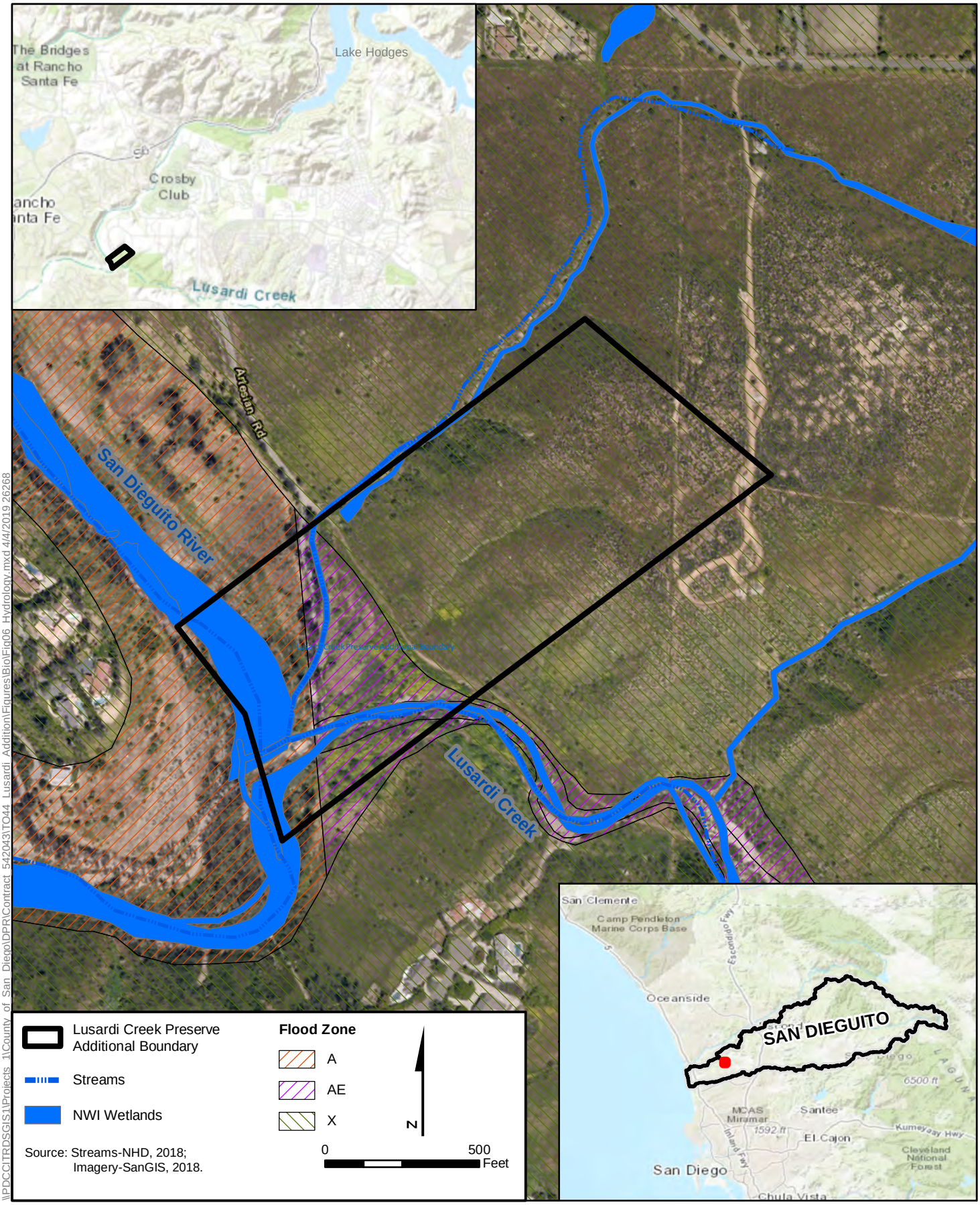

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Figure 6
Hydrology Map
Lusardi Creek Preserve Additional Parcel

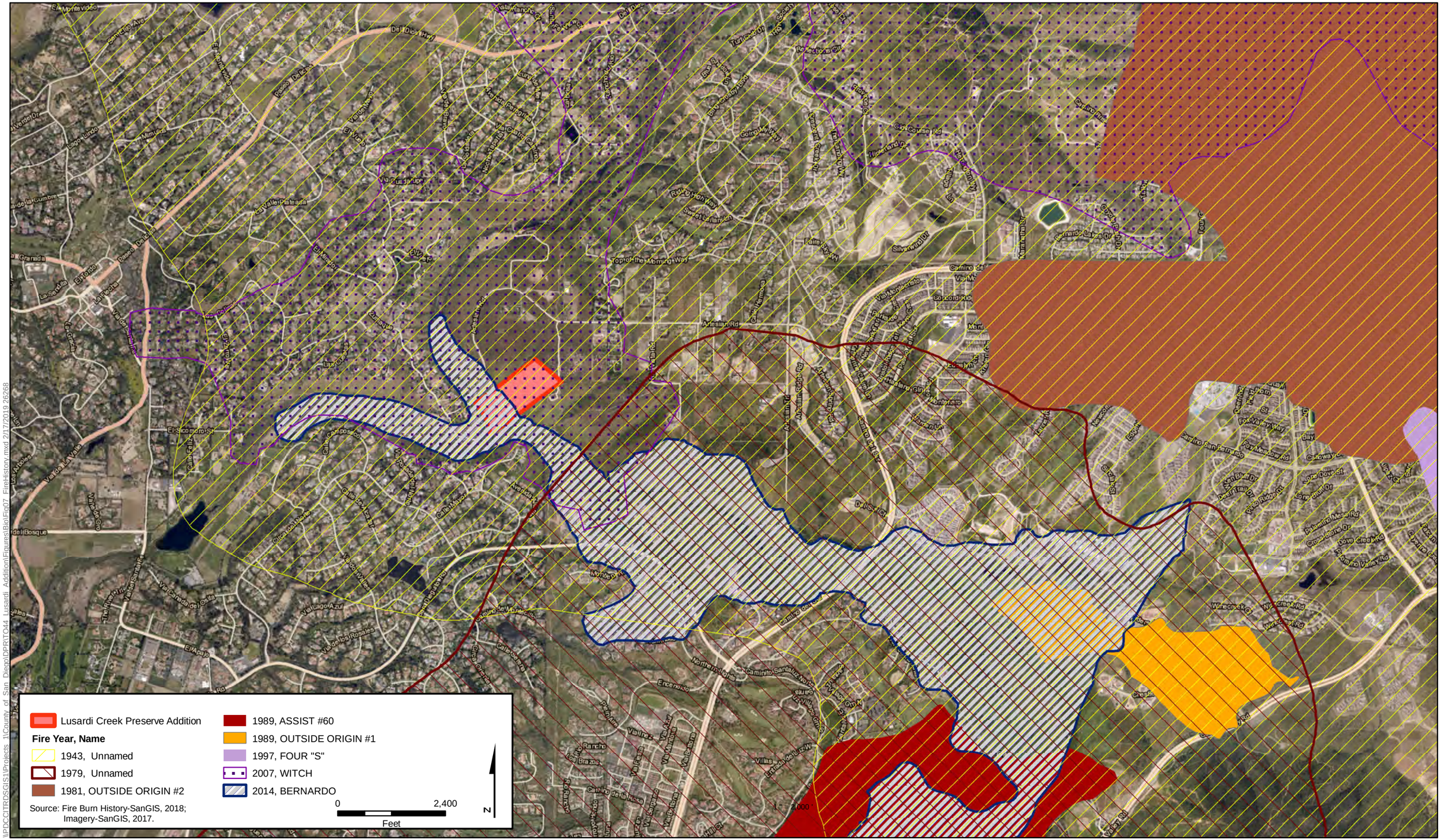

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Figure 7
Fire History Map
Lusardi Creek Preserve Addition

Chapter 3
Methods

ICF biologists conducted baseline biological surveys from January 10 through September 26, 2018, at the Addition, including the following: (1) vegetation surveys with habitat community, rare plant, and invasive plant species mapping components; (2) butterfly surveys; (3) herpetofauna surveys; (4) avian surveys, including diurnal surveys and nocturnal surveys; and (5) mammal surveys, including small mammal trapping, camera stations for medium to large mammals, and passive and active acoustical bat surveys.

The following sources are followed for taxonomy and nomenclature, including both scientific and standardized English names: Arnett (2000) for higher taxonomic categories of invertebrate animals, generally Opler and Wright (1999) or Hogue (1993) for invertebrate species, Society for the Study of Amphibians and Reptiles (2018) for amphibians and reptiles, American Ornithological Society (Chesser et al. 2018) for birds, and Bradley et al. (2014) for mammals. Where this information differs from MSCP names, the MSCP information is provided parenthetically. The scientific binomial from the cited reference is included with the first mention of a species in the body of this report.

3.1 Vegetation Communities/Habitats

3.1.1 Vegetation Communities Mapping

Vegetation communities were mapped within the Addition boundaries and included a 100-foot buffer pursuant to County guidelines (County 2010). Vegetation mapping was conducted by ICF botanist Lance Woolley on January 10, 2018. Vegetation was mapped to the 2011 *Vegetation Classification Manual for Western San Diego County*, herein referred to as the VCM (AECOM et al. 2011), which is based on *A Manual of California Vegetation* (MCV; Sawyer, Keeler-Wolf, Evens 2009), as well as the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) (as modified by Oberbauer 2008) classification system.

The VCM is a hierarchical system that is consistent with the National Vegetation Classification System (NVCS). The highest levels of the NVCS are very broad and therefore not part of the locally derived VCM, which focuses on the lowest levels—the alliances, associations, and stands. *Alliances* are characterized by "the presence of diagnostic species within a range of cover values within a single plant stratum," and *associations* are a "subset of types within an alliance, which are further defined by additional diagnostic species that may be present in any stratum" (AECOM et al. 2011). The most basic unit in the VCM classification system is the *stand*, which is defined by species composition and relative cover as well as structural integrity (e.g., vertical and horizontal structure resulting from local environmental conditions and site history). *Semi-natural stands* are equivalent to an alliance but dominated by non-native plant species.

The vegetation types (e.g., alliances and associations) were determined by assessing the relative dominance of tree, shrub, and herbaceous species. These determinations were made with use of a key, which was in the form of an interactive program that was installed on an iPad and used in the field. In addition, to confirm the field identification, "membership rules" were reviewed as well as the slope aspect, topographic position, and soil texture for each alliance and association. The

boundaries of vegetation communities were drawn within a map within the ESRI Collector application used on an Apple iPad. To ensure consistency with previous mapping, the MSCP, and other planning or regulatory documents, mapping on the Addition was cross-walked to the Holland classification system (1986), as modified by Oberbauer et al. (2008), pursuant to guidelines detailed in Appendix C of the VCM. Mapping of the VCM and Holland is presented in the results section of this report (Section 4).

All existing roads were included on the vegetation community figures and depicted as either disturbed (dirt) or developed (paved). Man-made or unvegetated land covers not described in the VCM are presented with their "Holland" descriptions.

3.2 Plants

Prior to conducting rare plant surveys, ICF biologists performed a literature search of the available special-status species databases to determine if rare plants were previously detected or known to occur within the vicinity of the Addition. The available data that were reviewed included the California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife [CDFW] 2018); the California Native Plant Society (CNPS) Rare Plant Inventory (CNPS 2018); the USDA soil survey of the area (USDA 1973); the Baseline Biological Resources Evaluation, Lusardi Creek Preserve (ICF Jones & Stokes 2008); and USGS topographic maps to identify potential stream courses and other notable topographic features.

Surveys were conducted to categorize and map the plant communities within the Addition, map special-status plants, map invasive non-native plant species, document all flora observed, and assess the potential occurrence of special-status plant species not detected during the surveys. Rare plant survey priority areas were determined once the literature search and the vegetation mapping were complete. For the purpose of this project, special-status plant species include all species listed or proposed for listing by the U.S. Fish and Wildlife Service (USFWS) and CDFW, any species with a California Rare Plant Rank (CRPR) of 1B through 4, any species on the County list (A, B, C, and D), and any species covered under the MSCP.

3.2.1 Floristic Surveys

Focused sensitive plant species surveys were performed within the Addition on January 10, April 23, and May 21, 2018 (Table 1). Surveys were conducted in accordance with survey protocols set forth by *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009) and *CNPS Botanical Survey Guidelines* (CNPS 2001).

Table 1. Floristic Inventory Surveys at the Addition in 2018

Activity	Survey Personnel	Date
Vegetation Mapping, invasive plant mapping, rare plant mapping	Lance Woolley	1/10/2018
Rare plant mapping, invasive plant mapping	Lance Woolley, Nicole Salas	4/23/2018
Rare plant mapping, invasive plant mapping	Shawn Johnston	5/21/2018

All plants observed within the Addition were identified to species (including subspecies or variety, as applicable) using *The Jepson Manual Vascular Plants of California Second Edition* (Baldwin et al. 2012) and recorded in a species compendium. Plant common names followed the *Checklist of the Vascular Plants of San Diego County,* fifth edition (Rebman and Simpson 2014), if the common names were not provided in Baldwin et al. (2012).

The locations of special-status plants were mapped with ESRI Collector software on an Apple iPad and uploaded to ArcGIS Online. Subsequent to the field survey, data were brought into ESRI ArcGIS for analysis.

A list of plant species observed on the Addition is provided as Appendix A. Sensitive plant species were evaluated for their probability of occurring within the Addition (see table presented in Appendix C).

During vegetation mapping and rare plant surveys, botanists mapped perennial highly invasive plant species, focusing on species that are invasive but have the potential to be controlled as well as rare shrubs and cactus. Annual Mediterranean grasses are highly invasive but were not mapped because these species cannot be practicably controlled across the Addition.

Maintenance of variegated dudleya (*Dudleya variegata*) was being conducted on the main Preserve under a separate contract by D&D Wildlife Habitat Restoration, which reported that variegated dudleya was not fully in bloom on April 17; therefore, the second rare plant survey was postponed until April 23, 2018, to coincide with the period of maximum detectability for variegated dudleya. This visit would also have been appropriate for detecting other rare annuals known from the Preserve (ICF Jones & Stokes 2008), including small-flowered morning glory (*Convolvulus simulans*) and Palmer's grapplinghook (*Harpagonella palmeri*). Graceful tarplant (*Holocarpha virgata* ssp. *elongata*) is a late-blooming annual known from the Preserve. Another rare plant visit was conducted on May 21 to coincide with maximum detectability for tarplant species.

3.3 Wildlife

Surveys were conducted to document the wildlife species currently using the Addition and assess the potential occurrence of special-status wildlife species not detected during the surveys (Appendix D).

3.3.1 Invertebrates

3.3.1.1 Butterflies

ICF biologist Ford Bendell conducted an inventory of butterfly species on June 14, 2018. The inventory included walking transects through all vegetation communities within the Addition and recording butterfly species observed. Weather was favorable for butterfly observation, skies were clear, winds were from 0 to 5 mph, and temperatures between 75°F and 88°F.

No focused surveys were conducted for Quino checkerspot butterfly (*Euphydryas editha quino*), a federally listed endangered species, because the Addition is outside of the USFWS recommended survey area (USFWS 2014). Additionally, no host plants for Quino checkerspot butterfly were observed within the Addition during floristic surveys. As of 2014, the list of larval host includes dot-seed plantain (*Plantago erecta*), desert plantain (*Plantago patagonica*), Coulter's snapdragon

(*Antirrhinum coulterianum*), bird's beak (*Cordylanthus rigidus)*, purple owl's clover (Castilleja exserta), and Chinese houses (*Collinsia heterophylla*) (USFWS 2014). Quino checkerspot butterflies lay their eggs on exclusively on these plants. The larvae then eat the plants as they develop and form chrysalis within leaves of the host plant. Adult Quino checkerspot butterfly then feed on the nectar of any short-corolla flower.

No focused surveys were conducted for Hermes copper butterfly (*Lycaena hermes*), a federal candidate species, because suitable habitat was not present. Hermes copper butterflies use spiny redberry (*Rhamnus crocea*) as their larval host plant and preferentially choose mature spiny redberry surrounded by the nectaring resource California buckwheat (*Eriogonum fasciculatum*). No spiny redberry host plants were observed during habitat assessments; therefore, no flight-season surveys were considered. All butterfly species detected during the surveys were identified and counted. In addition, butterflies identified during other biological surveys are included in the wildlife species detected list in Appendix C.

3.3.1.2 Other Invertebrates

ICF biologists recorded a list of other invertebrate species observed during general surveys. The observations are included in Appendix C.

3.3.2 Herpetofauna

ICF conducted surveys for herpetofauna (amphibians and reptiles) within the Addition from May 29 to June 1, 2018. The selection of array locations was based on access, vegetation community, soils, topography, and avoidance of known special-status resources (including cultural resources) (Figure 8). Array 1 was placed in Diegan coastal sage scrub adjacent to an ephemeral drainage at the base of the hillslope (Figure 8). Array 2 was placed in the floodplain in the arrow weed scrub. The arrays included 100 feet of silt drift fence. Silt fence was installed by Will Kohn and Kelsey Dix on May 21, 2018. Four funnel box traps were placed at each array on May 28; no pitfall traps were used at this site. The traps were covered with a lid to shade them. A piece of 2-inch plastic pipe with synthetic cotton batting was placed in each trap to shelter incidentally trapped small mammals. Four 2- by 2-foot plywood coverboards were placed in the vicinity of the arrays and checked during trapping.

All areas immediately surrounding the arrays were actively searched for herpetofauna during monitoring of each array. Furthermore, active searches for herpetofauna were conducted during other wildlife surveys at the Addition. Active searches included looking under rocks, shrubs, and logs and along the periphery of vegetated water features and channels. All herpetofauna observed during active searches and other wildlife surveys were identified to species and recorded. The method of observation (arrays or active surveys) is presented for each species in the results section of this report.

Herpetofauna array traps were placed May 28, 2018, by ICF biologist Will Kohn. Arrays were sampled by Mr. Kohn on four consecutive days, from May 29 to June 1, 2018. The traps were opened on Monday, sampled Tuesday through Friday, and closed Friday.

Array traps were checked during morning hours to ensure that animals were released before daytime temperatures reached levels that could result in mortality. All animals were identified to species and immediately released at the point of capture. Biologists did not handle animals, other than to photograph and release them from traps. Because the trapping effort's purpose was to

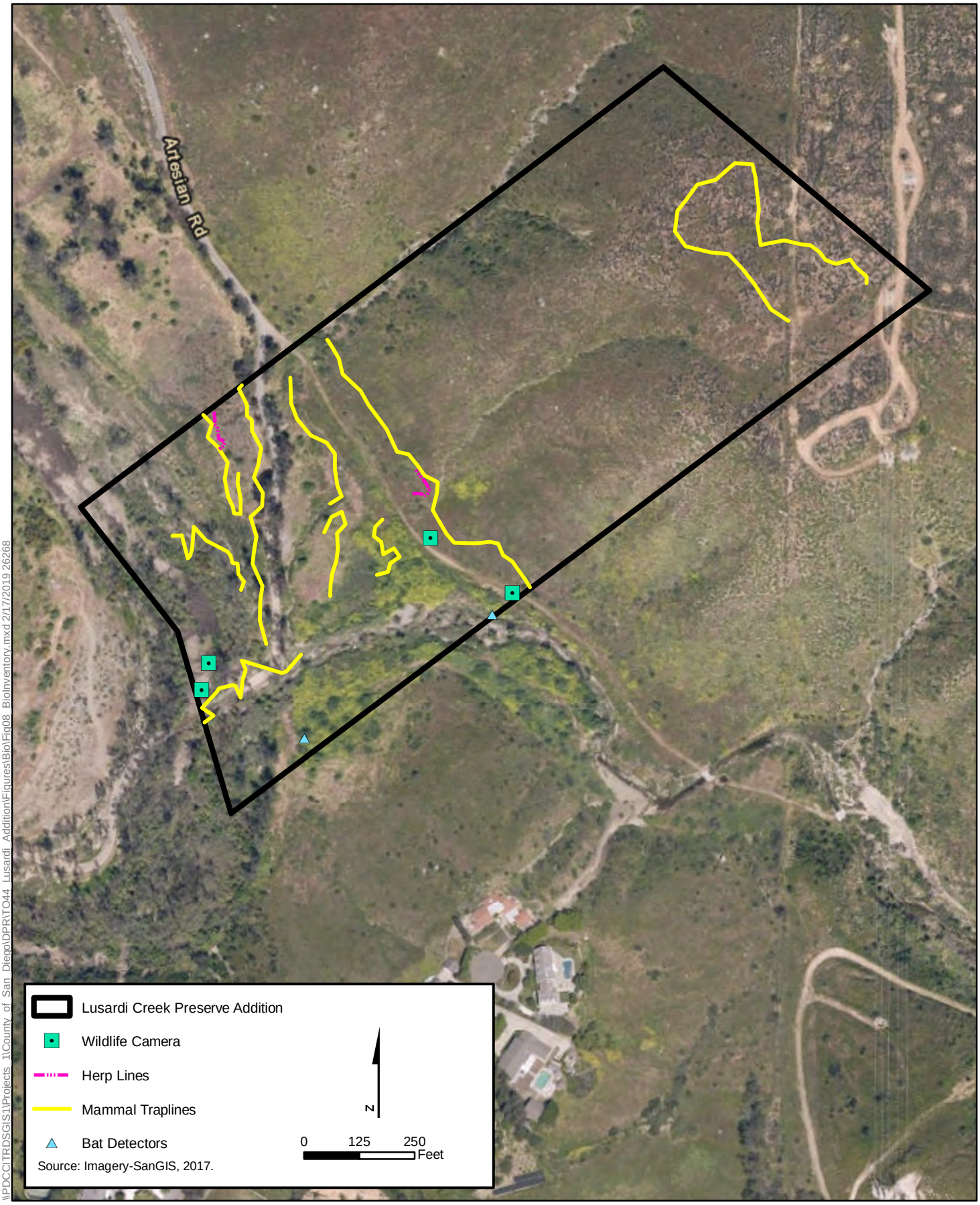

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Figure 8
Biological Inventory Locations
Lusardi Creek Preserve Addition

generate an inventory of species present within the Addition and not to assess population sizes or dynamics, individuals were not marked, weighed, or otherwise measured. Data recorded included species and trap number.

Aquatic herpetological surveys were conducted after each herpetofauna array trap check from May 29 to June 1, 2018. Aquatic surveys included looking on logs and along the periphery of vegetated water features and channels, with a focus on detecting amphibians or turtles.

A nighttime survey of the riparian area was conducted on April 24, 2018, by ICF biologists Ford Bendell and Courtney Casey. The riparian areas were walked while listening for frog and toad calls. The roads were inspected for any activity of nocturnal amphibians or reptiles.

3.3.3 Birds

3.3.3.1 Diurnal Surveys

Diurnal surveys for avian species were conducted by walking meandering transects through all habitat types in the Addition. Diurnal surveys were conducted by Ford Bendell and Courtney Casey on April 24, 2018, and Ford Bendell on June 14. Playback calls were not used because of the potential for sensitive and listed avian species, including coastal California gnatcatcher (*Polioptila californica californica*), on the Addition and because playback calls can be considered "take" by harassment under the Endangered Species Act.

Incidental encounters of diurnal birds observed during plant surveys, small mammal trapping, reptile trap checks, and camera checks were also recorded and included in the species list in Appendix B.

3.3.3.2 Nocturnal Surveys

Nocturnal bird surveys were conducted at the Addition on April 24, 2018, by Courtney Casey and Ford Bendell. The methods included walking the roads on the Addition as well as the periphery of the riparian areas while looking and listening for birds. Headlamps and moderately powerful flashlights were used to aid identifications. Electronic playback of owl calls was intermittently used in an attempt to elicit responses from birds.

Incidental encounters of nocturnal birds observed during active bat surveys or small mammal trapping were also recorded and included in the species list in Appendix B.

3.3.4 Mammals

The goal of the mammal surveys was to document which species are currently present on the Addition or using the Addition for passage through to other areas of the county. Mammal species were documented through general surveys, small mammal trapping, wildlife camera stations, and bat sampling. The goal of the small mammal trapping was to document the small mammal species that use the different habitats on the Addition. The camera stations documented the medium to large mammal species that use the Addition. Active and passive bat sampling was used to document use of the Addition by bat species.

3.3.4.1 Small Mammal Trapping

ICF biologists Phillip Richards, James Hickman, and Ford Bendell conducted two nights of trapping to sample the diversity of small mammals occurring on the Addition. For the purposes of this effort, "small mammals" include species in the shrew, squirrel, pocket gopher, heteromyid, mouse, rat, and vole families.

Small mammal trapping on the Addition consisted of nine trap lines, totaling 150 traps. Each trap line was set for two nights, for a total of 300 trap nights. All nine trap lines were initially set and baited during the afternoon of September 25, 2018. Traps were systematically checked in the early morning between 0700 and 0930 on September 26 and 27, 2018 (Table 2). Trap lines were distributed throughout most of the Addition and ranged from 10 to 30 traps per trap line (Figure 8; Table 3).

Table 2. Small Mammal Trapping Dates, Time, Personnel, and Weather Conditions

Date	Time	Personnel	Conditions
09/26/2018	0700–0920	Phillip Richards Ford Bendell	65°F–67°F, wind 0–1mph, cloudy skies
09/27/2018	0700–1000	James Hickman Ford Bendell	61°F–84°F, wind 0–3mph, cloudy skies

The selection of trap line locations was based on three criteria: 1) sampling of different vegetative communities, 2) geographic distribution across the Addition, 3) and sampling of unique features (e.g., washes). Sequentially numbered 12-inch Sherman live traps were set at dusk, approximately 5 to 10 meters (16 to 33 feet) apart. Traps were set and placed where potential small rodent captures were judged to be most probable. Where rodent sign was not apparent, traps were placed near the base of shrubs. The location of each trap was recorded using a recreational-grade global positioning system (GPS) receiver (Garmin brand, WAAS enabled). Mixed birdseed was used as bait, and a few seeds were trailed out from the mouth of the trap, usually toward a game trail, burrow, or open area. All traps were checked and closed at dawn.

When animals were captured, each animal was transferred from the trap into a cloth bag. The animals were then removed from the bag by their napes and briefly handled to identify to species. The sex and reproductive condition of each animal was recorded (i.e., testes scrotal, not scrotal; vagina perforate, not perforate). Any mites, ticks, or other parasites were noted. Digital photos were taken of some specimens. Once the data were recorded onto data sheets, each animal was released where captured. This whole process took a few minutes for each capture. The released animals were observed until they moved to the safety of a burrow or clump of vegetation.

Table 3. Small Mammal Trap Line Description

Trap Line	Trap Nights	Number of Traps	Physical Description	Vegetation Community (Holland)
1	2	30	Mesa, compact soils, and moderately dense shrub cover.	Chamise Chaparral
2	2	25	Base of southwest-facing slope; dense low-growing, non-native herbaceous cover with scattered native shrubs.	Disturbed Coastal Sage Scrub
3	2	10	Valley floor, terrace above drainages, and very dense, tall-growing non-native herbaceous cover.	Non-native Grassland: Broadleaf Dominated
4	2	10	Valley floor, terrace above drainages, and dense, low-growing non-native herbaceous cover.	Non-native Grassland
5	2	10	Valley floor, dry drainage, and mix of low-growing, non-native herbaceous cover and scattered mule-fat.	Mule-Fat Scrub
6	2	20	Valley floor, terrace above drainages, and adjacent to paved road and row of eucalyptus trees. Disturbed by possible equestrian use.	Mixed Eucalyptus Woodland and Non-native Grassland
7	2	15	Valley floor, terrace above drainages, and mix of dense, non-native herbaceous cover and arrow weed scrub.	Arrow Weed Scrub
8	2	15	Valley floor, terrace above edge of water in the creek, and mix dense willows and native shrubs.	Southern Arroyo Willow Riparian Forest
9	2	15	Valley floor and adjacent to edge of water in the creek; densely vegetated with a mix of giant reed, willows, and freshwater marsh vegetation.	Mixed Coastal Valley Freshwater Marsh, Giant Reed, and Southern Arroyo Willow Riparian Forest

3.3.4.2 Medium to Large Mammals

For the purposes of this project, medium and large mammals include all mammals in the didelphid, lagomorph, procyonid, mustelid, felid, canid, and cervid families.

Camera Tracking Survey

Remote camera stations were used to help document the presence of medium and large mammals within the Addition. These stations allowed for the detection of species that are rarely encountered because of their nocturnal or crepuscular activity patterns. Within the Addition, two camera tracking stations were set up at locations that represented various vegetation communities on the Addition and were judged to have high potential for the movement of medium and large mammals (e.g., along game trails, creek beds, existing trails) (Figure 8; Table 4).

Each camera station consisted of one StealthCam by GSM infrared digital game camera. The cameras were programmed to record a series of three images every time the motion sensor was triggered. Each image included an information tag that recorded the date, time, temperature, camera ID, and moon phase. Cameras were installed on May 21 by Will Kohn and Kelsey Dix. The cameras were checked on June 1 and the SD memory card was replaced. Cameras and data cards were removed on June 14. Images from the SD cards were downloaded and reviewed. All animals were identified to the species level.

Table 4. Camera Sampling Location Description

Camera Station Number	Physical Description	Vegetation Community (VCM/Holland)
1	Near the bottom of the hillside.	California sagebrush scrub (Diegan coastal sage scrub)
2	On the floodplain terrace.	Arrow weed thickets (Arrow weed scrub)

3.3.4.3 Bats

A combination of passive and active acoustic surveys were conducted in an effort to detect as many bat species as possible on the Addition. The Addition was evaluated for potential roost sites, but no appropriate man-made structures or geological formations such as rocky outcroppings, caves, and snags were present.

Passive Surveys

Passive Anabat "Express" bat detectors were used to document foraging bats on the property. Two Anabats were deployed in the late spring/early summer of 2018 to maximize the likelihood of detecting both migratory and resident bat species as efficiently as possible. One Anabat was placed near the wet riparian area near the road and creek, while the second Anabat was placed in the grassy floodplain adjacent to the San Dieguito River (Figure 8). The Anabats were placed at locations that would maximize detections of multiple bat species. The Anabats were set up and left to automatically record bat vocalizations on three consecutive nights (April 30 to May 2, 2018) and then retrieved. The recorded bat calls were downloaded and analyzed in the office. Species identifications were made, and bat activity levels were quantified according to the number of calls recorded for each species, resulting in an index of relative activity for each species.

Active Surveys

To supplement the passive Anabat surveys, an actively monitored Anabat "walkabout" hand-held bat detector was used to record bat vocalizations. The unaided ear was used to listen for audible bats on one active survey night (August 1, 2018) during the summer season. The survey was conducted by San Diego Natural History Museum biologist Drew Stokes from sunset to approximately 2 hours after sunset. The active survey consisted of a walking transect, beginning at sunset at the east end of the property, on the dirt road next to the creek. The biologist then walked toward the road/creek crossing to the west, then toward the grassy field adjacent to the San Dieguito River to the north, and then back to the east end such that a triangular transect was covered. This triangular transect was walked

several times throughout the 2-hour survey period. The recorded bat calls were downloaded and analyzed in the office. Species identifications were made but bat activity levels were not quantified.

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Chapter 4
Results and Discussion

4.1 Vegetation Communities/Habitats

Fifteen plant alliances, associations, or ground cover types were recorded within the Addition (Table 5; Figures 9 and 10). These vegetation community types are described below and organized as they are in the classification key by functional group (i.e., scrub and chaparral, woodland, riparian woodland, herbaceous wetlands, grasslands). The VCM does not include unvegetated habitat (e.g., disturbed habitat, urban/developed, non-vegetated channel); therefore, unvegetated habitat is described using the *Draft Vegetation Communities of San Diego County* (Oberbauer et al. 2008), based on the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986).

Until the VCM was finalized in 2011, MSCP preserve lands were generally mapped using the Holland classification system. To ensure consistency with previous mapping efforts, the property map data layer was cross-walked to the Holland system, pursuant to the VCM (AECOM et al. 2011) (Table 5; Figures 9 and 10).

Table 5. Vegetation Communities and Land Cover Types within the Addition

	Vegetation Community Type				
VCM Code	**VCM Alliance/Association**	**MCV Common Name**	**Holland Code**	**Holland Classification**	**Area (acres)**
Scrub and Chaparral					
4.1	*Adenostoma fasciculatum* – Alliance	Chamise Chaparral	37200	Chamise Chaparral	5.19
4.6	*Artemisia californica* Alliance	Coastal Sagebrush Scrub	32500	Diegan Coastal Sage Scrub	14.52
4.29	*Isocoma menziesii* Alliance	Menzies' Goldenbush Scrub	32000	Coastal Scrub	0.56
4.42.1	*Rhus integrifolia* Association	Lemonadeberry Scrub	32500	Diegan Coastal Sage Scrub	0.01
	Total Scrub and Chaparral				***20.28***
Woodland					
3.2	*Eucalyptus (globulus, camaldulensis)* Semi-Natural Stands	Eucalyptus Forests and Woodlands	79100	Eucalyptus Woodland	0.64
	Total Woodland				***0.64***

Vegetation Community Type					
VCM Code	**VCM Alliance/Association**	**MCV Common Name**	**Holland Code**	**Holland Classification**	**Area (acres)**
Riparian Forest and Scrub					
3.10.1	*Salix lasiolepis* Alliance	Arroyo Willow Riparian Forests and Woodlands	61320	Southern Arroyo Willow Riparian Forest	1.52
4.11.1	*Baccharis salicifolia* Association	Mulefat Thickets	63310	Mule Fat Scrub	0.33
4.36	*Pluchea serricea* Alliance	Arrow Weed Thickets	63820	Arrow Weed Scrub	0.95
	Total Riparian Forest and Scrub				**2.80**
Herbaceous Wetland					
5.35	*Typha (angustifolia, domingensis, latifolia)* Alliance	Cattail Marshes	52410	Coastal and Valley Freshwater Marsh	0.78
	Total Herbaceous Wetland				***0.78***
Grassland					
5.21	Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands	Annual Brome Grasslands	42200	Non-native Grassland	1.86
5.7.1	*Brassica nigra* Semi-natural Stand Type	Upland Mustards	42210	Non-native Grassland: Broadleaf-dominated	2.12
5.25	Naturalized Warm-temperate Riparian and Wetland Semi-natural Stands	Pampas Grass Patches	65000	Non-native Riparian	0.08
5.4	*Arundo donax* Semi-natural Stands	Giant Reed Breaks	65100	Giant Reed Dominated Riparian	1.63
	Total Grassland				***5.69***
Unvegetated[1]					
N/A	N/A	Disturbed Habitat	11300	Disturbed Habitat	0.62
N/A	N/A	Urban/Developed	12000	Urban/ Developed	0.36
	Total Unvegetated				***0.98***
		TOTAL LAND COVER[2]			**31.16**

[1] The *Vegetation Classification Manual* does not classify unvegetated habitats such as those found in the Oberbauer-modified Holland classification system (disturbed habitat and urban/developed).

[2] Individual rows do not sum to the total because of rounding.

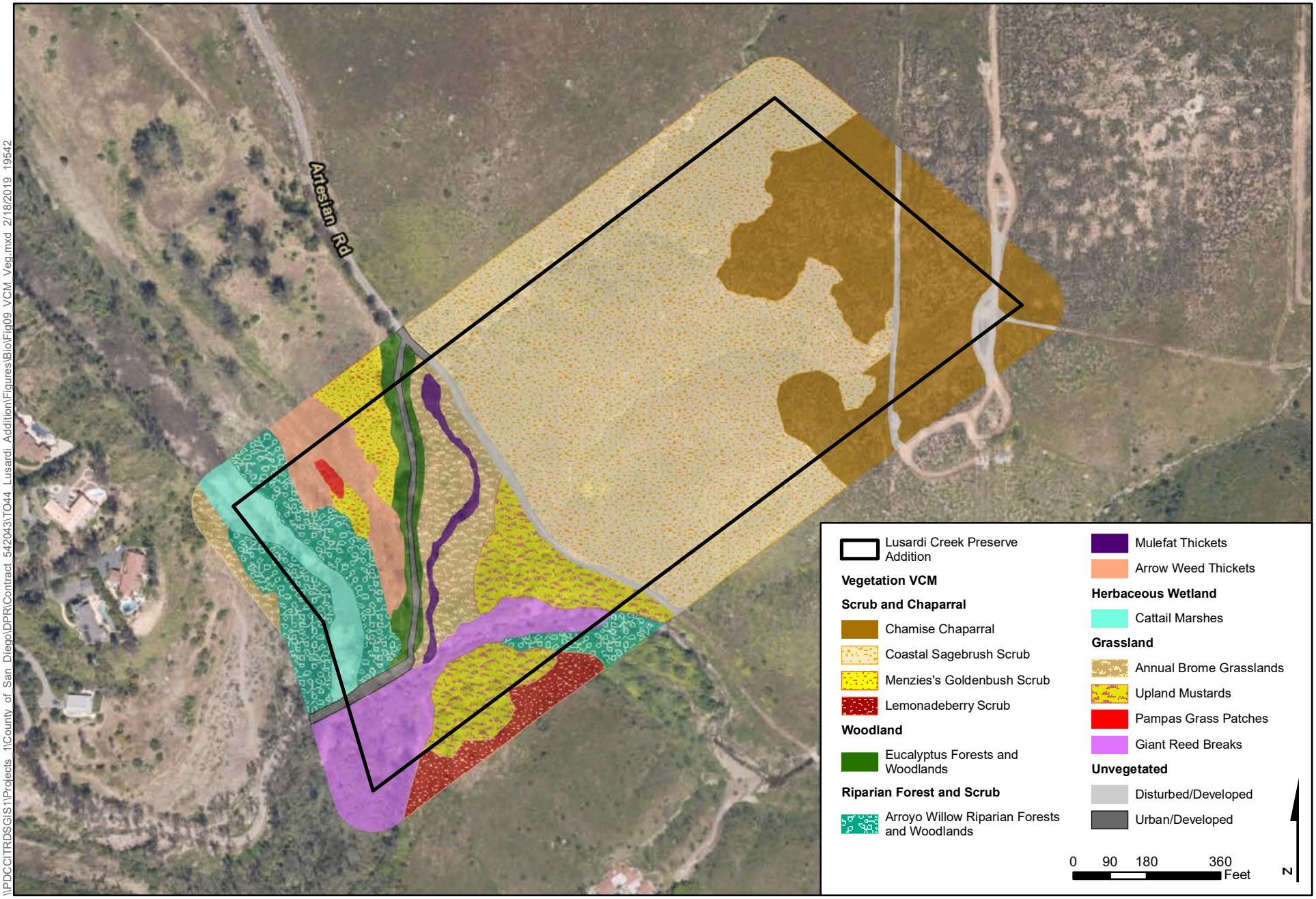

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Figure 9
VCM Classified
Vegetation Communities
Lusardi Creek Preserve Addition

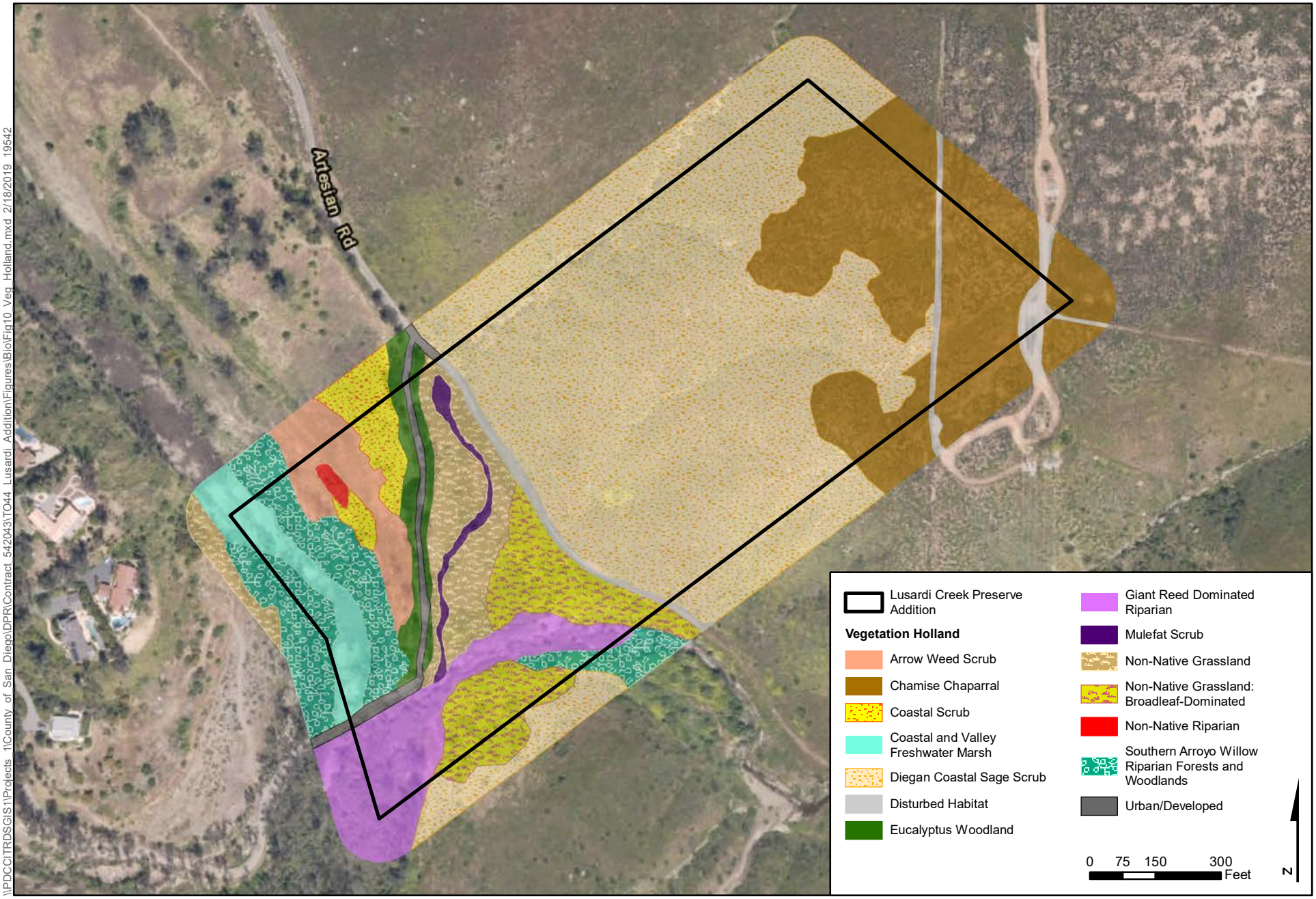

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Figure 10
Holland Code - Vegetation Communities
Lusardi Creek Preserve Addition

4.1.1.1 Chamise Chaparral (4.1)

Chamise chaparral (*Adenostoma fasciculatum* Alliance) is a vegetation community dominated by chamise (*Adenostoma fasciculatum*). In the Holland classification, this would also be known as chamise chaparral. This vegetation community is the dominant community along the hilltop on the northeast side of the Addition.

4.1.1.2 Coastal Sagebrush Scrub (4.6)

Coastal sagebrush scrub (*Artemisia californica* Alliance) has California sagebrush (*Artemisia californica*) as the dominant or co-dominant in the shrub canopy and typically has a relatively open canopy. Other co-dominant species include black sage (*Salvia mellifera*) and deerweed (*Acmispon glaber*). In the Holland classification, this would be known as Diegan coastal sage scrub. This vegetation community is the dominant community across the hillside in the center and on the north side of the Addition.

4.1.1.3 Menzies' Goldenbush Scrub (4.29)

Menzies' goldenbush scrub (*Isocoma menziesii* Alliance) typically forms stands on sandy soils in association with herbs and grasses. Most of these stands are a result of disturbance from fire, flooding, or clearing. In general, this alliance is characterized by coastal (Menzies') goldenbush (*Isocoma menziesii*) as the dominant shrub, with a variable herbaceous layer. In the Holland classification, this would be known as coastal scrub. On the Addition, Menzies' goldenbush are relatively tall, with moderate density. The species is situated on the higher portions of the floodplain terrace on Tujunga sand soil (Figure 5).

4.1.1.4 Lemonadeberry Scrub (4.42.1)

Lemonadeberry scrub (*Rhus integrifolia Association*) is a vegetation community composed primarily of lemonadeberry (*Rhus integrifolia*), with no other diagnostic species with cover to circumscribe any other alliance/association. Lemonadeberry is a large, evergreen, frost-intolerant shrub that can form particularly dense stands on north-facing slopes. In the Holland classification, this would be included within Diegan coastal sage scrub. The species is situated on Terrace escarpment soils on the slope at the southwest boundary of the Addition.

4.1.1.5 Eucalyptus Forests and Woodlands (3.2)

Eucalyptus forests and woodlands (*Eucalyptus* [*globulus, camaldulensi*] Semi-Natural Stands) is a vegetation community dominated by the gum tree (*Eucalyptus*) species, with at least 5 percent tree canopy. Gum trees exude alleopathic chemical compounds that prevent the germination of plants. Therefore, eucalyptus forests and woodlands often have understories with few shrubs and low cover from herbs and grasses. In the Holland classification, this would be described as eucalyptus woodland. Within the Addition, this vegetation community occurs along Artesian Road.

4.1.1.6 Arroyo Willow Riparian Forests and Woodlands (3.10.1)

Arroyo willow riparian forests and woodlands (*Salix lasiolepis* Alliance) is a vegetation community dominated by arroyo willow (*Salix lasiolepis*), along with co-dominant species such as red willow (*Salix laevigata*), black willow (*Salix gooddingii*), and mule-fat (*Baccharis salicifolia*). In the Holland

classification, this would be classified as southern arroyo willow riparian forest. Within the Addition, this vegetation community occurs as the riparian strip of the San Dieguito River.

4.1.1.7 Mulefat Thickets (4.11.1)

Mulefat thickets (*Baccharis salicifolia* Association) is a vegetation community dominated by mule fat, along with co-dominant species such as arroyo willow. In the Holland classification, this would be described as mule fat scrub. This vegetation community occurs in the terrace floodplain, in a narrow ephemeral drainage that enters on the north side of the Addition.

4.1.1.8 Arrow Weed Thickets (4.36)

Arrow weed thickets (*Pluchea serricea* Association) is a vegetation community dominated by arrow weed (*Pluchea sericea*). This community often occurs as clonal stands where fluvial processes can distribute root fragments. In the Holland classification, this would be described as arrow weed scrub. Within the Addition, this vegetation community occurs in the terrace floodplain on Tujunga sand soil, in a similar position as Menzies' goldenbush scrub.

4.1.1.9 *Cattail Marshes* (5.35)

Cattail marshes (*Typha* [*angustifolia, domingensis, latifolia*] Alliance) is a vegetation community dominated by cattails (*Typha* spp.), with bulrush (*Schoenoplectus* spp.) as co-dominants occurring within the community. In the Holland classification, this would be described as coastal and valley freshwater marsh. This community occurs in the low-flow channel of the San Dieguito River.

4.1.1.10 Annual Brome Grasslands (5.21)

Annual brome grasslands (Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands) is a vegetation community that occurs at the group level, which is hierarchically above association. This classification is used where there is no clear dominant non-native plant species, but all are mixed together. Some species typically found in this group are red brome (*Bromus rubens*), red-stem filaree (*Erodium cicutarium*), and ripgut grass (*Bromus diandrus*). In the Holland classification, this would be described as non-native grassland. Within the Addition, this community is situated on the higher portions of the floodplain terrace on Tujunga sand soil.

4.1.1.11 Upland Mustards (5.7.1)

Upland mustards (*Brassica nigra* Semi-natural Stand Type) is a vegetation community dominated by black mustard (*Brassica nigra*) or other non-native upland mustards, including field mustard (*Hirschfeldia incana*) and/or wild turnip (*Raphanus sativus*), with an understory of herbs and less than 50 percent cover of non-native grasses. In the Holland classification, this would be described as non-native grassland, broadleaf-dominated. Within the Addition, this community is situated on the higher portions of the floodplain terrace on Tujunga sand soil.

4.1.1.12 Pampas Grass Patches (5.25)

Pampas grass patches (Naturalized Warm-temperate Riparian and Wetland Semi-natural Stands) is a vegetation community that occurs at the group level where non-native grasses and forbs are present in riparian or wetland areas and dominant over native species, but giant reeds (*Arundo donax*) are not dominant. On the Addition, this community is dominated by pampas grass (*Cortaderia selloana*). In the Holland classification, this would be described as non-native riparian.

Within the Addition, this community is situated on the higher portions of the floodplain terrace adjacent to Menzies' goldenbush scrub and arrow weed scrub.

4.1.1.13 Giant Reed Breaks (5.4)

Giant reed breaks (*Arundo donax* Semi-natural Stands) is a vegetation community dominated by giant reed, a large, aggressive, non-native perennial grass. Giant reed spreads by rhizomes and culms and is readily distributed by fluvial disturbance. Giant reed is often strongly dominant, displacing everything from the herb and shrub layers and often excluding native trees. It has essentially no habitat value for native invertebrates, amphibians, reptiles, birds, and mammals. In the Holland classification, this would be described as giant reed–dominated riparian. Within the Addition, this community is situated on the higher portions of the floodplain terrace adjacent to Menzies' goldenbush scrub and arrow weed scrub.

4.1.1.14 Disturbed Habitat

Areas of dirt roads within the Addition are described following the Holland description of disturbed habitat. Non-vegetation land cover types are not described in the VCM. Several dirt utility roads exist in the Addition.

4.1.1.15 Urban/Developed

Areas of paved roads within the Addition are described following the Holland description of urban/developed. Non-vegetation land cover types are not described in the VCM. Artesian Road, which is paved, exists on the southwest side of the Addition.

4.2 Plants

The following section discusses special-status plant species observed within the Preserve. A special-status plant species is one listed by federal or state agencies as threatened or endangered; given a CRPR of 1, 2, 3, or 4; or included on the County's Sensitive Plant list (List A, B, C, or D plants).

A total of 88 plant species were recorded within the Addition. Six special-status plant species were detected on the Addition in 2018: spinethorn (*Adolphia californica*), San Diego sagewort (*Artemisia palmeri*), San Diego barrel cactus (*Ferocactus viridescens*), San Diego marsh-elder (*Iva hayesiana*), Southwestern spiny rush (*Juncus acutus*), and ashy spike-moss (*Selaginella cinerascens*) (Figure 11). Two other sensitive species were determined to have a high potential to occur: western dichondra (*Dichondra occidentalis*) and graceful tarplant (*Holocarpha virgata* ssp*. elongata*)

4.2.1 Special-Status Plant Species Observed

4.2.1.1 Spinethorn (*Adolphia californica*)

CRPR List 2B.1, San Diego County List B

Spinethorn is a drought-deciduous shrub in the buckthorn family (Rhamnaceae). It is often intermixed in Diegan coastal sage scrub but occasionally occurs on the periphery of chaparral communities. It the fall, its spiny light-green stems are evident. Substantial populations occur

southwest of Lake Hodges (Reiser 2001). On the Addition, six patches of spinethorn were observed in Diegan coastal sage scrub and chamise chaparral (Figure 11).

4.2.1.2 San Diego Sagewort (*Artemisia palmeri*)

CRPR List 4.2, San Diego County List D

San Diego sagewort is found primarily along creeks and drainages near the coast. In inland locations, it may be found in mesic chaparral areas (Reiser 2001). On the Addition, one San Diego sagewort was observed in mule fat scrub adjacent to Artesian Road (Figure 11).

4.2.1.3 San Diego Barrel Cactus (*Ferocactus viridescens*)

CRPR List 2B.1, San Diego County List B

San Diego barrel cactus is a low-growing barrel cactus with stout spines. It is most common on hillsides of open Diegan coastal sage scrub, often at the crest of the slope or among cobbles. It may also occur within mesic mima-mound topography. On the Addition, one patch of San Diego barrel cactus observed in Diegan coastal sage scrub (Figure 11).

4.2.1.4 San Diego Marsh-Elder (*Iva hayesiana*)

CRPR List 2B.2, San Diego County List B

San Diego marsh-elder is a creeping aromatic shrub that is found along creeks and intermittent streambeds. It is typically found in areas with an open canopy and alluvial environments with cobbles. On the Addition, one San Diego marsh-elder was observed in the freshwater marsh in the San Dieguito River adjacent to Artesian Road (Figure 11).

4.2.1.5 Southwestern Spiny Rush (*Juncus acutus*)

CRPR List 4.2, San Diego County List D

Southwestern spiny rush grows in large clumps to more than 1 meter in height. It is found in coastal salt marshes, alkaline meadows, and riparian marshes. It suffered losses associated with the widespread loss of wetlands but now may be stable. On the Addition, one southwestern spiny rush was observed in the freshwater marsh in the San Dieguito River adjacent to Artesian Road (Figure 11).

4.2.1.6 Ashy Spike-Moss (*Selaginella cinerascens*)

CRPR List 4.1, San Diego County List D

Ashy spike-moss is a creeping simple herb, typically found in undisturbed chaparral and Diegan coastal sage scrub (Reiser 2001). This species is found throughout undisturbed open soils in Diegan coastal sage scrub and in chamise chaparral on the Addition (Figure 11).

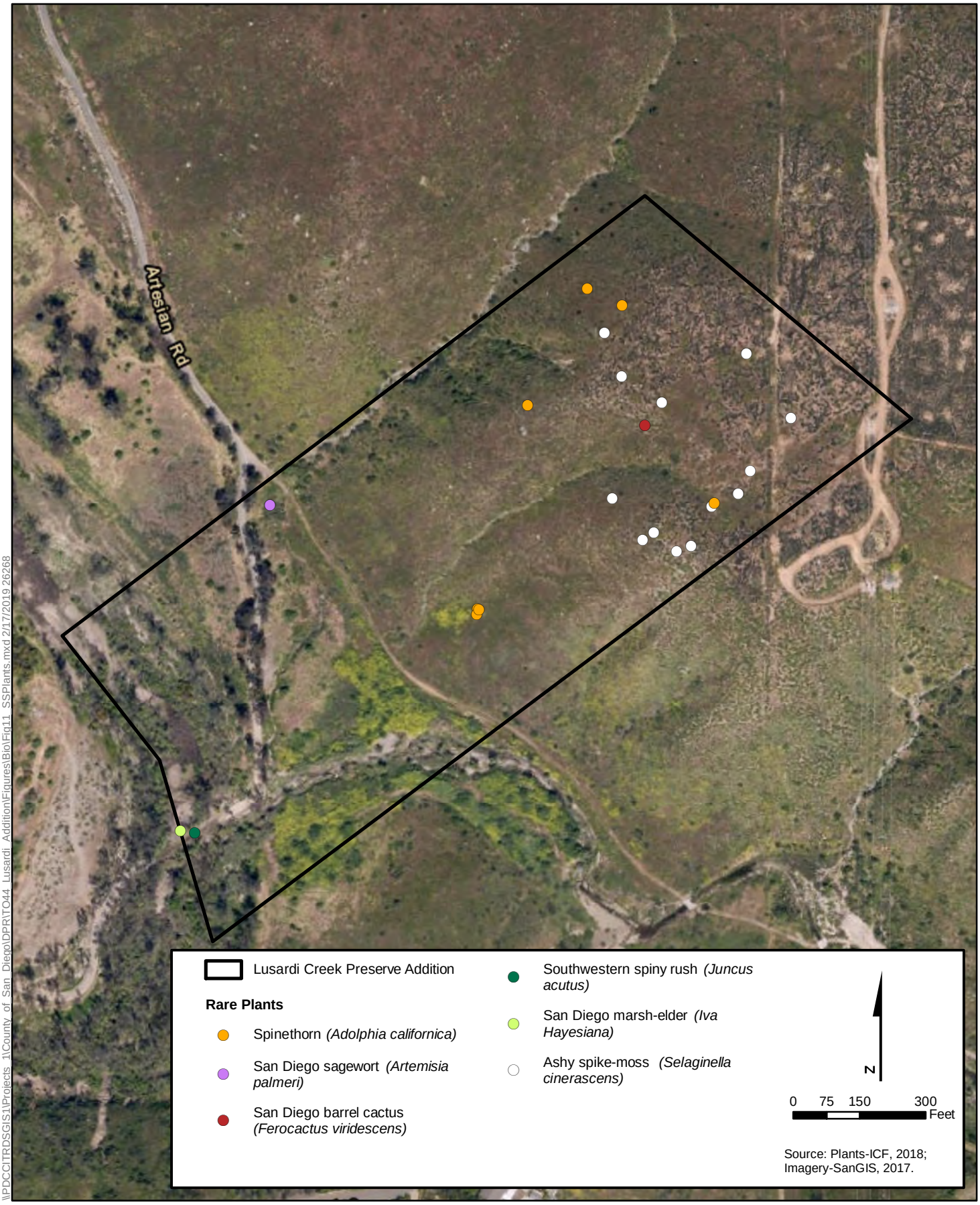

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Figure 11
Special Status Plant Species
Lusardi Creek Preserve Addition

4.2.2 Special-Status Plant Species with High Potential to Occur

4.2.2.1 Western Dichondra (*Dichondra occidentalis*)

CRPR List 4.2, San Diego County List D

Western dichondra is a small, cryptic perennial herb that occurs in the shelter of shrubs in Diegan coastal sage scrub and chaparral as well as rock outcrops in grasslands. (Reiser 2001). This species was not observed during rare plant surveys on the Addition. However, because of the presence of suitable habitat and the proximity to extant populations immediately across the border of the Addition within the Preserve (ICF Jones and Stokes 2008), western dichondra has high potential to occur on the Addition.

4.2.2.2 Graceful Tarplant (*Holocarpha virgata* ssp. *elongata*)

CRPR List 4.2, San Diego County List D

Graceful tarplant is an annual herb that is typically found within annual and perennial grasslands but can occur within coastal sage scrub and chaparral (Reiser 2001). This species was not observed during rare plant surveys on the Addition. However, because of the presence of suitable habitat and the proximity to extant populations along Lusardi Creek on the western side of the Preserve (ICF Jones and Stokes 2008), graceful tarplant has high potential to occur on the Addition.

4.2.3 Invasive Non-native Plant Species

The introduction of invasive non-native plant species into native habitats is becoming more common, and further expansion of human activities into areas away from urban and suburban centers will amplify this effect. Today, it is almost impossible to find any lowland areas in California that do not support a collection of plant species brought from elsewhere.

The general effect of invasive non-native plant species is that they out-compete native species. This can occur directly by taking up space that was formerly occupied by native plants but can also occur from a variety of indirect, competitive effects. Competition can be keen between invasive and native species for scarce water resources, soil nutrients, or even sunlight. Other species, such as gum trees, use chemicals (i.e., allelopathy) to prevent germination of native plants. With a decrease in native plant diversity, there is an associated decrease in native animal diversity, particularly endemic invertebrates. Thus, it becomes important to control or eliminate invasive non-native plant species from natural areas to maintain natural biodiversity and the support systems for native fauna.

Appendix A documents all invasive non-native plant species found during the surveys on the Addition. During surveys of the Addition, a total of 32 invasive non-native plant species were detected.

Given their current extent (Figure 12), highly invasive nature and ability to reproduce quickly, and potential effects on the environment, as well as the possibility for them to be practicably controlled, nine species have been determined to be “target species.” Therefore, a concerted effort should be made to monitor and control/eliminate the following target species (Table 6).

Table 6. Target Invasive Non-native Plant Species

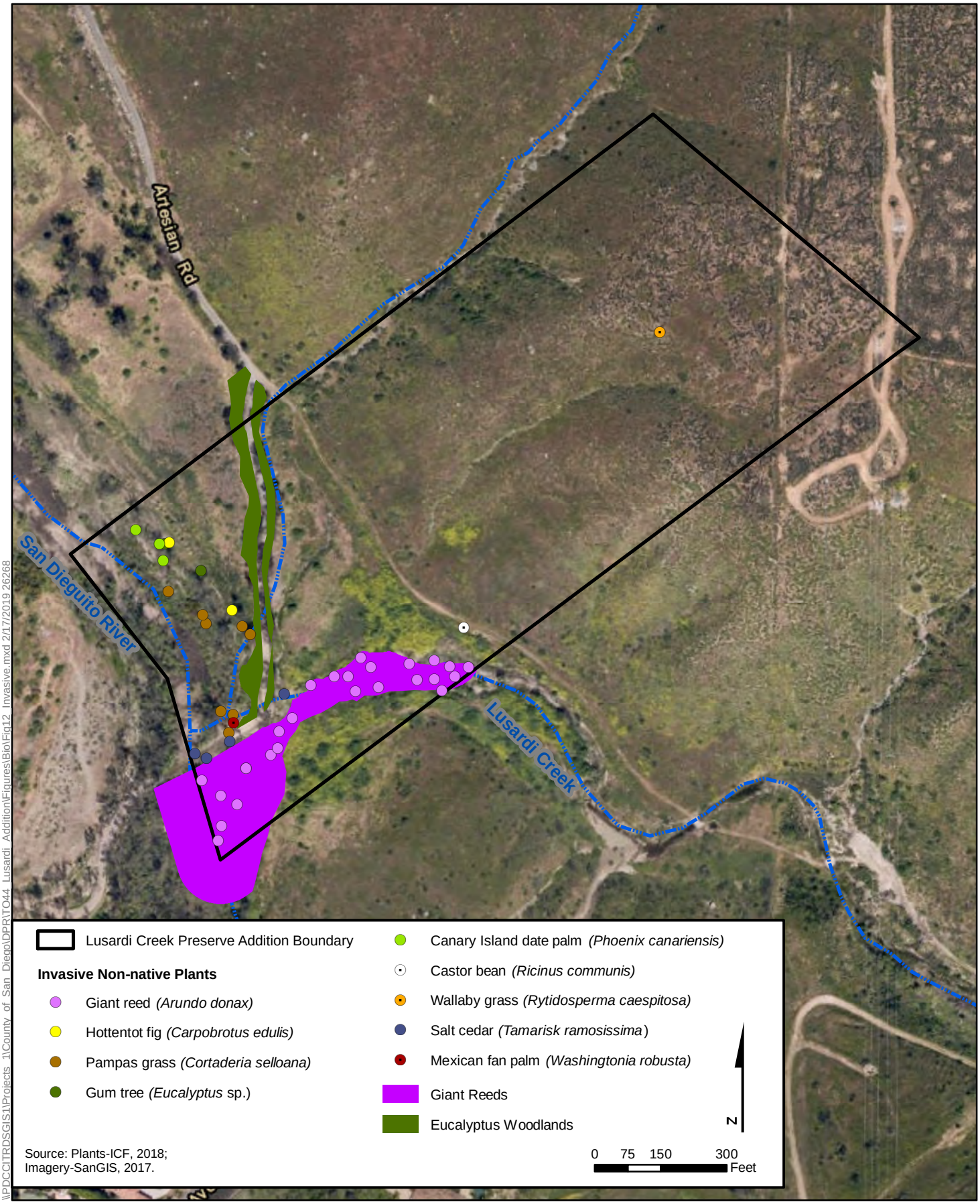
Common Name[1]	Scientific Name	Cal-IPC Rating[2]
Giant reed	*Arundo donax*	High
Hottentot fig/ highway iceplant	*Carpobrotus edulis*	High
Pampas grass	*Cortaderia selloana*	High
Gum trees	*Eucalyptus* spp.	Limited
Canary Island palm	*Phoenix canariensis*	Limited
Castor bean	*Ricinus communis*	Limited
Wallaby grass	*Rytidosperma caespitosum*	Watch
Salt cedar	*Tamarix ramosissima*	High
Mexican fan palm	*Washingtonia robusta*	Moderate

1 Observed locations of non-native plant species mapped on Figure 12.

2 Source: Cal-IPC California Invasive Plant Inventory Database, updated February 1, 2017. Overall rating listed for southwest region, factoring impact, invasiveness, distribution, and documentation level.
Inventory Categories
High: Species have severe ecological impacts, are conducive to moderate to high rates of dispersal/establishment, and most are widely spread.
Moderate: Species have substantial and apparent, but generally not severe, ecological impacts; are conducive to moderate to high rates of dispersal, though establishment is generally dependent on ecological disturbance; and distribution may range from limited to widespread.
Limited: Species are invasive, but their ecological impacts are minor on a statewide level, or there was not enough information to justify a higher score; have low to moderate rates of invasiveness; and are generally limited but may be locally persistent and problematic.
Watch: Species on the "watch" list have been assessed as posing a high risk of becoming invasive in the future in California.
None: Species has not been listed by Cal-IPC.

The riparian areas of the San Dieguito River and Lusardi Creek have been affected by invasive non-native plant species (Figure 12). Giant reed and gum trees have already converted native habitat to invasive non-native habitat. Giant reed forms a near monoculture within Lusardi Creek on the Addition, displacing all other plants. In total, 1.62 acres of giant reed breaks were mapped on the Addition. The upstream spread of giant reed within the San Dieguito River appears to be constrained and limited by the Artesian Road crossing. Giant reed is prevalent upstream in Lusardi Creek and downstream within the San Dieguito River. Giant reed is primarily devoid of any value as habitat for any native vertebrate or invertebrate species. Pampas grass is present at scattered locations and displacing native wetland species, potentially including San Diego marsh elder and southwestern spiny rush. Three Canary Island date palms and one Mexican fan palm were observed within the San Dieguito River channel. Several patches of hottentot fig (iceplant) were observed along the edge of the San Dieguito River channel.

A variety of other invasive non-native plants were observed on the Addition (Figure 12). Gum trees are present along both sides of Artesian Road within the Addition. Gum trees provide nesting opportunities for some bird species, but gum trees largely displace all other plants and the species that rely on them. Five salt cedar were mapped, primarily along Artesian Road. Eucalyptus woodland was mapped over 0.64 acre of the Addition. One wallaby grass was observed near the hilltop on the northeast side of the Addition. Salt cedar can alter soil conditions and take over alluvial areas. Significant local populations of invasive perennial wallaby grass have infested the Preserve to the east. Only one mature castor bean was observed, and this plant was trimmed by roadside vegetation control on June 11, 2018.



\\PDCCITRDSGIS1\Projects_1\County_of_San_Diego\DPRTO44_Lusardi_AdditionFigures\Bio\Fig12_Invasive.mxd 2/17/2019 26268

Figure 12
Invasive Non-native Plants
Lusardi Creek Preserve Addition

4.3 Wildlife

In total, 70 wildlife species were detected during focused surveys, general surveys, herp trapping, avian surveys, camera sampling, and bat surveys. Eight of these species are considered special-status species by federal, state, or local governments.

4.3.1 Invertebrates

Fifteen species of invertebrates, including butterflies and beetles, were identified during the 2018 surveys of the Addition (Appendix B). Species were observed during focused butterfly diversity surveys and other active surveys.

4.3.1.1 Butterflies

Nine species of butterfly were observed on the Addition in 2018 (Table 7). None of these species are considered special-status species by federal, state, or local governments.

Table 7. Butterfly Species Observed

Scientific Name	Common Name	Survey Detection Type
Papilio rutulus	Western tiger swallowtail	Focused survey
Pieris rapae	Cabbage white	Focused survey
Colias eurytheme	Orange sulfur	Focused survey
Adelphia californica	California sister	Focused survey
Leptotes marina	Marine blue	Focused survey
Icaricia acmon	Acmon blue	Focused survey
Brephidium exilis	Western pygmy blue	Focused survey
Coenonympha tullia	Common ringlet	Focused survey
Nymphalis antiopa	Mourning cloak	Focused survey

4.3.1.2 Other Invertebrates

Six other invertebrate species were detected during surveys of the Addition, including honey bee (*Apis mellifera*), tarantula hawk wasp (*Pepsis* sp.), and tarantula (*Aphonopelma* sp.) (Appendix B).

4.3.2 Herpetofauna

In total, two amphibian species and four reptile species were captured in the sampling arrays and/or observed during active surveys (Appendix B). One of the six herptile species observed is considered a special-status species by federal, state, or local agencies. These species' occurrences on the Addition are discussed in more detail in Section 4.3.5.

4.3.2.1 Amphibians

During the 2018 sampling at the Addition, two amphibian species were observed (Table 8; Appendix C). Neither of these species are special-status Both species were observed in and near the San Dieguito River. No amphibians were captured in the sampling arrays.

Table 8. Amphibian Species Observed

Scientific Name	Common Name	Special Status Listing	Survey Type
Pseudacris hypochondriaca	Baja California tree frog	None	Active survey
* *Lithobates catesbeiana*	Bullfrog	None	Active survey

* = non-native species

4.3.2.2 Reptiles

During the 2018 sampling at the Addition, five reptile species were observed or captured (Table 9; Appendix C). Three species were captured in the sampling arrays; one was only observed during active surveys. Three lizard species and one snake species were detected, with one species having special status. Special-status species observed consist of Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), also a MSCP covered species. This species' occurrence on the Addition is discussed in more detail in Section 4.3.5.

Table 9. Reptile Species Observed or Captured

Scientific Name	Common Name	Special Status Listing	Survey Type
Elgaria multicarinata	Southern alligator lizard	None	ARY #2
Sceloporus occidentalis	Western fence lizard	None	AS
Aspidoscelis hyperythra beldingi	Belding's orange-throated whiptail	WL, County Group 2, MSCP Covered	ARY #1
Coluber lateralis lateralis	California striped racer	None	ARY #1

Special Status: WL = CDFW Watch List, MSCP Covered = Multiple Species Conservation Program Covered Species
Survey Type: AS = Active Survey, ARY = Sampling Array

Based on the presence of potentially suitable habitat, seven additional sensitive reptile species have high potential to occur on the Addition: Blainville's (San Diego/coast) horned lizard (*Phrynosoma blainvillii*), coastal western whiptail (*Aspidoscelis tigris stejnegeri*), Coronado skink (*Plestiodon skiltonianus interparietalis*), red diamond rattlesnake (*Crotalus ruber*), three-lined (coastal rosy) boa (*Lichanura trivirgata*), coastal patch-nosed snake (*Salvadora hexalepis vigultea*), and two-striped garter snake (*Thamnophis hammondii*).

4.3.3 Birds

In total, 29 bird species were detected during surveys of the Addition in 2018 (Table 10). These included year-round residents, breeding species that migrate to the neotropics, and some species that are strictly migratory through the Addition.

The Addition's avifauna is a mixture of species that are associated with the habitat types found on site. These include birds of woodlands and riparian areas such as Nuttall's woodpecker (*Picoides*

nuttallii), house wren (*Troglodytes aedon*), and red-winged blackbird (*Agelaius phoeniceus*), as well as species of chaparral and sage scrub including California quail (*Callipepla californica*), Anna's hummingbird (*Calypte* anna), ash-throated flycatcher (*Myiarchus cinerascens*), Cassin's kingbird (*Tyrannus vociferans*), Bewick's wren (*Thryomanes bewickii*), wrentit (*Chamaea fasciata*), spotted towhee (*Pipilo maculates*), California towhee (*Melozone crissalis*), song sparrow (*Melospiza melodia*), black-headed grosbeak (*Pheucticus melanocephalus*), house finch (*Haemorhous mexicanus*), and lesser goldfinch (*Carduelis psaltria*). Further discussion of the use of the Addition by special-status avian species is found in Section 4.3.6.

One federally listed as endangered bird species, least Bell's vireo (*Vireo bellii pusillus*), was observed on the Addition in 2018.

Few raptors were observed on the Addition in 2018, although the Addition appears to have potential nesting habitat for tree-nesting species. Raptors observed were red-tailed hawk (*Buteo jamaicensis*) and great horned owl (*Bubo virginianus*).

No non-native or invasive avian species were detected during the surveys in 2018.

Table 10. Avian Species Detected at Lusardi Creek Preserve and Addition

Scientific Name	Common Name	Detected on Preserve in 2008	Detected on Addition in 2018	Special Status Listing
Callipepla californica	California quail	X	X	None
Ardea alba	Great egret	X		None
Elanus leucurus	White-tailed kite	X		FP, County Group 1
Circus cyaneus	Northern harrier	X		SSC County Group 1, MSCP Covered
Accipiter cooperii	Cooper's hawk	X		County Group 1, MSCP Covered
Buteo jamaicensis	Red-tailed hawk	X	X	None
Falco sparverius	American kestrel	X		None
Charadrius vociferus	Killdeer	X		None
Zenaida macroura	Mourning dove	X	X	None
Geococcyx californianus	Greater roadrunner	X		None
Tyto alba	Barn owl	X		County Group 2
Bubo virginianus	Great horned owl	X	X	None
Chordeiles acutipennis	Lesser nighthawk	X		None
Phalaenoptilus nuttallii	Common poorwill	X	X	None
Archilochus alexandri	Black-chinned hummingbird	X		None
Calypte anna	Anna's hummingbird	X	X	None
Calypte costae	Costa's hummingbird	X		None
Picoides nuttallii	Nuttall's Woodpecker	X	X	None
Colaptes auratus	Northern flicker	X		None
Sayornis nigricans	Black phoebe	X	X	None

Scientific Name	Common Name	Detected on Preserve in 2008	Detected on Addition in 2018	Special Status Listing
Sayornis saya	Say's phoebe	X		None
Myiarchus cinerascens	Ash-throated flycatcher	X	X	None
Tyrannus vociferans	Cassin's kingbird	X	X	None
Vireo bellii pusillus	Least Bell's vireo		X	FE, SE, County Group 1, MSCP NE and Covered
Vireo gilvus	Warbling vireo	X	X	None
Aphelocoma californica	Western scrub-jay	X	X	None
Corvus brachyrhynchos	American crow	X		None
Corvus corax	Common raven	X	X	None
Stelgidopteryx serripennis	Northern rough-winged swallow	X		None
Petrochelidon pyrrhonota	Cliff swallow	X		None
Psaltriparus minimus	Bushtit	X	X	None
Thryomanes bewickii	Bewick's wren	X	X	None
Troglodytes aedon	House wren	X		None
Polioptila californica californica	Coastal California gnatcatcher	X		FT, SSC, County Group 1, MSCP Covered
Chamaea fasciata	Wrentit	X	X	None
Mimus polyglottos	Northern mockingbird	X	X	None
Toxostoma redivivum	California thrasher	X	X	None
Sturnus vulgaris	European starling	X		None
Phainopepla nitens	Phainopepla	X		None
Vermivora celata	Orange-crowned warbler	X		None
Geothlypis trichas	Common yellowthroat	X	X	None
Wilsonia pusilla	Wilson's warbler	X		None
Pipilo maculatus	Spotted towhee	X		None
Pipilo crissalis	California towhee	X	X	None
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	X		County Group 1, MSCP,
Melospiza melodia	Song sparrow	X	X	None
Zonotrichia leucophrys	White-crowned sparrow	X	X	None
Pheucticus melanocephalus	Black-headed grosbeak	X	X	None
Passerina caerulea	Blue grosbeak	X	X	None
Passerina amoena	Lazuli bunting	X		None
Agelaius phoeniceus	Red-winged blackbird	X	X	None
Molothrus ater	Brown-headed cowbird	X		None
Sturnella neglecta	Western meadowlark		X	None
Icterus cucullatus	Hooded oriole	X		None

Scientific Name	Common Name	Detected on Preserve in 2008	Detected on Addition in 2018	Special Status Listing
Icterus bullockii	Bullock's oriole	X		None
Haemorhous mexicanus	House finch	X	X	None
Carduelis psaltria	Lesser goldfinch	X	X	None

Legend

* = non-native or invasive species

Special Status: FE = Federally Endangered, FT = Federally Threatened, SE = State Endangered, SSC = CDFW Species of Special Concern, FP = CDFW Fully Protected, MSCP Covered= Multiple Species Conservation Program Covered Species, MSCP NE = MSCP Narrow Endemic Species

4.3.3.1 Nocturnal Surveys

The nocturnal bird surveys documented two nocturnal avian species: great horned owl and common poorwill (*Phalaenoptilus nuttallii*). A great horned owl was heard vocalizing within riparian forest along the San Dieguito River. Several poorwills were heard on the Addition.

4.3.4 Mammals

In total, 20 mammal species were detected during general surveys, mammal trapping, camera station sampling, and bat sampling (Appendix C). Of these, four species have special status with federal, state, or local governments.

4.3.4.1 Small Mammals

In total, seven species of small mammals were recorded on the Addition during small mammal trapping and other surveys (Table 10). These species were detected through capture, direct observation, or sign. The trapping results indicate that the Addition has relatively low abundance and moderate species diversity with respect to small mammals. With 300 trap nights, only 21 animals, comprising six different species, were captured (Table 11). The small mammal species captured during trapping were Bryant's woodrat (*Neotoma lepida intermedia)*, deer mouse (*Peromyscus maniculatus*), western harvest mouse (*Reithrodontomys megalotis*), northern Baja mouse (*Peromyscus fraterculus*), Dulzura kangaroo rat (*Dipodomys simulans*), and big-eared woodrat (*Neotoma macrotis*). Botta's pocket gopher (*Thomomys bottae*) was incidentally captured in a herpetological box trap.

Table 11: Small Mammal Capture Summary

*Species	Special Status Listing	Trap Line Number									
		1	2	3	4	5	6	7	8	9	Total
Dulzura Kangaroo Rat *Dipodomys simulans*	None	1 ♂									**1** ♂
Western Harvest Mouse *Reithrodontomys megalotis*	None					1 ♂	1 ♂				**2** ♂
Northern Baja Mouse *Peromyscus fraterculus*	None	5 ♂ 5 ♀	2 ♂							1 ♂ 1 ♀	**8** ♂ **6** ♀
Deer Mouse *Peromyscus maniculatus gambelii*	None	1 ♂									**1** ♂
Big-eared Woodrat (= Dusky-footed Woodrat) *Neotoma macrotis* (= *N. fuscipes*)	None		2 ♀								**2** ♀
Bryant's Woodrat (= San Diego Desert Woodrat) *Neotoma bryanti* (= *N. lepida intermedia*)	County Group 2		1 ♂								**1** ♂
	Total	**12**	**5**	**0**	**0**	**1**	**1**	**0**	**0**	**2**	**21**

♂ = male, ♀ = female

4.3.4.2 Medium and Large Mammals

Each camera station was set from May 21 to June 15, 2018. The evaluation of all images captured at the two camera stations resulted in the identification of three medium to large mammal species using the Addition: coyote (*Canis latrans*), bobcat (*Lynx rufus*), and southern mule deer (*Odocoileus hemionus fuliginata*) (Table 12). Southern mule deer is a special-status species. Further discussion of the use of the Addition by special-status medium and large mammal species is found in Section 4.3.5. Two additional medium and large mammal species, desert cottontail (*Sylvilagus audubonii*) and raccoon (*Procyon lotor*), were not captured on the remote cameras but were observed or detected within the Addition during other studies.

Table 12. Medium and Large Mammals Detected

Scientific Name	Common Name	Special Status Listing	Camera Stations	Vegetation Community
Sylvilagus audubonii	Desert cottontail	None	Scat observed	California sagebrush scrub
Canis latrans	Coyote	None	1 and 2	California sagebrush scrub, disturbed habitat, arroyo willow riparian forests, and woodland
Lynx rufus	Bobcat	None	1 and 2	California sagebrush scrub, disturbed habitat, arroyo willow riparian forests, and woodland
Odocoileus hemionus fuliginata	Southern mule deer	County Group 2, MSCP Covered	1 and 2	California sagebrush scrub, disturbed habitat, arroyo willow riparian forests, and woodland
Procyon lotor	Northern raccoon	n/a	Tracks observed	Cattail marshes

Special Status: MSCP Covered = Multiple Species Conservation Program Covered Species

4.3.4.3 Bats

A total of eight bat species, including two California species of special concern, were detected on the Addition using acoustic survey techniques (Table 12).

Passive Acoustic Surveys

Seven of the eight bat species found on the Addition were detected using passive Anabats. The migratory hoary bat (*Lasiurus cinsereus*) was the most active bat species during the passive acoustic monitoring period, accounting for almost 45 percent of the recorded bat calls. The only bat species on the Addition not detected with the passive Anabats was the canyon bat (*Parastrellus hesperus*). Three California species of special concern and/or County of San Diego sensitive bats were detected: western red bat (*Lasiurus blossevillii*), western mastiff bat (*Eumops perotis*), and Yuma myotis (*Myotis yumanensis*). Further discussion of the use of the Addition by bat species is found in Section 4.3.5.

Active Acoustic Surveys

Seven of the eight bat species found on the Addition were detected during the active survey (Table 13). Only the migratory hoary bat was not detected during the active survey, and the canyon bat was detected only during the active survey. Bat activity was very high at the wet creek crossing part of the walking transect; recorded bat activity was nearly continuous here. Although the western mastiff bat accounted for only a small percentage of the relative activity recorded with passive Anabats, the audible calls of this species were heard frequently during the active survey, particularly near the end of the survey period. In fact, multiple western mastiff bats were heard foraging nearly continuously high above the Addition and well out of range of bat detectors.

Table 13. Bat Species Detected at the Addition

Common Name	Scientific Name	Special Status Listing*	Number of Anabat Recordings	Relative Frequency of Recordings (%)
Hoary bat	*Lasiurus cinereus*		136	44.9
Mexican free-tailed bat	*Tadarida brasiliensis*		50	16.5
Western red bat	*Lasiurus blossevillii*	SSC, County Group 2	41	13.5
Big brown bat	*Eptesicus fuscus*		36	11.9
Yuma myotis	*Myotis yumanensis*	County Group 2	30	9.9
Western mastiff bat	*Eumops perotis*	SSC, County Group 2	7	2.3
California myotis	*Myotis californicus*		3	1.0
Canyon bat	*Parastrellus hesperus*		N/A**	N/A**
		Total	**303**	

* SSC = California Species of Special Concern,

** = detected during active Anabat survey only

The Addition appears to support a fair number of bat species, including two California species of special concern. Although there were not obvious roosting opportunities on the Addition, it is possible riparian trees were being used by the California species of special concern western red bat and migratory hoary bat, but this could not be verified during the surveys. Based on the high levels of hoary bat recordings during the passive surveys in May, the Addition may be an important stopover for this highly migratory species. The wet creek crossing area had nearly continuous activity recorded during the active survey, indicating the importance of this area to foraging bats, most likely because of the open water and associated abundance of insects. The presence of multiple western mastiff bats foraging high overhead nearly continuously late in the active survey indicates that this area is also a popular foraging spot for this California species of special concern bat species. The difference in activity levels for this species, as recorded by the passive Anabats (low), compared with what was heard with the unaided ears during the active surveys (high) justifies the importance of supplementing passive surveys with active surveys for this audible species that often flies at altitudes above the range of bat detectors.

The Addition is a valuable acquisition for the County that preserves an important piece of habitat linkage, including the confluence of Lusardi Creek with the San Dieguito River. The wet stretch of the creek supports high levels of foraging bat activity, and the riparian habitat supports tree-roosting species such as the western red bat and migratory hoary bat. Furthermore, this is a popular foraging area for the western mastiff bat.

4.3.5 Special-Status Wildlife Species Observed

Eight special-status wildlife species were detected during the 2018 surveys at the Addition (Figure 13). One special-status reptile species was detected: Belding's orange-throated whiptail. Two special-status bird species were observed: least Bell's vireo and yellow-breasted chat. Five special-status mammal species were detected: western red bat, western mastiff bat, Yuma myotis, Bryant's woodrat, and southern mule deer. See Figure 13 for locations of special-status species detected during surveys of the Addition.

4.3.5.1 Herpetofauna

Belding's Orange-Throated Whiptail (*Aspidoscelis hyperythra beldingi*)

California Watch List, San Diego County Group 2, MSCP Covered Species

Belding's orange-throated whiptail is a medium-sized lizard that ranges from Southern California (specifically Corona del Mar in Orange County and Colton in San Bernardino County) southward to the tip of Baja California, Mexico (Jennings and Hayes 1994). Historically, most populations of the orange-throated whiptail were found on floodplains or terraces along streams in brushy areas with loose soil and rocks (Jennings and Hayes 1994). The habitat types they are known to use include chaparral, non-native grassland, coastal sage scrub, juniper woodland, and oak woodland. California buckwheat and black sage area important indicators of appropriate habitat for Belding's orange-throated whiptail (Jennings and Hayes 1994). Orange-throated whiptails appear to be dietary specialists, with most (greater than 85 percent) of their prey being termites (Jennings and Hayes 1994). This species was caught in the herpetofauna traps located in coastal sage scrub on the Addition.

4.3.5.2 Birds

Least Bell's Vireo (*Vireo bellii pusilis*)

Federally Endangered, California Endangered, San Diego County Group 1, MSCP Narrow Endemic and Covered

Least Bell's vireo is a migratory songbird that generally arrives in San Diego County in March and April and leaves by August or September. It is highly restricted to willow and mule fat scrubs and riparian woodlands (Unitt 2004). An individual was incidentally observed near Lusardi Creek on the Addition during herp array checks (Figure 13). Suitable breeding habitat for least Bell's vireo exists along the San Dieguito River. Lusardi Creek is dominated by giant reed and is currently unsuitable as habitat for this species.

Yellow-Breasted Chat (*Icteria virens*)

California Species of Special Concern; San Diego County Group 1

The yellow-breasted chat is a common summer-breeding visitor that prefers to nest in extensive dense thickets of riparian habitat (Unitt 2004). This species is very secretive; therefore, finding its nests is a challenge. The decline of this species is linked to the loss of riparian woodlands in the coastal lowland as a result of development, agriculture, and channeling rivers. This species is still considered a common species in San Diego County. One individual was incidentally observed near Lusardi Creek on the Addition on June 14, 2018 (Figure 13). Suitable breeding habitat for yellow-breasted chat exists along the San Dieguito River. Lusardi Creek is dominated by giant reed and is currently unsuitable as breeding or foraging habitat for this species.

4.3.5.3 Mammals

Bryant's Woodrat (*Neotoma bryanti*)

California Species of Special Concern, San Diego County Group 2

Bryant's (San Diego desert) woodrat requires large amounts of water, which it obtains from fleshy plants such as yucca species and prickly pear cactus (*Opuntia* sp.). It usually makes a stick house under one of these food plants, or it may den among rocks (Zeiner et al. 1990). Materials used to build middens include cacti, sticks, bones, and a variety of debris. Middens provide insulation against excessive heat as well as protection from predators. This species breeds in late winter or spring, occurs from sea level to approximately 2,591 meters (8,500 feet) AMSL in deserts and coastal sage scrub, and prefers areas with rocky outcrops and plentiful succulents (Zeiner et al. 1990). Bryant's woodrat was captured during small mammal trapping at the base of the steep southwest-facing slope, just northeast of the dirt maintenance road that branches off of Artesian Road within Diegan coastal sage scrub (Figure 13). Coastal sage scrub habitat on the slopes of the Addition is good-quality habitat for this species.

Southern Mule Deer (*Odocoileus hemionus fuliginata*)

San Diego County Group 2, MSCP Covered Species

Southern mule deer are common across the western United States in a variety of habitats, from forest edges to mountains and foothills (Whitaker 1996). Southern mule deer prefer edge habitats, rarely travel or forage far from water, and are most active around dawn and dusk. Southern mule deer were observed on the Addition along the dirt road and in the riparian area and were frequently observed on the wildlife cameras (Figure 13).

Western Red Bat (*Lasiurus blossevillii*)

California Species of Special Concern, San Diego County Group 2

Western red bat is a solitary bat that roosts in tree foliage. It is closely associated with cottonwoods in riparian areas below 6,500 feet (BCI 2018). These bats typically forage along forest edges and in small clearings. They appear to have declined because of a loss of lowland riparian forest. Western red bat was detected during passive and active surveys of the Addition. This species may roost in riparian areas within the Addition.

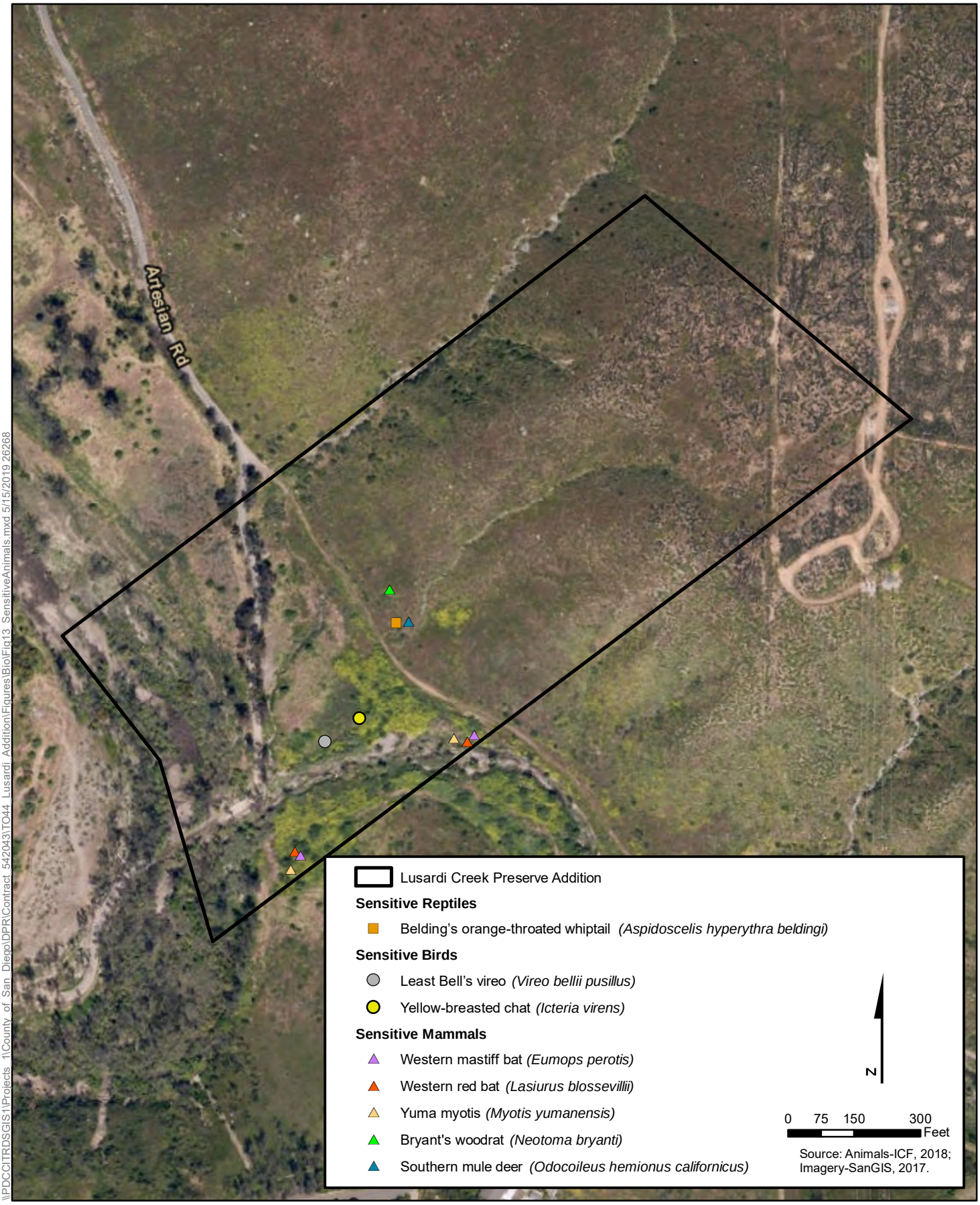


Figure 13
Special Status Wildlife Species
Lusardi Creek Preserve Addition

Yuma Myotis (*Myotis yumanensis*)

San Diego County Group 2

The Yuma myotis is found throughout much of the western United States and into Canada (BCI 2018). The species is always found near lakes, creeks, and ponds because the species forages over water. Typically, individuals skim low over the water and snatch up flying insects, but they can forage in other mesic areas. The species roosts by day, usually in buildings or bridges, but has been documented using mines or caves (BCI 2018). Yuma myotis is threatened by a loss of riparian habitat and the decline in permanent water sources in the southwest. Yuma myotis was detected during passive and active surveys of the Addition.

Western Mastiff Bat (*Eumops perotis*)

California Species of Special Concern, San Diego County Group 2

Western mastiff bats are the largest native bats in the United States. This subspecies occurs from the western foothills of the Sierra Nevada and the Coastal Ranges (south of San Francisco Bay) southward into Mexico (BCI 2018). In Southern California, they are found throughout the coastal lowlands, up to the drier mid-elevation mountains, but avoid the Mojave and Colorado Deserts (Zeiner et al. 1990). Habitats include dry woodlands, shrublands, grasslands, and occasionally even developed areas. This big bat forages in flight; most prey species are relatively small, low to the ground, and weak-flying. For roosting, western mastiff bats appear to favor rocky, rugged areas in lowlands where abundant suitable crevices are available for day roosts (BCI 2018). Roost sites may be in natural rock, tall buildings, large trees, or elsewhere. The reasons for this species' decline are poorly understood but probably related to disturbance, habitat loss, and perhaps widespread use of pesticides. The western mastiff bat was detected during passive and active surveys of the Addition. The San Dieguito River was a popular foraging area for western mastiff bat.

4.3.6 Special-status Wildlife Species with High Potential to Occur

4.3.6.1 Herpetofauna

Seven sensitive reptile species were determined to have high potential to occur on the Addition: Blainville's horned lizard, coastal western whiptail, Coronado skink, red diamond rattlesnake, three-lined boa, coastal patch-nosed snake, and two-striped garter snake.

Blainville's Horned Lizard (*Phrynosoma blainvillii*)

California Species of Special Concern, San Diego County Group 2

The Blainville's (coast/San Diego) horned lizard is a stout lizard that was historically found from Kern, Los Angeles, Santa Barbara, and Ventura Counties southward to Baja California, Mexico. Horned lizards inhabit a variety of vegetation communities, including coastal sage, annual grassland, chaparral, oak woodland, riparian woodland, and coniferous forest (Stebbins 2003). Loose, fine soils with a high sand content and an abundance of prey as well as open areas with limited overstory typify suitable habitat for this species (Jennings and Hayes 1994). The coast horned lizard's insectivorous diet consists mostly of native harvester ants (*Pogonmyrmex* sp.), which make up more than 90 percent of its prey;

however, it is an opportunistic feeder that will take other insects, including termites, beetles, flies, wasps, and grasshoppers (Stebbins 2003; Jennings and Hayes 1994).

This species has disappeared from about 45 percent of its former range. A number of factors have led to this decline, including habitat fragmentation and degradation, loss of native prey to exotic species, and extensive collection for the curio trade (Jennings and Hayes 1994). The specialized diet of harvester ants has made horned lizards especially vulnerable to extirpation since the introduction of Argentine ants (*Linepithema humile*). This species has not been recorded at the Addition or the Preserve. However, this species has potential to occur throughout the scrub, chaparral, and grassland habitats within the Addition.

Coronado Skink (*Plestiodon skiltonianus interparietalis*)

California Species of Special Concern, San Diego County Group 2

The Coronado skink is a medium-sized, secretive lizard that is typically found in the moister areas of coastal sage, chaparral, oak woodlands, pinyon-juniper, riparian woodlands, and pine forests (Jennings and Hayes 1994). Its prey includes small invertebrates in leaf litter or dense vegetation at the edges of rocks and logs. The Coronado skink is found along the coastal plain and Peninsular Ranges west of the deserts, from approximately San Gorgonio Pass in Riverside County south to San Quentin, Mexico (Jennings and Hayes 1994). The Coronado skink was detected on the Preserve in 2008 but was not observed on the Addition in 2018. It has potential to occur throughout the scrub, chaparral, woodland, and riparian habitats.

Coastal Western Whiptail (*Aspidoscelis tigris stejnegeri*)

San Diego County Group 2

Coastal western whiptail is a medium-sized, slender lizard that is found in arid and semi-arid desert regions to open woodlands where vegetation is sparse, making running easy (Stebbins 2003). Its range includes coastal Southern California and western Baja California. The decline of coastal whiptails is most likely due to the loss of habitat to agriculture and urban development. The coastal western whiptail was detected on the Preserve in 2008 but was not observed on the Addition in 2018. This species is presumed to occur throughout the scrub and chaparral habitats within the Addition.

Red Diamond Rattlesnake (*Crotalus ruber*)

California Species of Special Concern, San Diego County Group 2, MSCP Covered Species

The red diamond rattlesnake is a large, heavy-bodied rattlesnake that has a wide tolerance for varying environments. It can be found in a variety of vegetation types but is most commonly seen in areas with heavy brush and cacti, rocks, or boulders (Stebbins 2003). The known range extends from San Bernardino County, along the coastal and desert slopes, southward to Baja California. Adult red diamond rattlesnakes eat mostly squirrels and rabbits, but lizards, specifically the western whiptail, are a significant food source for juveniles (Jennings and Hayes 1994). Urban development and the trend toward planting orchards on steeper rocky hillsides have significantly decreased the amount of appropriate habitat for this species (Jennings and Hayes 1994). Red diamond rattlesnake was detected on the Preserve in 2008 but was not observed on the Addition

in 2018. This species is presumed to occur throughout the scrub and chaparral habitats within the Addition.

Three-lined Boa (*Charina trivirgata*)

San Diego County Group 2

Three-lined (coastal rosy) boas are heavy-bodied snakes that inhabit arid scrublands, semi-arid and rocky shrublands, rocky deserts, canyons, and other rocky areas (Stebbins 2003). This species eats rodents, small birds, lizards, small snakes, and amphibians and kills its prey by constriction. Three-lined boas occur in southwestern California, from the coastal slopes of the San Gabriel and San Bernardino Mountains to the Peninsular Ranges and the desert in San Diego County (Stebbins 2003). Threats to this species include habitat degradation and fragmentation from urban development. This species has not been recorded at the Addition or the Preserve. This species is often associated with the margins of riparian areas. Suitable habitat occurs on the Addition.

Coast Patch-nosed Snake (*Salvadora hexalepis virgutea*)

State Species of Special Concern, San Diego County Group 2

The coast patch-nosed snake is a medium-sized, slender snake that is a habitat generalist. It makes use of whatever vegetative cover is available and thrives in most environments. It is also a generalist in its diet, opportunistically feeding on anything it can overpower, including small mammals, lizards, and the eggs of lizards and snakes. The species ranges from Creston in San Luis Obispo County southward into Baja California (Stebbins 2003). This species' decline is most likely due to the conversion of habitat to development, agriculture, or non-native plant species. Although this species was not observed during surveys of the Addition in 2018 or the Preserve in 2008, the species has high potential to occur, given the presence of suitable habitat.

Two-striped Garter Snake (*Thamnophis hammondii*)

State Species of Special Concern, San Diego County Group 1

Two-striped garter snake occurs west of the deserts and Central Valley, from Salinas in Monterey County to Baja California, at elevations from sea level up to about 2,438 meters (8,000 feet) in the San Jacinto Mountains (Jennings and Hayes 1994). It is often in water and rarely found far from it, although it is also known to inhabit intermittent streams with rocky beds bordered by willow thickets or other dense vegetation (Jennings and Hayes 1994). They will also inhabit large riverbeds, such as those of the Santa Ana and Santa Clara Rivers, if riparian vegetation is available. They even occur in artificial impoundments if both aquatic vegetation and suitable prey items (small amphibians and fish) are present (Jennings and Hayes 1994). Declines are attributable directly to the loss of riparian habitats. Although this species was not observed during surveys of the Addition in 2018 or the Preserve in 2008, the species has high potential to occur, given the presence of suitable habitat along the San Dieguito River.

4.3.6.2 Birds

Eleven sensitive bird species were determined to have high potential to occur on the Addition: barn owl (*Tyto alba*), Bell's sparrow (*Artemisiospiza belli*), California horned lark (*Eremophila alpestris actia*), coastal California gnatcatcher, Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk

(*Buteo linearis*), great blue heron (*Ardea herodias*), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), turkey vulture (*Cathartes aura*), white-tailed kite (*Elanus caeruleus*), and yellow warbler (*Dendroica petechia brewsteri*).

Barn Owl (*Tyto alba*)

San Diego County Group 2

The barn owl is the owl species that is most tolerant of urban development (Unitt 2004). It will nest in buildings, in nest boxes, at the base of the leaves in palm trees, and in cavities in native trees (Unitt 2004). Even though this species is tolerant of human development, dense housing communities do not provide suitable nesting habitat, and increased traffic has had a negative effect on the species (Unitt 2004). Barn owl was observed on the Preserve in 2008 but was not observed on the Addition in 2018.

Bell's Sparrow (*Artemisiospiza belli*)

San Diego County Group 1

Bell's sparrow is a resident species that is usually found in open chaparral and coastal sage scrub, from Southern California to Baja California. This mostly ground-dwelling species prefers open chaparral and sage scrub and is one of the first species to inhabit recently burned habitat (Unitt 2004). This species occurs along coastal lowlands, inland valleys, and the lower foothills of the local mountains, from Southern California to Baja California. The decline in this species can be attributed to fire suppression, invasion by exotic plant species, loss of habitat to agriculture and urban development, and population isolation due to habitat fragmentation (Unitt 2004). Bell's sparrow is documented as breeding in the vicinity (Unitt 2004) and has high potential to occur on the Addition.

California Horned Lark (*Eremophila alpestris actia*)

San Diego County Group 2

The California horned lark is a resident of a variety of open habitats, usually where trees and large shrubs are absent (Zeiner et al. 1990). This subspecies breeds primarily in open fields and grasslands. It is found along the coastal slope of San Diego County, east to Jacumba (Unitt 2004). Continuing threats to this species include habitat destruction and fragmentation. This species has been documented in the general vicinity (Unitt 2004) and has high potential to occur on the Addition.

Coastal California Gnatcatcher (*Polioptila californica californica*)

Federally Threatened, California Species of Special Concern, San Diego County Group 1, MSCP Covered Species

Coastal California gnatcatcher is a small insectivorous resident species whose occurrence is strongly associated with the sage scrub habitats found from Southern California to northern Baja California, Mexico. Coastal California gnatcatcher was observed on the Preserve in 2008 but was not observed on the Addition in 2018. Highly suitable Diegan coastal sage scrub habitat occurs within the Addition.

The majority of the Preserve and all of the Addition were burned in the 2007 Witch Fire. In 2008, two use areas for the coastal California gnatcatcher were detected within the Preserve. One use area was in the burned western portion of the Preserve. The second use area was at the western edge of

the unburned coastal sage scrub in the eastern portion of the Preserve. In 2014, the Bernardo Fire burned the southern side of the Preserve and Addition, including both of the areas in which coastal California gnatcatcher were observed in 2008.

Cooper's Hawk (*Accipiter cooperii*)

San Diego County Group 1, MSCP Covered Species

Cooper's hawk is a resident of riparian deciduous habitats and oak woodlands, but in recent times, it has become adapted to urban park environments (Unitt 2004). Cooper's hawk hunts its primary source of food, passerines, in broken woodlands and forest margins; it is also known to take fish and mammals. The Cooper's hawk population declined because of hunting and the loss of habitat; however, this species is making a comeback through its adaptation to the urban environment (Unitt 2004). Cooper's hawk was observed on the Preserve in 2008 but was not observed on the Addition in 2018. This species is widespread throughout the county and has high potential to occur on-site.

Red-Shouldered Hawk (*Buteo lineatus*)

San Diego County Group 1

The red-shouldered hawk was once an uncommon breeder in lowland riparian woodlands but has been thriving recently in urban environments with large trees such as eucalyptus (Unitt 2004). On the West Coast, this species is found in California and northern Baja California; it is also common throughout San Diego County. Red-shouldered hawk was observed on the Preserve in 2008 but was not observed on the Addition in 2018. This species is widespread throughout the county and has high potential to occur on-site.

Great Blue Heron (*Ardea herodias*)

San Diego County Group 2

The great blue heron is a large water bird that can be found in any type of wetland. It is typically a colonial breeder that nests in trees near water (Unitt 2004); however, breeding by isolated pairs in the absence of trees has been documented. Great blue herons will nest in bushes, on the ground, or in artificial structures (Unitt 2004). This species is non-migratory in Southern California but is migratory in other parts of its range (Unitt 2004). Great blue herons forage diurnally in estuaries and beaches but are also commonly seen on dry land (Unitt 2004). This species is common within the county, and highly appropriate marsh and riparian foraging habitat was present on the Addition.

Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*)

San Diego County Group 1, MSCP Covered Species

The Southern California rufous-crowned sparrow is a resident species that is closely associated with coastal sage scrub, steep rocky hillsides, burned chaparral, and openings in mature chaparral (Unitt 2004). Preferring open habitat with approximately 50 percent shrub cover, this species seeks cover in shrubs, rocks, grass, and forb patches (Unitt 2004). The Southern California subspecies is restricted to semi-arid coastal sage scrub and sparse chaparral from Santa Barbara south to the northwestern corner of Baja California . Southern California rufous-crowned sparrows are declining

because of the loss of appropriate habitat and their sensitivity to habitat fragmentation (Unitt 2004). This species was observed on the Preserve in 2008 but was not observed on the Addition in 2018.

Turkey Vulture (*Cathartes aura*)

San Diego County Group 1

Turkey vultures are often seen foraging over woodlands and nearby open country (Unitt 2004). They prefer dry, open country and ranch lands and often occur along roadsides where carrion is common. They nest in crevices among granite boulders (Unitt 2004). Turkey vulture's range has been retracting from the coast because of human disturbance, the loss of foraging habitat, and pesticide contamination (Unitt 2004). This species is still common in the undeveloped areas of east San Diego County. Turkey vultures have high potential to forage over the Addition, but there is no nesting habitat present.

White-Tailed Kite (*Elanus caeruleus*)

California Fully Protected Species (nesting), San Diego County Group 1

The white-tailed kite is found in lower elevations in open grasslands, agricultural areas, wetlands, and oak woodlands. Their primary source of food is the California vole (*Microtus californicus sanctidiegi*) (Unitt 2004). It typically forages in open, undisturbed habitats and nests in the top of dense oaks, willows, or other large trees (Unitt 2004). The white-tailed kite population is on the decline mostly because of urban sprawl; however, this species is still considered fairly widespread throughout the foothills of San Diego County (Unitt 2004). White-tailed kite was observed on the Preserve in 2008 but was not observed on the Addition in 2018. Its preferred prey, California vole, was not observed during small mammal trapping on the Preserve in 2008 or trapping on the Addition in 2018. This species may have low capture rates in Sherman traps.

Yellow Warbler (*Dendroica petechia brewsteri*)

California Species of Special Concern, San Diego County Group 2

The yellow warbler is a small insectivorous migratory passerine that inhabits mature lowland and foothill riparian woodlands (Unitt 2004). Preferred plant species include cottonwoods, willows (*Salix* spp.), and other small trees and shrubs that are typically found in open-canopy riparian woodlands. Yellow warblers are usually on their breeding grounds from late March to mid-October. Destruction and degradation of riparian habitat and brood parasitism by the brown-headed cowbird led to the decline of this species (Unitt 2004). Cowbird trapping has caused an increase in the San Diego County population of yellow warblers (Unitt 2004). This species has been considered a fairly common summer breeder in appropriate habitat in San Diego County (Unitt 2004). Yellow warblers were not observed on the Addition or Preserve but have high potential to nest in riparian habitat.

4.3.6.3 Mammals

Four sensitive mammal species were determined to have high potential to occur on the Addition.

Dulzura Pocket Mouse (*Chaetodipus californicus femoralis*)

California Species of Special Concern, San Diego County Group 2

Dulzura pocket mouse is active mainly on the ground, but it also climbs shrubs and small trees when feeding (Zeiner et al. 1990). This species can become torpid by day at any time of the year and is

inactive in cold wet weather. It breeds in spring to early summer and occurs from sea level to approximately 2,408 meters (7,900 feet) AMSL (Zeiner et al. 1990). No Dulzura pocket mouse were captured on the Addition in 2018, but this species was captured on the Preserve in 2008.

Small-Footed Myotis (*Myotis ciliolabrum*)

San Diego County Group 2

Small-footed myotis rears its young in cliff-face crevices, erosion cavities, and beneath rocks (BCI 2018). They may hibernate in caves and mines. The species was not detected during surveys of the Addition in 2018 but was recorded on the Preserve in 2008.

Long-Eared Myotis (*Myotis evotis*)

San Diego County Group 2

Long-eared myotis is found in western North America, from British Columbia south through California to Baja Mexico (BCI 2018). This species prefers coniferous forests in higher altitudes and will roost in caves, rock crevices, under tree bark, or in buildings (BCI 2018). This species was detected on the Preserve in 2008 but was not observed on the Addition in 2018.

Pocketed Free-Tailed Bat (*Nyctinomops femorosacus*)

California Species of Special Concern, San Diego County Group 2

Pocketed free-tailed bats are typically found in desert and arid grasslands with rocky outcrops, canyons, or cliffs (BCI 2018). This species was not detected during surveys of the Addition in 2018 but recorded on the Preserve in 2008.

4.3.7 Invasive Wildlife Species

Native species are often at a disadvantage after exotic species or non-native predators are introduced. Non-native animal species have few natural predators or other ecological controls on their population sizes; they thrive under conditions created by humans. These species may aggressively out-compete native species or otherwise harm sensitive species. When top predators are absent, intermediate predators multiply and increase predation on native bird species and their nests. Feral and domestic animals, particularly cats, can prey on small native wildlife species. Feral animals are not a current problem at the Addition. With increased use of the Addition by hikers and their dogs and horseback riders, increased interactions between domestic animals and native animals are expected.

Bullfrog was the only non-native or invasive animal species documented at the Addition in 2018. Other non-native or invasive species with high potential to occur include brown-headed cowbird (*Molothrus ater*), black rat (*Rattus rattus*), and domestic cat (*Felis catus*).

4.4 Wildlife Movement

Wildlife movement corridors are areas that connect suitable wildlife habitat areas in a region that would otherwise be fragmented by rugged terrain, changes in vegetation, or human disturbance.

Natural features such as canyon drainages, ridgelines, or areas with vegetative cover provide corridors for wildlife movement. 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.

The Addition and Preserve are not part of a designated primary linkage of the MSCP. The Addition and Preserve are in the Hodges Reservoir/San Pasqual Valley Biological Resources Core Area, which is adjacent to two biological linkages. The Addition and Preserve connect the City of San Diego MHPA's biological core areas (Black Mountain Open Space Park) to the San Dieguito River, and open space areas to the north are connected to the San Dieguito River. In addition, the San Dieguito River and Lusardi Creek serve as a wildlife corridor for local wildlife movement.

Mule deer were frequently recorded using the dirt road on the Addition in 2018. The Addition and Preserve are assumed to provide movement opportunities between open space areas for medium and large mammals.

Chapter 5
Conclusions and MSCP Management and Monitoring Recommendations

The Preserve and Addition are in the Lake Hodges segment of the MSCP planning area; both do not contain any designated USFWS critical habitat. The overall goal of the MSCP is to maintain and enhance biological diversity in the region and conserve viable populations of sensitive species and their habitats, preventing extirpation or extinction. The MSCP includes general biological monitoring to evaluate whether the preserve system is meeting conservation targets for covered plant and animal species and their habitats, identify threats to covered species and their habitats, and help identify management needs.

In this chapter, specific management recommendations for the habitat types are documented within the Addition. These recommendations are based on the results of the baseline biological diversity surveys as well as the management and monitoring guidelines and conservation goals provided in the MSCP Framework Management Plan (FMP) (County 2000).

The FMP includes plan-wide stewardship and management guidelines; habitat- and species-specific management guidelines; and monitoring guidelines as well as specific conservation goals for each of the three planning segments identified in the MSCP Subarea Plan. The Addition is located within the Lake Hodges Segment. The MSCP describes the Lake Hodges segment as being an important regional section of the MSCP, valued for its location relative to coastal regions (County 1997). It has large blocks of self-sustaining habitat, especially in the northern portion of the 4S Ranch and portions of the Santa Fe Valley.

As detailed previously, the current survey effort documented 13 vegetation associations/alliances, plus two landcover types and 159 species within the Addition. Specifically, the surveys detected 91 plant species and 71 wildlife species. Of these species, six plants are considered special status, and one of these is covered by the MSCP, San Diego barrel cactus. Eight special-status wildlife species were detected during the surveys, three of which are covered by the MSCP, Belding's orange-throated whiptail, least Bell's vireo, and southern mule deer.

5.1 Vegetation Communities/Habitats

As previously discussed, the Addition contains 13 vegetation associations/alliances, including a variety of wetland, riparian, grassland, and scrub communities. Diegan coastal sage scrub, along with riparian areas, has been significantly affected by historical habitat conversion throughout its range. Species generally endemic to these communities, such as coastal California gnatcatcher and least Bell's vireo, have suffered significant losses.

In order to assess the overall biological integrity of the Addition, it is recommended that the County maintain an updated vegetation community map. The map should be used as a tool for adaptive management within the Addition. Updates should occur once every 8-10 years or within the first growing season following an unforeseen disturbance (i.e., fire, flood, man-made disturbance). The purpose of the ongoing mapping effort should be to document changes in the vegetation communities within the Addition that could affect quality and usage by wildlife. Vegetation

monitoring for habitat value should also focus on identifying adverse changes and their effects on vegetation over time. This includes dramatic changes, such as fire, as well as slower but equally important effects, such as invasions by invasive non-native plant species or a slow decline in existing native species.

5.2 Plants

During baseline surveys in 2018, one MSCP covered plant species was detected, San Diego barrel cactus. Management recommendations for this species are detailed below.

5.2.1 Management Directives for MSCP Covered Plant Species

5.2.1.1 San Diego Barrel Cactus (*Ferocactus viridescens*)

Site Location

One individual was observed within the Addition on a southwest-facing slope (Figure 11).

Habitat

Within the Addition, Diegan coastal sage scrub on the slope represents suitable habitat.

MSCP Monitoring Conditions

San Diego barrel cactus is relatively common within Diegan coastal sage scrub, but this vegetation community has experienced high levels of habitat loss in the 20th century. This species has low priority for management and monitoring. Table 3-5 of the MSCP indicates that management directives should include protecting this species from edge effects, unauthorized collection, and too-frequent fire cycles. The amount and distribution of Diegan coastal sage scrub on the Addition and Preserve should be monitored.

Habitat-based maintenance and monitoring should include:

1. Mapping vegetation every 8-10 years to determine if on-site vegetation communities supporting San Diego barrel cactus remain viable.
2. Ensuring that signs remain in place at Addition entrances, stating that trail users must remain on the trail and that vegetation collection is prohibited.
3. Conducting post-fire assessments to document the condition and persistence of this species

5.3 Wildlife

As documented previously, three MSCP covered wildlife species were detected during baseline surveys at the Addition: Belding's orange-throated whiptail, least Bell's vireo, and southern mule deer. Management and monitoring recommendations for each of these species covered are detailed below.

General management recommendations for bat species include maintaining the flow of water in Lusardi Creek, minimizing disturbance to the riparian habitat, and, if possible, controlling the non-native grasses and vegetation that characterize much of the floodplain of the San Dieguito River.

5.3.1 Management Directives for MSCP Covered Wildlife Species

5.3.1.1 Belding's Orange-Throated Whiptail (*Aspidocelis hyperythrus beldingi*)

Site Location

Belding's orange-throated whiptail was observed on the Addition in 2018, in Trap 1A at the edge of the floodplain, in Diegan coastal sage scrub vegetation.

Vegetation Community

Belding's orange-throated whiptail has potential to occur within all vegetation communities on the Addition, except marsh and giant reed breaks. It is often associated with the boundaries of riparian areas.

MSCP Monitoring Conditions

Belding's orange-throated whiptail has low priority for management and monitoring. Table 3-5 of the MSCP indicates that management directives must address edge effects.

Habitat-based monitoring should include:

1. Mapping vegetation every 8-10 years to determine if on-site vegetation communities supporting Belding's orange-throated whiptail remain viable.

   a.

5.3.1.2 Least Bell's Vireo (*Vireo bellii pusillus*)

Site Location

One individual observed in the southern arroyo willow riparian forest on the Addition in 2018.

Vegetation Community

Least Bell's vireo has the potential to nest in the southern arroyo willow riparian forest and mule-fat scrub. Riparian areas in the San Dieguito River and Lusardi Creek are suitable habitat for least Bell's vireo.

MSCP Monitoring Conditions

Table 3-5 of the MSCP indicates that management directives must include measures to protect least Bell's vireo from edge effects and minimize impacts during nesting periods. Also included are fire protection measures and management measures to maintain or improve habitat quality, including vegetation structure.

Management and monitoring recommendations include:

1. Mapping vegetation every 8-10 years to determine if on-site vegetation communities supporting least Bell's vireo remain viable.
2. Monitoring of the presence of pests and pathogens, including SHB/*Fusarium* infestation, in riparian habitat every 8-10 years, concurrent with vegetation mapping.
3. Conducting removal of giant reed, pampas grass, castor beans, and other invasive non-native plant species from Lusardi Creek and San Dieguito River.
4. If found on-site, conducting management to reduce impacts from SHB/*Fusarium* infestation.

5.3.1.3 Southern Mule Deer (*Odocoileus hemionus fuliginata*)

Site Location

This species is widespread throughout the Addition. It was frequently recorded around the wildlife camera locations in riparian habitat and along the road through the center of the Addition.

Vegetation Community

The potential exists for this species to use all vegetation communities within the Addition.

MSCP Monitoring Conditions

This species has low priority for management and monitoring. Table 3-5 of the MSCP indicates that habitat-based management will be conducted. The preservation of undeveloped vegetation on the Addition would provide adequate foraging habitat. Monitoring efforts should focus on status monitoring. Status monitoring should involve general assessments of habitat characteristics, such as threats or changes in habitat quality as a check on their condition. Vegetation mapping would be conducted on the Addition and Preserve every 8-10 years and monitor for the loss of foraging habitat, particularly as a result of additional on-site development or a too-frequent wildfire regime.

Habitat-based monitoring should include:

1. Revising vegetation mapping every 8-10 years to determine if on-site vegetation communities supporting southern mule deer remain viable.
2. Conducting activities to keep trail users on the trail and prevent off-leash dogs.
    a. Place signage to advise trail users of leash laws and regulations regarding remaining on trails.
    b. Have DPR staff conduct routine monitoring of the Addition for unauthorized trails and close these features if they appear.

5.4 Invasive Non-native Species Control

5.4.1 Invasive Non-native Plants

Chapter 4.3.7 detailed invasive non-native plants that were observed on the Addition in 2018. These plants all have the capacity to displace or are currently displacing native vegetation and altering the functions and services of native vegetation communities.

The invasive non-native plant species are presented in Figure 12. Target invasive non-native plants identified for control at the Addition include:

- Giant reed
- Hottentot fig
- Pampas grass
- Gum trees
- Canary Island date palm
- Castor bean
- Wallaby grass
- Salt cedar
- Mexican fan palm

Several of these species are currently present, with low numbers and extents; they should be treated and removed as soon as possible before their numbers can increase. These include Hottentot fig, pampas grass, castor bean, wallaby grass, and salt cedar.

Mexican fan palm and Canary Island date palm are present in low numbers but are large species that would require significant effort to remove. These two palm tree species should be treated with a "drill and kill" method, wherein a powerful cordless drill with a long bit is used to drill into the trunk and introduce herbicide into the vascular system of the tree. A California pest control advisor would need to be hired to choose and apply the appropriate herbicide type and concentration.

The riparian areas of the San Dieguito River and Lusardi Creek have been affected by invasive non-native plant species. Giant reed and gum trees have already converted native habitat to exotic habitat (Figure 12). Removal of these species and restoration with native riparian trees would potentially benefit sensitive riparian-associated animal species, including least Bell's vireo, yellow warbler, yellow-breasted chat, Cooper's hawk, red-shouldered hawk, and white-tailed kite. Any giant reed removal should use a systematic removal approach, beginning at the top of the Lusardi Creek watershed and working downstream.

DPR should coordinate with other agencies, nonprofit organizations, and/or volunteer groups in order to seek funding and implement removal of giant reed, pampas grass, gum trees, and other invasive non-native plants within the Addition.

When invasive non-native plant control is implemented within a preserve, the MSCP FMP requires that the following measures be followed:

- Base the priority for removal on a species' biology, the immediate need of a specific area, and where removal could increase habitat available for covered species.
- Avoid removal activities during the reproductive seasons of sensitive species and reduce impacts on sensitive species or native habitats.
- Use an integrated pest management approach (i.e., use the least biologically intrusive control methods) at the most appropriate period of the growth cycle to achieve the desired goals.
- Consider both mechanical and chemical methods of control. Only herbicides compatible with biological goals should be used. Only licensed pest control advisors are permitted to make specific pest control recommendations.
- Dispose of all exotic plant materials that are removed from preserve lands properly (e.g., in off-site facilities).
- Revegetate exotic weed removal areas with species appropriate to biological goals, as appropriate.
- Identify where active revegetation (as opposed to passive recruitment) will be necessary in the RMP.

5.4.2 Invasive Wildlife

Bullfrogs, an invasive aquatic species, were observed within the portion of San Dieguito River on the Addition. As sensitive aquatic species are not currently known from the addition, removal of these species is not currently a high priority.

Brown-headed cowbird is an invasive native species that has high potential to occur within the Addition; it was observed on the Preserve in 2008. This species was not observed on the Addition in 2018; therefore, it is unlikely to be present in the vicinity in densities that would require control. No control efforts are recommended for prioritization.

5.5 Restoration Opportunities

The Addition is generally composed of high-quality habitat that provides essential habitat for special-status species that are covered under the MSCP.

However, a variety of target invasive non-native plants are present on the Addition, as described in Section 4.2.3. These plants have altered the riparian habitat in the Addition and have the potential to further alter and degrade habitat. If resources are available, active invasive non-native plant removal and restoration would improve the native plant cover and composition of the river valley on the Addition and improve habitat values for a variety of native and sensitive animal species. Any proposed restoration activity should use current accepted techniques and avoid or minimize impacts on sensitive species or native habitats. In addition, revegetation activities should use only local native plant seed or container stock plants that have been propagated from plant material from central coastal San Diego County.

The usage of this section of the San Dieguito River by special-status and MSCP covered species was relatively low compared with other critical sections of riparian areas, such as the San Luis Rey River and Tijuana River Valley.

5.6 Fire Management

The entirety of the Addition burned in an unnamed fire in 1943 and in the Witch Fire in 2007 (Figure 6). The southwestern portion of the Addition burned in 2014 in the Bernardo Fire. Because the Addition and Preserve are surrounded by residential development, sensitive and MSCP covered plant and animal species risk extirpation by fire; further fires in the next 10 to 20 years would be an unnaturally frequent fire interval. Therefore, efforts should be made to prevent, control, and manage fire on the Addition.

The dirt road within the Addition would be maintained annually to keep it fuel free and maintained at 11 to 17 feet wide. In addition, DPR would continue to coordinate with the California Department of Forestry and Fire Protection (CAL FIRE) and/or the Rancho Santa Fe Fire Protection District to determine what improvements need to be made to make fire response feasible throughout the Addition.

Fuel management would be conducted along the sides of Artesian Road. Gum tree removal is recommended as part of this fuel management.

No residences are within 100 feet of the boundary of the Addition, and no structures will be allowed within 100 feet of the boundary, which would require fuel management on the Addition.

Vegetation management within the Preserve was identified as a top priority by the Rancho Santa Fe Fire Protection District (County 2009). The Addition should be incorporated into the RMP for the Preserve, and similar vegetation management should be conducted. DPR will coordinate with CAL FIRE and the Rancho Santa Fe Fire Protection District to develop an integrated Vegetation Management Plan that allows environmental documentation for strategic fuels management to be conducted if, and when, needed. The Vegetation Management Plan will also identify likely locations for equipment staging areas and fire breaks, helping firefighters avoid known cultural sites, if feasible.

Signage prohibiting smoking, camping, and campfires/open flames should be established and kept in good order.

5.7 Wildlife Linkages and Corridors

The primary function of wildlife corridors is to provide migration routes between core biological areas. In some cases, wildlife corridors may also serve as habitat for various life history requirements (e.g., foraging, reproduction, growth). Target species for corridor use include large mammals, such as mountain lion and southern mule deer. Corridor use by mammals should be monitored as described below.

A program to monitor corridor use by mammals is established within the existing MSCP area (Conservation Biology Institute 2003). Although not a designated MSCP corridor, the Addition and Preserve connect the City of San Diego MHPA biological core areas (Black Mountain Open Space Park) to the San Dieguito River, and open space areas to the north connect to the San Dieguito River (Figure 4).

DPR should conduct corridor monitoring at 8-10-year intervals in conjunction with habitat monitoring. The main product of this monitoring should be a report documenting the results of the current assessment of habitat linkage function, including a list of focal species detected.

5.8 Additional Management Recommendations

5.8.1 Public Access

Public access should be restricted to designated roads within the Addition.

Domestic dogs on leashes are allowed within the Addition. It is recommended that the County amend signage to state that dog owners should remove all feces in order to minimize potential vector-borne disease transmission to the local coyote population. In addition, feces bags and disposal bins should be provided at trailheads to encourage the public to remove feces.

5.8.2 Fencing

Fencing plays an important role in the use of the landscape by humans, domestic animals, and wildlife. Fencing can control human access, particularly by off-highway vehicles. Fencing can direct wildlife to road under-crossings and prevent road kills. However, fencing can also have an impact on cultural resources, restrict normal wildlife movement, restrict access to food and water, and guide wildlife onto roads. Vehicular access to the Addition and the Preserve is controlled through gates. There is no restriction to pedestrian, bicycle, or equestrian access. No other fencing is currently considered necessary to protect sensitive biological resources.

5.8.3 Trails and Access Roads

Passive recreational use of the Addition is consistent with the protection and enhancement of biological resources. Passive recreational facilities, including roads, should be managed to promote the maintenance of habitat value surrounding these facilities and reduce impacts on the conserved resources.

5.8.4 Signage and Education

Signs educate, provide direction, and promote the sensitive use and enjoyment of natural areas, but they can also inadvertently invite vandalism and other destructive behavior. Signs that explain the rules within the Addition (e.g., firearms use, protection of archaeological resources) are most effective at trailheads. Educational signs along the multi-use trails should be posted at appropriate locations.

DPR should provide and maintain sufficient signage to clearly identify public access to the Addition and instruct the public on the rules and regulations for preserve usage.

Barriers such as vegetation, rocks/boulders, or fencing may be necessary to protect highly sensitive areas. The determination of the appropriate types of barriers to be used would be based on location, setting, and use.

5.8.5 Litter/Trash Removal

Management of the Addition and Preserve should include implementation of a litter and trash removal program. The purpose of this program would be to ensure that contaminants do not negatively affect the conserved resources within the Addition.

Trash receptacles should be provided and maintained at the main trail access area. Trash receptacles should be designed to be secure from intrusion by wildlife species. Ranger personnel should regularly empty trash receptacles at least once a week (more/less as deemed necessary).

5.8.6 Illegal Off-road Activity

Off-road activities can result in a significant detrimental effect on the conserved resources within the Addition by reducing air quality, causing soil erosion and sedimentation in local waters, creating noise pollution, and causing habitat degradation. Disturbance from off-road vehicles can also disrupt breeding activities. For these reasons, off-road vehicle use is not compatible in preserved areas. The fences and gates within the Addition should be maintained to prevent illegal access. Ranger personnel will monitor trails for degradation as well as off-trail access and use. They will provide the necessary repair/maintenance.

5.8.7 Emergency and Safety Issues

Safety measures should be implemented within the Addition as needed. These measures may include installing safety signs and identifying emergency evacuation procedures, such as vehicular access and helicopter landing areas. The Addition is not open at night; therefore, safety lighting is not necessary.

Law enforcement officials should be invited to access the Addition property as necessary. If it becomes apparent that extensive enforcement activities are necessary, DPR should coordinate with the applicable agencies to inform field personnel regarding how to minimize damage to particularly sensitive resources.

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Chapter 6
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Appendix A

Observed Species List – Plants

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Appendix A. Plant Species Detected at Lusardi Addition in 2018

	Scientific Name	Common Name	Special Status
	LYCOPHYTES		
	Selaginellaceae - Spike-moss fam		
	Selaginella bigelovii	Bushy spike-moss	
	Selaginella cinerascens	Ashy spike-moss	CRPR 4.1
	MAGNOLIIDS		
	Saururaceae - Lizard's-tail family		
	Anemopsis californica	Yerba mansa	
	EUDICOTS		
	Aizoaceae - Fig-marigold family		
*	*Carpobrotus edulis*	Hottentot fig, iceplant	
	Anacardiaceae - Sumac Or Cashe		
	Malosma laurina	Laurel sumac	
	Rhus integrifolia	Lemonade berry	
*	*Schinus molle*	Peruvian pepper tree	
	Apiaceae - Carrot family		
*	*Foeniculum vulgare*	Fennel	
	Asteraceae - Sunflower family		
	Acourtia microcephala	Sacapellote	
	Ambrosia psilostachya	Western ragweed	
	Artemisia californica	California sagebrush	
	Artemisia palmeri	San Diego sagewort	CRPR 4.2
	Baccharis pilularis ssp. pilularis	Coyote brush	
	Baccharis salicifolia ssp. salicifolia	Mule fat	
*	*Centaurea melitensis*	Tocalote	
	Encelia californica	California encelia	
	Eriophyllum confertiflorum	Golden woolly sunflower	
*	*Helminthotheca echioides*	Bristly ox-tongue	
	Heterotheca grandiflora	Telegraph weed	
	Isocoma menziesii	Coastal goldenbush	
	Iva hayesiana	San Diego marsh-elder	CRPR 2B.2
*	*Lactuca serriola*	Prickly lettuce	
*	*Logfia gallica*	Narrowleaf cottonrose	
	Pseudognaphalium californicum	California everlasting	
*	*Sonchus asper ssp. asper*	Prickly sow thistle	

	Scientific Name	Common Name	Special Status
	Uropappus lindleyi	Silver puffs	
	Xanthium strumarium	Cocklebur	
	Boraginaceae - Borage family		
	Phacelia cicutaria	Caterpillar phacelia	
	Phacelia sp.	Phacelia	
	Brassicaceae - Mustard family		
*	*Brassica nigra*	Black mustard	
	Cactaceae - Cactus family		
	Cylindropuntia prolifera	Coast cholla	
	Ferocactus viridescens	San Diego barrel cactus	CRPR 2B.1
	Opuntia oricola	Chaparral prickly pear	
	Chenopodiaceae - Goosefoot fami		
*	*Atriplex semibaccata*	Australian saltbush	
*	*Salsola tragus*	Russian thistle	
	Cistaceae - Rock-rose family		
	Crocanthemum scoparium	Peak rush-rose	
	Cleomaceae - Spiderflower family		
	Peritoma arborea	Bladderpod	
	Convolvulaceae - Morning-glory f		
	Calystegia macrostegia	Coast morning-glory	
	Cucurbitaceae - Gourd family		
	Marah macrocarpa	Wild cucumber	
	Euphorbiaceae - Spurge family		
*	*Ricinus communis*	Castorbean	
	Fabaceae - Legume family		
	Acmispon glaber var. glaber	Deerweed	
	Amorpha fruticosa	Desert false indigo	
*	*Melilotus albus*	White sweetclover	
*	*Melilotus indicus*	Indian sweetclover	
	Lamiaceae - Mint family		
	Salvia mellifera	Black sage	
	Stachys albens	Whitestem hedgenettle	
	Malvaceae - Mallow family		
*	*Malva parviflora*	Cheeseweed	
	Myrtaceae - Myrtle family		
	Eucalyptus sp.	Gum Tree	

	Scientific Name	Common Name	Special Status
*	*Melaleuca sp.*	Bottlebrush	
	Nyctaginaceae - Four O'clock fam		
	Mirabilis laevis	Wishbone plant	
	Onagraceae - Evening Primrose f		
	Camissoniopsis bistorta	California sun cup	
	Phrymaceae - Lopseed family		
	Diplacus aurantiacus	Coast bush monkeyflower	
	Plantaginaceae - Plantain family		
*	*Plantago major*	Common plantain	
	Platanaceae - Plane Tree, Sycam		
	Platanus racemosa	Western sycamore	
	Polygonaceae - Buckwheat famil		
	Chorizanthe fimbriata var. laciniata	Laciniate spineflower	
	Eriogonum fasciculatum var. foliolosum	Leafy California buckwheat	
*	*Rumex crispus*	Curly dock	
	Ranunculaceae - Buttercup famil		
	Clematis ligusticifolia	Western virgin's bower	
	Rhamnaceae - Buckthorn family		
	Adolphia californica	Spineshrub	CRPR 2B.1
	Rosaceae - Rose family		
	Adenostoma fasciculatum	Chamise	
	Heteromeles arbutifolia	Toyon	
	Rubiaceae - Madder family		
	Galium angustifolium ssp. angustifolium	Narrow leaved bedstraw	
	Rutaceae - Rue family		
	Cneoridium dumosum	Bushrue	
	Salicaceae - Willow family		
	Salix exigua	Sand bar willow	
	Salix gooddingii	Goodding's black willow	
	Salix laevigata	Red willow	
	Salix lasiolepis	Arroyo willow	
	Solanaceae - Nightshade family		
	Datura wrightii	Wright's jimsonweed	
	Tamaricaceae - Tamarisk family		
*	*Tamarix ramosissima*	Tamarix	

	Scientific Name	Common Name	Special Status
	Tropaeolaceae - Nasturtium famil		
*	*Tropaeolum majus*	Garden nasturtium	
	MONOCOTS		
	Arecaceae - Palm family		
*	*Phoenix canariensis*	Canary Island palm	
*	*Washingtonia robusta*	Mexican fan palm	
	Cyperaceae - Sedge family		
	Eleocharis montevidensis	Sand spikerush	
	Schoenoplectus californicus	California bulrush	
	Iridaceae - Iris family		
	Sisyrinchium bellum	Blue-eyed-grass	
	Juncaceae - Rush family		
	Juncus acutus ssp. leopoldii	Southwestern spiny rush	CRPR 4.2
	Liliaceae - Lily family		
	Calochortus splendens	Splendid mariposa lily	
	Poaceae - Grass family		
*	*Arundo donax*	Giant reed	
*	*Avena barbata*	Slender wild oat	
*	*Bromus diandrus*	Ripgut brome	
*	*Bromus hordeaceus*	Soft brome	
*	*Bromus rubens*	Red brome	
*	*Cortaderia selloana*	Pampas grass	
*	*Cynodon dactylon*	Bermuda grass	
*	*Festuca perennis*	Perennial rye grass	
*	*Hordeum murinum ssp. glaucum*	Smooth barley	
*	*Polypogon monspeliensis*	Rabbit-foot beard grass	
*	*Rytidosperma caespitosum*	Wallaby grass	
	Stipa cernua	Nodding needle grass	
	Themidaceae - Brodiaea family		
	Dichelostemma capitatum ssp. capitatum	Blue dicks	
	Typhaceae - Cattail family		
	Typha domingensis	Southern cattail	

Scientific Name	Common Name	Special Status

Legend

*= Non-native or invasive species

Special Status:

Federal:
FE = Endangered
FT = Threatened

State:
SE = Endangered
ST =Threatened

CRPR – California Rare Plant Rank
2B. Rare or Endangered in California, more common elsewhere
4. Plants of limited distribution - Watch list

Threat Ranks
.1 - Seriously endangered in California
.2 – Fairly endangered in California
.3 – Not very endangered in California

Appendix B

Observed Species List – Wildlife

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Appendix B. Wildlife Species Detected at Lusardi Addition in 2018

Scientific Name	Common Name	Special Status	
INVERTEBRATES			
Arachnids			
Aphonopelma sp.	Tarantula		
Insects			
Trimerotropis pallidipennis	Pallid-winged Grasshopper		
Brachynemurus / Myrmeleon sp.	Ant Lion		
Eleodes sp.	Darkling Beetle		
**Apis mellifera*	Honey Bee		
Pepsis / Hemipepsis sp.	Tarantula Hawk Wasp		
Moths, Skippers and Butterflies			
Papilio rutulus	Western Tiger Swallowtail		
**Pieris rapae*	Cabbage White		
Colias eurytheme	Orange Sulphur		
Brephidium exile	Western Pygmy-Blue		
Leptotes marina	Marine Blue		
Icaricia acmon	Acmon Blue		
Nymphalis antiopa	Mourning Cloak		
Adelpha bredowii	California Sister		
Coenonympha tullia	Common Ringlet		
VERTEBRATES			
Amphibians			
**Lithobates catesbeianus*	American Bullfrog		
Pseudacris hypochondriaca	Baja California Treefrog		
Reptiles			
Aspidoscelis hyperythra hyperythra	Belding's Orange-throated Whiptail	WL	SDC Group II, MSCP
Elgaria multicarinata webbii	San Diego Alligator Lizard		
Sceloporus occidentalis	Western Fence Lizard		
Coluber lateralis lateralis	California Striped Racer		
Birds			
Callipepla californica	California Quail		
Buteo jamaicensis	Red-tailed Hawk		
Zenaida macroura	Mourning Dove		
Bubo virginianus	Great Horned Owl		

Scientific Name	Common Name	Special Status	
Phalaenoptilus nuttallii	Common Poorwill		
Calypte anna	Anna's Hummingbird		
Picoides nuttallii	Nuttall's Woodpecker		
Sayornis nigricans	Black Phoebe		
Myiarchus cinerascens	Ash-throated Flycatcher		
Tyrannus vociferans	Cassin's Kingbird		
Vireo bellii pusillus	Least Bell's Vireo	FE, SE	SDC Group I, MSCP
Vireo gilvus	Warbling Vireo		
Aphelocoma californica	Western Scrub-Jay		
Corvus corax	Common Raven		
Psaltriparus minimus	Bushtit		
Thryomanes bewickii	Bewick's Wren		
Chamaea fasciata	Wrentit		
Toxostoma redivivum	California Thrasher		
Mimus polyglottos	Northern Mockingbird		
Geothlypis trichas	Common Yellowthroat		
Pipilo maculatus	Spotted Towhee		
Melozone crissalis	California Towhee		
Melospiza melodia	Song Sparrow		
Zonotrichia leucophrys	White-crowned Sparrow		
Pheucticus melanocephalus	Black-headed Grosbeak		
Passerina caerulea	Blue Grosbeak		
Agelaius phoeniceus	Red-winged Blackbird		
Sturnella neglecta	Western Meadowlark		
Haemorhous mexicanus	House Finch		
Carduelis psaltria	Lesser Goldfinch		
Mammals			
Myotis californicus	California Myotis		
Myotis yumanensis	Yuma Myotis		SDC Group II
Lasiurus blossevillii	Western Red Bat	SSC	SDC Group II
Lasiurus cinereus	Hoary Bat		
Parastrellus hesperus	Canyon Bat		
Eptesicus fuscus	Big Brown Bat		

Scientific Name	Common Name	Special Status	
Tadarida brasiliensis	Mexican Free-tailed Bat		
Eumops perotis	Western Mastiff Bat	SSC	SDC Group II
Sylvilagus audubonii	Desert Cottontail		
Thomomys bottae	Botta's Pocket Gopher		
Dipodomys simulans	Dulzura Kangaroo Rat		
Reithrodontomys megalotis	Western Harvest Mouse		
Peromyscus fraterculus	Northern Baja Mouse		
Peromyscus maniculatus gambelii	Deer Mouse		
Neotoma macrotis	Big-eared Woodrat		
Neotoma bryanti	Bryant's Woodrat	SSC	SDC Group II
Canis latrans	Coyote		
Procyon lotor	Northern Raccoon		
Lynx rufus	Bobcat		
Odocoileus hemionus	Southern Mule Deer		SDC Group II, MSCP

Legend

*= Non-native or invasive species

Special Status:

Federal:
FE = Endangered
FT = Threatened

State:
SE = Endangered
ST =Threatened
CSC = California Species of Special Concern
CFP = California Fully Protected Species

County:
SDC Group I = includes animal species that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirements that must be met.
SDC Group II - includes animal species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action. These species tend to be prolific within their suitable habitat types.

MSCP = Multiple Species Conservation Program Covered Species

Appendix C

Potential Sensitive Species Table: Plants

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Appendix C. Potential to Occur - Sensitive Species Table - Flora

Common Name (Scientific Name)	Sensitivity Status	Habitat	Verified On-Site	Potential to Occur	Rationale
San Diego thorn-mint (*Acanthomintha ilicifolia*)	FT/SE CRPR 1B.1 SD County List A MSCP NE	Annual herb. Prefers friable or broken clay soils in grassy openings in chaparral and coastal sage scrub, valley and foothill grassland, and vernal pools; 10-960 m (33-3150 ft). Blooming period: April - June	No	Low	Suitable soils are not present within the Addition. Not observed during focused rare plant surveys in 2018.
Nuttal's acmispon *(Acmispon prostratus)*	CRPR 1B.1 SD County List A	Annual herb. Coastal dunes and sandy coastal scrub; 0-10 m (0-32 ft). Blooming period: March - July	No	Not expected	Species of sandy beaches. Appropriate habitat not present within Addition.
California adolphia *(Adolphia californica)*	CRPR 2B.1 SD County List B	Deciduous shrub. Clay soils in chaparral, coastal scrub, and valley and foothill grassland; 45-740 m (147-2428 ft). Blooming period: December - May	**Yes**	**Present**	Observed on the Addition.
San Diego ambrosia (*Ambrosia pumila*)	FE CRPR 1B.1 SD County List A MSCP NE	Rhizomatous herb. Sandy loam or clay soils in chaparral, coastal sage scrub, valley and foothill grassland, vernal pools; often in disturbed areas or sometimes alkaline areas. Can occur in creek beds, seasonally dry drainages, and floodplains; 20-415 m (66-1362 ft). Blooming period: April - October	No	Moderate	Appropriate habitat and soils present within Addition. Known upstream in the San Dieguito River floodplain. Not observed during focused surveys.
Aphanisma *(Aphanisma blitoides)*	CRPR 1B.2 SD County List A	Annual herb. Sandy soils in coastal bluff scrub, coastal dunes, and coastal scrub; 1-305 m (3-1000 ft). Blooming period: March - June	No	Low	Generally restricted to areas in the immediate vicinity of the coast.
Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*)	FE, CRPR 1B.1, SD County List A	Evergreen shrub. Maritime chaparral with sandy soils; 0-365 m (0-1197 ft). Blooming period: December - June	No	Low	This species is not likely on chamise chaparral on sedimentary soils. Large perennial shrub that would be readily detectable but was not observed during rare plant surveys.
Rainbow manzanita (*Arctostaphylos rainbowensis*)	CRPR 1B.1, SD County List A	Evergreen shrub. Chaparral; 205-670 m (672-2198 ft). Blooming period: December - March	No	Low	This species is not likely on chamise chaparral on sedimentary soils. Large perennial shrub that would be readily detectable but was not observed during rare plant surveys.
San Diego sagewort (*Artemisia palmeri*)	CRPR 4.2 SD County List D	Deciduous shrub. Sandy soils in mesic areas in chaparral, coastal scrub, riparian forest, riparian scrub, riparian woodland; 15-915 m (49-3002 ft). Blooming period: February - September	**Yes**	**Present**	One individual observed in riparian area on the Addition.
Coastal dunes milk-vetch *(Astragalus tener var. titi)*	FE/SE CRPR 1B.1 SD County List A	Annual herb. Often in vernally mesic areas in sandy coastal bluff scrub, coastal dunes, and mesic coastal prairie; 1-50 m (3-164 ft). Blooming period: March - May	No	Not expected	Generally restricted to coastal dunes; no dune habitat present in the Addition. Species may be extirpated from southern California (Resier 2001).

Appendix D. Potential to Occur - Sensitive Species Table - Flora

Common Name (Scientific Name)	Sensitivity Status	Habitat	Verified On-Site	Potential to Occur	Rationale
Coulter's saltbush *(Atriplex coulteri)*	CRPR 1B.2 SD County List A	Perennial herb. Alkaline or clay soils in coastal bluff scrub, coastal dunes, coastal scrub, and valley and foothill grassland; 3-460 m (9-1509 ft). Blooming period: March - October	No	Low	Marginally suitable habitat present. Uncommon away from the immediate coast.
South coast saltscale *(Atriplex pacifica)*	CRPR 1B.2 SD County List A	Annual herb. Coastal bluff scrub, coastal dunes, coastal scrub, playas; 0-140 m (0-459 ft). Blooming period: March - October	No	Moderate	Suitable habitat present. Known from the Preserve. Not observed during rare plant surveys.
Encinitas baccharis *(Baccharis vanessae)*	CRPR 4.3 SD County List D	Perennial shrub. Chaparral and coastal scrub; 10-750 m (33-2461 ft). Blooming period: February - August	No	Low	Very restricted distribution. Perennial shrub that would be readily detectable but was not observed during rare plant surveys.
Golden-spined cereus *(Bergerocactus emoryi)*	CRPR 2B.2 SD County List B	Perennial stem succulent. Sandy soils in costal scrub, chaparral, and closed-cone coniferous forest, moist ocean breezes may be a key to its habitat requirements; 3-395 m (9-1295 ft). Blooming period: May - June	No	Not expected	Restricted to Otay Mesa and areas in the immediate vicinity of the coast (e.g. Torrey Pines State Park).
San Diego goldenstar (*Bloomeria clevelandii*)	CRPR 1B.1 SD County List A	Perennial bulbiferous herb. Clay soils in chaparral, coastal sage scrub, valley grasslands, particularly near mima-mound topography or the vicinity of vernal pools; 50 - 465 m (164-1526 ft). Blooming period: April - May	No	Low	Known from the vicinity. Restricted to clay soils; clay lenses observed on the Preserve but not the Addition. Not observed during surveys of the Preserve or Addition.
Thread-leaved brodiaea (*Brodiaea filiolia*)	FT, SE, CRPR 1B.1, SD County List, MSCP NE	Perennial bulbiferous herb. Often found in clay soils in openings in chaparral, cismontane woodland, coastal scrub, playas, grassland, and vernal pools; 25-1120 m (82-3673 ft). Blooming period: March - June	No	Low	Known from the vicinity. Restricted to clay soils; clay lenses observed on the Preserve but not the Addition. Not observed during surveys of the Preserve or Addition.
Orcutt's brodiaea (*Brodiaea orcuttii*)	CRPR 1B.1 SD County List A	Bulbiferous herb. Found on mesic, clay, sometimes serpentinite soils in closed-cone coniferous forest, chaparral, cismontane woodland, meadows and seeps, grassland, and vernal pools; 30-1692 m (98-5550 ft). Blooming period: May - July	No	Low	Known from the vicinity. Restricted to clay soils; clay lenses observed on the Preserve but not the Addition. Not observed during surveys of the Preserve or Addition.
Lakeside ceanothus (*Ceanothus cyaneus*)	CRPR 1B.2 SD County List A MSCP NE	Evergreen shrub. Closed-cone coniferous forest, dense chaparral; 235-755 m (771-2543 ft). Blooming period: April - June	No	Not expected	Highly restricted to volcanic soils in central San Diego County foothills. Well outside of the known distribution of this species. Large perennial shrub that would be readily detectable but was not observed during rare plant surveys.
Wart-stemmed ceanothus *(Ceanothus verrucosus)*	CRPR 2B.2 SD County List B	Evergreen shrub. Chaparral; 1-380 m (3-1247 ft). Blooming period: December - May	No	Moderate	This species is not likely on chamise chaparral on sedimentary soils. Large populations known from the local vicinity. Large perennial shrub that would be readily detectable but was not observed during rare plant surveys.

Appendix D. Potential to Occur - Sensitive Species Table - Flora

Common Name (Scientific Name)	Sensitivity Status	Habitat	Verified On-Site	Potential to Occur	Rationale
Southern tarplant (*Centromadia parryi* ssp.*australis*)	CRPR 1B.1, SD County List A	Annual herb. Found within the margin of marshes and swamps, vernally mesic soils in valley and foothill grassland, and vernal pools; 0-480 m (0-1574 ft). Blooming period: May - November	No	Moderate	Appropriate habitat was present on the Addition. Known from the San Dieguito River Valley from San Dieugito lagoon and upstream of Lake Hodges. No observed during rare plant surveys.
Smooth tarplant (*Centromadia pungens* ssp. *laevis*)	CRPR 1B.1, SD County List A	Annual herb. Alkaline soils in chenopod scrub, meadows and seeps, playas, riparian woodland, and valley and foothill grassland; 0-640 m (0-2100 ft). Blooming period: April - September	No	Low	Rare in San Diego County.
Orcutt's pincushion (*Chaenactis glabriuscula* var. *orcuttiana*)	CRPR 1B.1 SD County List A	Annual herb. Sandy soils in coastal bluff scrub and coastal dunes; 0-100 m (0-328 ft). Blooming period: January - August	No	Low	Restricted to coastal bluff scrub and coastal dunes. No appropriate habitat was present within the Addition.
Orcutt's spineflower *(Chorizanthe orcuttiana)*	FE/SE CRPR 1B.1 SD County List A	Annual herb. Sandy openings in closed-cone coniferous forest, maritime chaparral, and coastal scrub; 3-125 m (9-410 ft). Blooming period: March - May	No	Low	Primarily restricted to areas in the immediate vicinity of the coast.
Long-spined spineflower (*Chorizanthe polygonoides* var. *longispina*)	CRPR 1B.2 SD County List A	Annual herb. Clay lenses, largely devoid of shrubs in chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, and vernal pools; 30-1530 m (98-5018 ft). Blooming period: April - July	No	Low	Restricted to clay soils; clay lenses observed on the Preserve but not the Addition. Not observed during focused surveys of the Addition or Preserve.
Delicate clarkia (*Clarkia delicata*)	CRPR 1B.2 SD County List A	Annual herb. Oak woodlands and chaparral, often on gabbroic soils; 235-1000 m (770-3280 ft). Blooming period: April - June	No	Low	Generally restricted to gabbroic soils, higher elevations, and oak woodlands.
Summer holly *(Comarostaphylis diversifolia ssp. diversifolia)*	CRPR 1B.2 SD County List A	Evergreen shrub. Chaparral and cismontane woodland; 30-790 m (98-2591 ft). Blooming period: April - June	No	Moderate	Appropriate habitat present. Large perennial shrub that would be readily detectable but was not observed during rare plant surveys.
Small-flowered morning glory (*Convolvulous simulans*)	CRPR 4.2, SD County List D	Annual herb. Friable clay soils or serpentine seeps in chaparral openings, coastal scrub, and valley and foothill grassland; 30-700 m (98-2297 ft). Blooming period: March - July	No	Moderate	Recorded on the Preserve. Restricted to clay soils; clay lenses observed on the Preserve but not the Addition. Not observed during focused surveys of the Addition.
San Diego sand aster *(Corethrogyne filaginifolia var. incana)*	CRPR 1B.1	Perennial herb. Coastal bluff scrub, chaparral, and coastal scrub; 3-115 m (9-377 ft). Blooming period: June - September	No	Not expected	Known populations are in Point Loma and Potrero.
Del Mar Mesa sand aster *(Corethrogyne filaginifolia var. linifolia)*	CRPR 1B.1, SD County List A	Perennial herb. Sandy soils in coastal bluff scrub, coastal scrub, and openings in maritime chaparral; 15-150 m (49-492 ft). Blooming period: May-September	No	Low	Restricted to the immediate vicinity of the coast.
Wiggins cryptantha (*Cryptantha wigginsii*)	CRPR 1B.2	Annual herb. Often in clay soils in coastal scrub; 20-275 m (65-902 ft). Blooming period: February - June	No	Low	Restricted to the immediate vicinity of the coast.

Appendix D. Potential to Occur - Sensitive Species Table - Flora

Common Name (Scientific Name)	Sensitivity Status	Habitat	Verified On-Site	Potential to Occur	Rationale
Snake cholla *(Cylindropuntia californica var. californica)*	CRPR 1B.1 SD County List A MSCP NE	Stem succulent. Chaparral and coastal scrub, typically on xeric hillsides; 30-150 m (98-492 ft). Blooming period: April - May	No	Low	Small prostrate cactus that would be readily detectable but was not observed during rare plant surveys. Generally restricted to southern San Diego, but also known from Lusardi Creek at Black Mountain.
Western dichondra (*Dichondra occidentalis*)	CRPR 4.2, SD County List D	Perennial rhizomatous herb. Chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland; 50-500 m (164-1640 ft). Blooming period: January - July	No	High	Observed on the Preserve in 2008, very close to the Addition. Diminutive creeping perennial with high potential to occur on the Addition.
Blochman's dudleya (Dudleya blochmaniae ssp. blochmaniae)	CRPR 1B.1, SD County List A	Perennial herb. Rocky, often clay or serpentine soils in coastal bluff scrub, chaparral, coastal scrub, and valley and foothill grassland; 5-450 m (16-1476 ft). Blooming period: April - June	No	Low	Restricted to the immediate vicinity of the coast.
Short-leaved dudleya (Dudleya brevifolia)	SE, CRPR 1B.1, SD County List A, MSCP NE	Perennial herb. Torrey sandstone in coastal scrub and openings in maritime chaparral; 30-250 m (98-820 ft). Blooming period: April - May	No	Not Expected	Restricted to the immediate vicinity of the coast near Torrey Pines.
Variegated dudleya (*Dudleya variegata*)	CRPR 1B.2 SD County List A MSCP NE	Perennial herb. Clay soils in chaparral, cismontane woodland, coastal scrub, valley and foothill grassland, and vernal pools; 3-580 m (9-1903 ft). Blooming period: April - June	No	Moderate	Recorded on the Preserve. Restricted to clay soils; clay lenses observed on the Preserve but not the Addition. Not observed during focused surveys of the Addition.
Sticky dudleya *(Dudleya viscida)*	CRPR 1B.2 SD County List A	Perennial herb. Rocky soils in coastal bluff scrub, chaparral, cismontane woodland, and coastal scrub; 10-550 m (32-1804 ft). Blooming period: May - June	No	Low	Outside of species known range of this species of Camp Pendleton, Riverside County, and Orange County.
Palmer's goldenbush (*Ericameria palmeri* var. *palmeri*)	CRPR 1B.1 SD County List B MSCP NE	Evergreen shrub. Coastal drainages, in mesic chaparral sites, or rarely in coastal sage scrub; below 600 m (1969 ft). Blooming period: August - October (uncommon in July)	No	Low	Suitable habitat present. Evergreen shrub that would be readily detectable but was not observed during rare plant surveys.
Sessile-leaved yerba santa (*Eriodictyon sessifolium*)	CRPR 2B.1	Perennial shrub. Volcanic soils in coastal scrub.	No	Low	Appropriate habitat present, but no volcanic soils are present on the Addition.
San Diego button-celery (*Eryngium aristulatum* var. *parishii*)	FE/SE CRPR 1B.1 SD County List A	Annual/perennial herb. Mesic soils in vernal pools or adjacent coastal scrub; 20-620 m (65-2034 ft). Blooming period: April - June	No	Not expected	No suitable habitat. No vernal pools or vernal pool soils or mima-mounds on the Addition.
Sand-loving wallflower *(Erysimum ammophilum)*	CRPR 1B.2	Perennial herb. Sandy openings in maritime chaparral, coastal dunes, and coastal scrub; 0-60 m (0-196 ft). Blooming period: February - June	No	Low	Generally restricted to coastal dunes. Not observed during rare plant surveys.

Appendix D. Potential to Occur - Sensitive Species Table - Flora

Common Name (Scientific Name)	Sensitivity Status	Habitat	Verified On-Site	Potential to Occur	Rationale
Cliff spurge *(Euphorbia misera)*	CRPR 2B.2 SD County List B	Perennial shrub. Rocky areas in coastal bluff scrub, coastal scrub, and Mojavean desert scrub; 10-500 m (32-1640 ft). Blooming period: December - October	No	Not expected	In the U.S., only known from Otay Mesa and in the immediate vicinity of the coast (Agua Hedionda, Point Loma, Torrey Pines). Not expected at his inland location.
San Diego barrel cactus (*Ferocactus viridescens*)	CRPR 2B.1 SD County List B	Stem succulent. Sandy to rocky areas; chaparral, coastal scrub, valley and foothill grassland, vernal pools; 3-450 m (9-1476 ft). Blooming period: May - June	**Yes**	**Present**	Observed within Diegan coastal sage scrub on hillsides in the Addition. Was common on the hillsides in the Preserve before the 2014 Bernardo Fire; survivorship was not reassessed in 2018.
San Diego gumplant (*Grindelia hallii*)	CRPR 1B.2 SD County List A	Perennial herb. Meadows, chaparral, lower montane coniferous forest, and valley and foothill grassland; 185-1745 m (606-5723 ft). Blooming period: May - October	No	Not expected	Montane species. This species is almost exclusively restricted to the mountains of San Diego County and is not expected at a coastal site.
Palmer's grapplinghook (*Harpagonella palmeri*)	CRPR 4.2 SD County List D	Annual herb. Clay soils in chaparral, grasslands, coastal sage scrub; 20-955 m (65 to 3132 ft). Blooming period: March - May	No	Moderate	Recorded on the Preserve. Restricted to clay soils; clay lenses observed on the Preserve but not the Addition. Not observed during focused surveys of the Addition.
Orcutt's hazardia (*Hazardia orcuttii*)	FC, ST, CRPR 1B.1, SD County List A	Perennial evergreen shrub. Often in clay soils in maritime chaparral and coastal scrub; 80-85 m (262-279 ft). Blooming period: August - October	No	Not expected	Only known from the US from one population near San Elijo Lagoon. No *Hazardia* species were observed during rare plant surveys.
Beach goldenaster *(Heterotheca sessiliflora ssp. Sessiliflora)*	CRPR 1B.1	Perennial herb. Coastal chaparral, coastal dunes, and coastal scrub; 0-1225 m (0-4018 ft). Blooming period: March - December	No	Not expected	Restricted to salt marshes and dunes. No appropriate habitat present within the Addition.
Graceful tarplant (*Holocarpha virgata* ssp. *elongata*)	CRPR 4.2, SD County List D	Annual herb. Chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland; 60-1100 m (196-3600 ft). Blooming period: May - November	No	High	Observed on the Preserve in 2008. Annual species has high potential to occur within appropriate habitat.
Ramona horkelia (*Horkelia truncata*)	CRPR 1B.3, SD County List A	Perennial herb. Clay and gabbroic soils in chaparral and cismontane woodland; 400-1300 m (1312-4265 ft). Blooming period: May - June	No	Low	Appropriate soils not known from the Addition. Generally present at higher altitudes. Not observed during rare plant surveys,.
Decumbent goldenbush *(Isocoma menziesii var. decumbens)*	CRPR 1B.2 SD County List A	Perennial shrub. Chaparral and in sandy coastal scrub, often in sandy disturbed areas; 10-135 m (33-443 ft). Blooming period: April - November	No	Moderate	Perennial shrub that would be readily detectable but was not observed during rare plant surveys. Areas of the non-sensitive variety of *Isocoma menziesii* were common within the coastal scrub within the Addition. Known from the vicinity.
San Diego marsh-elder (*Iva hayesiana*)	CRPR 2B.2 SD County List B	Perennial herb. Marshes and swamps, wetland areas, and playas; 10-500 m (32-1640 ft). Blooming period: April - October	**Yes**	**Present**	One population observed in the San Dieguito River.
Southwestern spiny rush (*Juncus acutus* ssp. *leopoldi*)	CRPR 4.2, SD County List D	Perennial rhizomatous herb. Mesic soils in coastal dunes, alkaline seeps in meadows and seeps, and coastal salt marshes and swamps; 3-	**Yes**	**Present**	One population observed in the San Dieguito River.

Appendix D. Potential to Occur - Sensitive Species Table - Flora

Common Name (Scientific Name)	Sensitivity Status	Habitat	Verified On-Site	Potential to Occur	Rationale
		900 m (9-2953 ft). Blooming period: May - June			
Coulter's goldfields *(Lasthenia glabrata ssp. coulteri)*	CRPR 1B.1 SD County List A	Annual herb. Coastal salt marsh, coastal salt swamps, playas, vernal pools; 1-1220 m (3-4001 ft). Blooming period: February - June	No	Not expected	Restricted to coastal salt marsh, coastal salt swamps, playas, vernal pools. No appropriate habitat present within the Addition.
Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*)	CRPR 4.3 SD County List A	Annual herb. Openings in chaparral and sage scrub; below 885 m (2900 ft). Blooming Period: January - July	No	Moderate	Recorded on the Preserve. Not observed during focused surveys of the Addition.
Sea dahlia *(Leptosyne maritima)*	CRPR 2B.2 SD County List B	Perennial herb. Coastal bluff scrub and coastal scrub; 5-150 m (16-492 ft). Blooming period: March - May	No	Low	Generally restricted to the immediate vicinity of the coast.
Felt-leaved monardella (*Monardella hypoleuca* ssp. *lanata*)	CRPR 1B.2 SD County List A	Rhizomatous herb. Chaparral and cismontane woodland; 300-1575 m (984-5040 ft). Blooming Period: June - August	No	Not Expected	Generally restricted to peaks and mountainous ridgelines. No appropriate habitat present within the Addition.
Willowy monardella *(Monardella viminea)*	FE/SE CRPR 1B.1 SD County List A MSCP NE	Perennial herb. Alluvial ephemeral washes in chaparral, coastal scrub, riparian forest, riparian scrub, and riparian woodland; 50-225 m (164-738 ft). Blooming period: June - August	No	Low	While the San Dieguito River contains appropriate alluvial stream terrace, which this species is restricted to, willowy monardella has a highly restricted range and is not known to the north of Mira Mesa/Peñasquitos Creek.
Little mousetail *(Myosurus minimus ssp. apus)*	CRPR 3.1 SD County List C	Annual herb. Alkaline vernal pools; 20-640 m (65-2100 ft). Blooming period: March - June	No	Not expected	No suitable habitat. No vernal pools or vernal pool soils or mima mounds on the Addition.
Mud nama (*Nama stenocarpa*)	CRPR 2B.2 SD County List B	Annual/perennial herb. Marshes and swamps, also riverbanks and lake margins; 5-500 m (16-1640 ft). Blooming period: January - July	No	Low	Rare within suitable habitat. Not observed during rare plant surveys.
Spreading navarretia *(Navarretia fossalis)*	FT CRPR 1B.1 SD County List A	Annual herb. Chenopod scrub, assorted freshwater marshes and swamps, playas, and vernal pools; 30-655 m (98-2149 ft). Blooming period: April - June	No	Not expected	No suitable habitat. No vernal pools or vernal pool soils or mima mounds on the Addition.
Coast woolly-heads *(Nemacaulis denudata var. denudata)*	CRPR 1B.2 SD County List A	Annual herb. Coastal dunes and beaches; 0-100 m (0-328 ft). Blooming period: April - September	No	Not expected	Generally restricted to coastal beaches.
Slender cottonheads *(Nemacaulis denudata var. gracilis)*	CRPR 2B.2 SD County List B	Annual herb. Coastal dunes, desert dunes, and Sonoran desert scrub; -50 – 400 m (-164 – 1312 ft). Blooming period: March - May	No	Not expected	Generally restricted to coastal beaches.

Appendix D. Potential to Occur - Sensitive Species Table - Flora

Common Name (Scientific Name)	Sensitivity Status	Habitat	Verified On-Site	Potential to Occur	Rationale
California Orcutt's grass *(Orcuttia californica)*	FE/SE CRPR 1B.2 SD County List A	Annual herb. Vernal pools; 15-660 m (49-2165 ft). Blooming period: April - August	No	Not expected	No suitable habitat. No vernal pools or vernal pool soils or mima mounds on the Addition.
Short-lobed broomrape *(Orobanche parishii ssp. brachyloba)*	CRPR 4.2 SD County List D	Parasitic perennial herb. Sandy coastal bluff scrub, coastal dunes, and coastal scrub; 3-305 m (9-1000 ft). Blooming period: April - October	No	Low	Generally restricted to coastal beaches.
Brand's star phacelia *(Phacelia stellaris)*	CRPR 1B.1 SD County List A	Annual herb. Coastal dunes, coastal scrub; 1-400 m (3-1312 ft). Blooming period: March - June	No	Not expected	Generally restricted to coastal beaches.
San Diego mesa mint *(Pogogyne abramsii)*	FE/SE CRPR 1B.1 SD County List A	Annual herb. Vernal pools; 90-200 m (295-656 ft). Blooming period: March - July	No	Not expected	No suitable habitat. No vernal pools or vernal pool soils or mima mounds on the Addition.
Nuttall's scrub oak *(Quercus dumosa)*	CRPR 1B.1 SD County List A	Perennial evergreen shrub. Sandy or clay loam in closed-cone coniferous forest, chaparral, and coastal scrub; 15-400 m (49-1312 ft.). Blooming period: February - August	No	Moderate	Appropriate habitat present. Large perennial shrub that would be readily detectable but was not observed during rare plant surveys.
Munz's sage *(Salvia munzii)*	CRPR 2B.2 SD County List B	Evergreen shrub. Chaparral and coastal sage scrub; 120-1065 m (393-3493 ft). Blooming period: February - April	No	Low	Normally present in scrub communities in southern San Diego County; one location known near Lake Hodges. Not observed during rare plant surveys.
Ashy-spike moss (*Selaginella cinerascens*)	CRPR 4.1, SD County List	Perennial rhizomatous herb. Chaparral and coastal sage scrub; 20-640 m (65-2099 ft).	**Yes**	**Present**	Observed on the Addition.
Chaparral ragwort *(Senecio aphanactis)*	CRPR 2B.2 SD County List B	Annual herb. Chaparral, cismontane woodland, coastal scrub, and alkaline flats; 15-800 m (49-2624 ft.). Blooming period: January - April	No	Low	Rare in suitable habitat. Not observed during rare plant surveys.
Purple stemodia (*Stemodia durantifolia*)	CRPR 2B.1 SD County List B	Perennial herb. Population wide, along minor creeks and seasonal drainages, often in mesic, sandy soils in Sonoran Desert scrub. Within the coastal zone in streams and creeks, typically slow-moving rocky streams; 180-300 m (590-984 ft). Blooming period: January - December	No	Moderate	Purple stemodia is known upstream in San Dieguito River, below Lake Hodges. Appropriate habitat is present on the Addition. Not observed during rare plant surveys.

Appendix D. Potential to Occur - Sensitive Species Table - Flora

Common Name (Scientific Name)	Sensitivity Status	Habitat	Verified On-Site	Potential to Occur	Rationale
Estuary seablite *(Suaeda esteroa)*	CRPR 1B.2 SD County List A	Perennial herb. Coastal salt marshes and swamps; 0-5 m (0-16 ft). Blooming period: May - January	No	Not Expected	Restricted to coastal salt marshes and swamps. No appropriate habitat is present within the Addition.
Parry's tetracoccus (*Tetracoccus dioicus*)	CRPR 1B.2 SD County List A	Deciduous shrub. Chaparral and coastal sage scrub; 165-1000 m (541-3280 ft). Blooming period: April - May	No	Low	This species is not likely on chamise chaparral on sedimentary soils. Large perennial shrub that would be readily detectable but was not observed during rare plant surveys.

Appendix D. Potential to Occur - Sensitive Species Table - Flora

Common Name (Scientific Name)	Sensitivity Status	Habitat	Verified On-Site	Potential to Occur	Rationale

Legend:

Status:
Federal
FE - Listed as endangered under the federal Endangered Species Act.
FT - Listed as threatened under the federal Endangered Species Act.
FC – Candidate for listing under the federal Endangered Species Act.
State
SE - Listed as endangered under the California Endangered Species Act.
ST – Listed as threatened under California Endangered Species Act.
SR – Listed as rare under California Endangered Species Act.
CA Rare Plant Rank (CRPR) – Formerly known as CNPS List
1A. Presumed extirpated in California, and either rare or extinct elsewhere
1B. Rare, Threatened, or Endangered in California and elsewhere
2A. Presumed extirpated in California, more common elsewhere
2B. Rare, Threatened, or Endangered in California, more common elsewhere
3. Plants for which we more information is needed - Review list
4. Plants of limited distribution - Watch list
Threat Ranks
.1 - Seriously endangered in California
.2 – Fairly endangered in California
.3 – Not very endangered in California
San Diego County

MSCP – Species is a Covered Species under the San Diego Multiple Species Conservation Plan County Subarea Plan
MSCP NE – Species is listed as a Narrow Endemic in the San Diego MSCP

San Diego County Sensitive Plant List
A – Rare, threatened or endangered in California and elsewhere
B – Rare, threatened or endangered in California but more common elsewhere
C – Maybe quite rare, but more information is needed to determine their status
D – Limited distribution and are uncommon but not presently rare or endangered

References:
Special Status plant information from CDFW 2018, County 2010, County 1997. Nomenclature and plant descriptions from: CNPS Online Inventory, Calflora.org, Baldwin 2012, Reiser 2001, Range information from CNDDB 2018, CNPS 2018, and SDNHM Plant Atlas Project 2018.

Appendix D

Potential Sensitive Species Table: Wildlife

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Appendix D. Sensitive Animal Species Potential to Occur

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Study Area? (Historical and/or current observations)	Potential to Occur	Rationale
INVERTEBRATES					
Harbison's Dun Skipper (*Euphyes vestris harbisoni*)	SDC Group I	Host plant is San Diego sedge (*Carex spissa*). Adult butterfly generally nectars in vicinity of drainages which San Diego sedge occurs in/	No	Not expected	Host plant San Diego sedge (*Carex spissa*) was not observed on the Addition in 2018.
Hermes Copper Butterfly (*Lycaena hermes*)	FC SDC Group I	Mature spiny redberry host plant (*Rhamnus crocea*) surrounded by California buckwheat nectaring resources.	No	Not expected	Host plant spiny redberry (*Rhamnus crocea*) not present in isolated spots in dense chaparral. No suitable habitat present in the Addition
Quino Checkerspot Butterfly (*Euphydryas editha quino*)	FE SDC Group I	Inhabits openings on clay soils within or in the vicinity of shrublands, grasslands, meadows, vernal pools, and lake margins. Closely tied to its larval host plant, dwarf plantain *(Plantago erecta)* or owl's clover (*Castilleja exserta* ssp. *exserta).*	No	Not expected	Outside of the USFWS recommended survey area. No primary host plants observed on the Addition.
Riverside Fairy Shrimp (*Streptocephalus woottoni*)	FE SDC Group I MSCP NE	Vernal pools. It occurs from Los Angeles County to Baja California. In San Diego County, all populations are within 15 kilometers of the coast.	No	Not expected	No suitable habitat observed on the study area.
San Diego Fairy Shrimp (*Branchinecta sandiegoensis*)	FE SDC Group I MSCP NE	Vernal pools. All known localities are below 701m (2,300 ft) and are within 64km (40 miles) of the Pacific Ocean.	No	Not expected	No suitable habitat observed on the study area.
AMPHIBIANS					
Arroyo Toad (*Anaxyrus californicus*)	FE SSC SDC Group I MSCP NE	Exposed shallow pools with a sand or gravel base are used for breeding. Breeding pools must occur in the vicinity (ca. 10-100 m) of a braided sandy channel with shorelines or central bars made of stable, sandy terraces.	No	Low	This species is not known from the San Dieguito River below Lake Hodges. San Dieguito is channelized at the Addition and does not provide high quality breeding habitat.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Study Area? (Historical and/or current observations)	Potential to Occur	Rationale
Western Spadefoot (*Spea hammondii*)	SSC SDC Group II	Temporary rain-pools with water temperatures between 9°C and < 30°C that last at least 3 weeks.	No	Low	Has not been observed on the Addition in 2018 or the Preserve in 2008. No suitable habitat observed on the study area.
REPTILES					
Belding's Orange-throated Whiptail (*Aspidoscelis hyperythra beldingi*)	SSC SDC Group II MSCP	The habitat characteristics are poorly understood, however historically it was found in floodplains or terraces along streams. Closely tied to coastal sage scrub plants and some chaparral plants.	Yes	**Present**	Captured in a box trap during surveys in 2018.
Coast (Blainville's/San Diego) Horned Lizard (*Phrynosoma blainvillii*)	SSC SDC Group II MSCP	Grasslands, brushlands, woodlands, and open coniferous forest with sandy or loose soil; requires abundant ant colonies for foraging.	No	**High**	Suitable habitat observed on the Addition and this species is relatively common in suitable habitat. Was not observed on the Addition in 2018 or the Preserve in 2008.
Coast Patch-nosed Snake (*Salvadora hexalepis virgultea*)	SSC SDC Group II	Inhabits semi-arid brushy areas and chaparral in canyons, rocky hillsides, and plains.	No	**High**	Suitable habitat observed on the Addition and this species is relatively common in suitable habitat. Was not observed on the Addition in 2018 but was recorded on the Preserve in 2008.
Coastal Western Whiptail (*Aspidoscelis tigris stejnegeri*)	SDC Group II	Found in open brushland in semiarid habitats.	No	**High**	Suitable habitat observed on the Addition and this species is relatively common in suitable habitat. Was not observed on the Addition in 2018 but was recorded on the Preserve in 2008.
Coronado Skink (*Plestiodon skiltonianus interparietalis*)	SSC SDC Group II	Forest, open woodland and grassy areas. Usually found under leaf litter, logs or rocks.	No	**High**	Suitable habitat observed on the Addition and this species is relatively common in suitable habitat. Was not observed on the Addition in 2018 or the Preserve in 2008.
Red Diamond Rattlesnake (*Crotalus ruber*)	SSC SDC Group II	Occurs from sea level to 914m (3000ft) in chaparral, woodland, and arid desert habitats with rocky areas and dense vegetation.	No	**High**	Suitable habitat observed on the Addition and this species is relatively common in suitable habitat. Was not observed on the Addition in 2018 but was recorded on the Preserve in 2008.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Study Area? (Historical and/or current observations)	Potential to Occur	Rationale
San Diego Banded Gecko (*Coleonyx variegatus abbottii*)	SDC Group I	Found in open areas, often near rocks, and may seek shelter under them, or in crevices.	No	Moderate	Potentially suitable habitat occurs Addition. Was not observed on the Addition in 2018 or the Preserve in 2008.
San Diego Ringneck Snake (*Diadophis punctatus similis*)	SDC Group II	Prefers moist habitats, including wet meadows, rocky hillsides, gardens, farmland, grassland, chaparral, mixed coniferous forests and woodlands.	No	Medium	Potentially suitable habitat occurs Addition. Was not observed on the Addition in 2018 or the Preserve in 2008.
Silvery Legless Lizard (*Anniella pulchra pulchra*)	SSC SDC Group II	Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Leaf litter under trees and bushes in sunny areas often indicate suitable habitat.	No	Medium	Potentially suitable habitat occurs Addition. Was not observed on the Addition in 2018 or the Preserve in 2008.
Southwestern Pond Turtle *(Emys marmorata pallida*)	SSC SDC Group I MSCP NE	Requires slack- or slow-water aquatic habitat as well as aerial and aquatic basking sites. Also requires an upland oviposition site on an unshaded slope with clay soils, in the vicinity of the aquatic site.	No	Low	Marginally suitable freshwater marsh present along San Dieguito River. No observed during surveys.
Three-lined (Coastal Rosy) Boa (*Lichanura trivirgata*)	SDC Group II	Inhabits rocky areas in coastal sage scrub, chaparral, and desert environments.	No	**High**	Suitable habitat observed on the Addition and this species is relatively common in suitable habitat. Was not observed on the Addition in 2018 or the Preserve in 2008.
Two-striped Garter Snake (*Thamnophis hammondii*)	SSC SDC Group I	Inhabits perennial and intermittent streams with rocky beds and bordered by willow thickets or other dense vegetation.	No	**High**	Suitable habitat observed on the Addition and this species is relatively common in suitable habitat. Was not observed on the Addition in 2018 or the Preserve in 2008.
BIRDS					
Least Bittern (*Ixobrychus exilis*)	SSC SDC Group II	Dense freshwater marshes with tules and cattails.	No	Low	Marginally suitable freshwater marsh present along San Dieguito River. No observed during surveys.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Study Area? (Historical and/or current observations)	Potential to Occur	Rationale
Green Heron (*Butorides virescens*)	SDC Group II	Common in wetland thickets throughout much of North America. Generally a solitarily nester but are known to sometimes nest socially in loose colonies. Usually forages for fish by wading at water's edge or in very shallow water.	No	**High**	High potential to forage in the marsh habitat along San Dieguito River.
Great Blue Heron (*Areda herodias*)	SDC Group II	Forages in wetlands and occasionally grasslands. Communal nester on trees near water.	No	Nesting - Low **Foraging - High**	Low potential to nest in trees on the Addition. No nests observed. High potential to forage in the marsh habitat along San Dieguito River.
White-faced Ibis (*Plegadis chihi*)	SDC Group I MSCP	Forages in marshes, swamps, ponds and rivers, mostly in freshwater habitats. Nests in emergent vegetation or low trees and shrubs over shallow water; sometimes on ground on small islands.	No	Nesting - Low **F**oraging – Moderate	Marsh and riparian habitat along San Dieguito River is marginal habitat for this species.
Turkey Vulture (*Cathartes aura*)	SDC Group I	Forage over woodland and nearby open country. Nest in crevices among granite boulders.	No	High	Suitable foraging habitat present in the study area. No suitable nesting habitat present. Was not observed on the Addition in 2018 but was recorded on the Preserve in 2008.
White-tailed Kite (*Elanus leucurus*)	FP (nesting) SDC Group I	Open grasslands, agricultural areas, wetlands, and oak woodlands. Their primary source of food is the California vole. It typically forages in open undisturbed habitats and nests in the top of a dense oak, willow or other large tree.	No	High	Suitable foraging and nesting habitat present in the study area. Was not observed on the Addition in 2018 but was recorded on the Preserve in 2008.
Northern Harrier (*Circus cyaneus*)	SSC (nesting) SDC Group I MSCP	Grasslands and marshes. Nests are on the ground and typically concealed within a marsh or other dense vegetation.	No	High	Suitable foraging and nesting habitat present in the Preserve. Was not observed on the Addition in 2018 but was recorded on the Preserve in 2008.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Study Area? (Historical and/or current observations)	Potential to Occur	Rationale
Sharp-shinned Hawk (*Accipiter striatus*)	SDC Group I	Found in San Diego County during the winter in a variety of habitats.	No	Breeding - None Migration/ Wintering – Medium	This species is not known to breed in San Diego County. Has potential to forage on the Addition during the winter.
Cooper's Hawk (*Accipiter cooperii*)	SDC Group I MSCP	Oak groves and mature stands of riparian woodland. This species has adapted well to development and is abundant in urban canyons with eucalyptus trees.	No	**High**	Suitable foraging and nesting habitat present in the study area. Widespread and common within suitable habitat. Was not observed on the Addition in 2018 but was recorded on the Preserve in 2008.
Red-shouldered Hawk (*Buteo lineatus*)	SDC Group I	Lowland riparian woodland. This species has adapted well to development and is abundant in areas with eucalyptus trees.	No	**High**	Suitable foraging and nesting habitat present in the study area. Widespread and common within suitable habitat. Was not observed on the Addition in 2018 or on the Preserve in 2008.
Ferruginous Hawk (*Buteo regalis*)	SDC Group I	Occasional winter visitor. Forages in open grasslands.	No	Nesting - None Foraging - Low	Low potential to utilize the Addition in the winter.
Golden Eagle (*Aquila chrysaetos*)	FPS SDC Group I MSCP	Nest on cliff ledges or trees on steep slopes. Forage in grasslands, sage scrub or broken chaparral.	No	Nesting - None Foraging - Low	No suitable nesting habitat occurs on the Addition. Area is surrounded by development and is marginal habitat for this species.
Merlin (*Falco columbarius*)	SDC Group II	Will forage over a variety of habitats; however, species does not breed in California.	No	Breeding - None Migration/ Wintering – Low	Low potential to utilize the Addition in the winter.
Peregrine Falcon (*Falco peregrinus*)	SE SDC Group I MSCP (S)	Will forage over a variety of habitats however only breed near water, typically with the nest placed on a cliff ledge.	No	Breeding - None Migration/ Wintering - Low	Low potential to utilize the Addition in the winter.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Study Area? (Historical and/or current observations)	Potential to Occur	Rationale
Prairie Falcon (*Falco mexicanus*)	SDC Group I	Nest on cliffs or bluffs and forage in open desert or grasslands. In San Diego County, nest at least 23 miles from the coast (Unitt 2004).	No	Nesting - None Foraging - Low	Low potential to utilize the Addition in the winter.
Barn Owl (*Tyto alba*)	SDC Group II	Nest in buildings, nest boxes, at the base of the leaves in palm trees, and in cavities in native trees.	No	High	Suitable foraging and nesting habitat present in the Addition. Widespread and common within suitable habitat. Was not observed on the Addition in 2018 but was recorded on the Preserve in 2008.
Western Burrowing Owl (*Athene cunicularia hypugaea*)	SSC SDC Group I MSCP	Prairies, grasslands, lowland scrub, agricultural lands, coastal dunes, desert floors, and some artificial, open areas. They require large open expanses of sparsely vegetated areas on gently rolling or level terrain with an abundance of active small mammal burrows. They use rodent or other burrows for roosting and nesting cover and also known to use pipes, culverts, and nest boxes where burrows are scarce.	No	Not expected	The small grasslands onsite do not support vegetation structure or ground squirrel colonies necessary for this species.
Long-eared Owl (*Asio otus*)	SSC SDC Group I	Rare residents of oak woodlands and broad riparian forests. Ideal nesting habitat has a closed canopy and open lands adjacent for foraging.	No	Moderate	Suitable foraging and nesting habitat present in the study area.
Southwestern Willow Flycatcher (*Empidonax trailii extimus*)	FE SE SDC Group I MSCP NE	Breeds in riparian woodlands along rivers, streams, or other wetlands. They usually nest within close proximity of water or very saturated soil.	No	Low	Riparian habitat within the Addition does not contain the appropriate multi-layer structure.
Loggerhead Shrike (*Lanius ludovicianus*)	SSC SDC Group I	Found near grassland, open sage scrub and chaparral, and desert scrub. They nest in dense vegetation adjacent to their open foraging habitats.	No	Breeding - Medium Foraging - Moderate	Suitable habitat present. Uncommon species. Was not observed on the Addition in 2018 or on the Preserve in 2008.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Study Area? (Historical and/or current observations)	Potential to Occur	Rationale
Least Bell's Vireo (*Vireo bellii pusillus*)	FE SE SDC Group I MSCP NE	Riparian thickets either near water or in dry portions of river bottoms; nests along margins of bushes and forages low to the ground; may also be found using mesquite and arrow weed in desert canyons.	Yes	**Present**	Observed once on the Addition in 2018.
California Horned Lark (*Eremophila alpestris actia*)	SDC Group II	Grasslands, recently disturbed habitat where seeds and insects are easy to find.	No	High	Suitable habitat present. Was not observed on the Addition in 2018 or on the Preserve in 2008.
San Diego Cactus Wren (*Campylorhynchus brunneicapillus sandiegensis*)	SSC SDC Group I MSCP NE	Cactus thickets.	No	Not expected	No suitable breeding habitat (cactus thickets) occur on the Addition.
Coastal California Gnatcatcher (*Polioptila californica californica*)	FT SSC SDC Group I MSCP	Prefer open scrubby habitats such as coastal sage scrub and some forms of chaparral.	No	High	Suitable foraging and nesting habitat present in the Addition. Common within suitable habitat. Was not observed on the Addition in 2018 but was recorded on the Preserve in 2008.
Western Bluebird (*Sialia mexicana*)	SDC Group II MSCP	Foothills and mountains in meadows near groves of oaks and pines. This species is a cavity nester.	No	Low	No suitable nesting habitat present within woodlands in the Addition.
Yellow Warbler (*Dendroica petechia brewsteri*)	SSC SDC Group II	Mature riparian woodlands.	No	High	Suitable riparian nesting habitat occurs on the Addition. Was not observed on the Addition in 2018 or on the Preserve in 2008.
Yellow-breasted Chat (*Ictera virens*)	SSC SDC Group I	Dense riparian woodland.	Yes	**Present**	Suitable riparian nesting habitat occurs on the Addition. Observed on the Addition in 2018
Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*)	SDC Group I MSCP	Fairly common, widespread and generally fairly conspicuous resident of rocky grassland and patchy shrub habitats, often including areas with disturbance from fire, trash, soil compaction and non-native vegetation.	No	**High**	Suitable foraging and nesting habitat present in the Addition. Common within suitable habitat. Was not observed on the Addition in 2018 but was recorded on the Preserve in 2008.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Study Area? (Historical and/or current observations)	Potential to Occur	Rationale
Bell's Sparrow (*Artemisiospiza belli*)	SDC Group I	Year-round resident of chaparral and sage scrubs. Forages on litter-free openings on the ground, and is largely restricted to south-facing slopes, post-burn areas, and gabbro soils.	No	**High**	Highly suitable foraging and nesting habitat present in the Addition.
Grasshopper Sparrow (*Ammodramus savannarum*)	SSC SDC Group I	Structurally diverse grassland usually with native grasses.	No	Low	Grasslands on the Addition are very small and not expected to support this species.
Tricolored Blackbird (*Agelaius tricolor*)	FC- SSC (nesting colony) SDC Group I MSCP	Breeds near fresh water, preferably in emergent wetland with large, dense stands of cattails or tules, but also in thickets of willow, blackberry, wild rose, tall herbs. Feeds in grassland and cropland habitats.	No	Low	Marshes within the Addition are too small to support a nesting colony and grasslands are too small to provide any significant foraging opportunity for tricolored blackbird flocks.
MAMMALS					
Mexican Long-tongued Bat (*Choeronycteris mexicana*)	SSC SDC Group II	Likes desert canyons, arid mountain ranges. Roosts by day in caves, mines or buildings. Records indicate only a summer resident in San Diego County (CDFG 2005). Feeds on nectar and pollen from agaves and cactus blossoms.	No	Not expected	Appropriate vegetation is not present on the Addition.
Small-footed Myotis (*Myotis ciliolabrum*)	SDC Group II	Not much information available, but has been spotted under rock slabs and in crevices, mine tunnels, under loose tree bark, and in buildings.	No	**High**	Not observed during passive or active bat surveys of the Addition. Detected on the Preserve in 2008.
Long-eared Myotis (*Myotis evotis*)	SDC Group II	Brush, woodland and forest habitats from sea level to 9000 ft. Lives in coniferous forests in mountain areas, roosts in small colonies in caves, buildings and under tree bark.	No	**High**	Not observed during passive or active bat surveys of the Addition. Detected on the Preserve in 2008.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Study Area? (Historical and/or current observations)	Potential to Occur	Rationale
Yuma Myotis (*Myotis yumanensis*)	SDC Group II	Always found near lakes, creeks or ponds. Roosts by day under building sidings or shingles. Nursery colonies choose caves, mines, buildings or under bridges.	Yes	**Present**	Detected during passive and active bat surveys of the Addition.
Western Red Bat (*Lasiurus blossevillii*)	SSC SDC Group II	Usually among dense foliage, in forests and wooded areas, making long migrations from the northern latitudes to warmer climes for winter, sometimes hibernates in tree hollows or woodpecker holes.	Yes	**Present**	Detected during passive and active bat surveys of the Addition.
Western Yellow Bat (*Lasiurus xanthinus*)	SSC	Rare visitor to San Diego County. Found in wooded areas and desert scrub. Roosts in foliage, particularly in palm trees.	Yes	Low	Not observed during passive or active bat surveys of the Addition and not detected on the Preserve in 2008.
Pallid Bat (*Antrozous pallidus*)	SSC SDC Group II	Throughout So. Cal. from coast to mixed conifer forest; grasslands, shrublands, woodlands, & forest; most common in open, dry habitats w/ rocky areas for roosting; yearlong resident in most of range. Roosts in rock crevices, caves, mine shafts, under bridges, in buildings and tree hollows.	No	Roosting habitat-Low Foraging habitat-Moderate	Not observed during passive or active bat surveys of the Addition and not detected on the Preserve in 2008.
Pocketed Free-tailed Bat (*Nyctinomops femorosaccus*)	SSC SDC Group II	Lives in deserts and sage scrub, roosts in rocky crevices.	No	**High**	Not observed during passive or active bat surveys of the Addition. Detected on the Preserve in 2008.
Big Free-tailed Bat (*Nyctinomops macrotis*)	SSC SDC Group II	Inhabits arid, rocky areas; roosts in crevices in cliffs. Has been recorded in urban locations in San Diego County. Species is rare in California (CDFG 2005).	No	Roosting habitat-Low Foraging habitat-**Low**	Not observed during passive or active bat surveys of the Addition and not detected on the Preserve in 2008.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Study Area? (Historical and/or current observations)	Potential to Occur	Rationale
Western Mastiff Bat (*Eumops perotis californicus*)	SSC SDC Group II	Primarily a cliff-dwelling species for breeding. Found foraging in a variety of habitats, from dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, montane meadows, and agricultural areas.	Yes	**Present**	Detected during passive and active bat surveys of the Addition.
San Diego Black-tailed Jackrabbit (*Lepus californicus bennettii*)	SSC SDC Group II	Mostly found on the coastal side of our local mountains in open habitats, usually avoiding dense stands of chaparral or woodlands.	No	Low	Marginal suitable habitat occurs on the Addition. Preserve is isolated from other large grassland areas. Distinctive diurnal species not observed during surveys in 2008 or 2018.
Dulzura Pocket Mouse (*Chaetodipus californicus femoralis*)	SSC SDC Group II	Coastal and montane regions in grassland, sage scrub, and chaparral slopes.	No	**High**	Not observed during trapping of the Addition in 2018. Detected on the Preserve in 2008.
Northwestern San Diego Pocket Mouse (*Chaetodipus fallax fallax*)	SSC SDC Group II	Coastal sage scrub, sage scrub/grassland ecotones, and chaparral communities.	No	Moderate	Suitable habitat occurs on site, but this species was not caught during trapping surveys.
Stephens' Kangaroo Rat (*Dipodomys stephensi*)	FE ST SDC Group I	Occurs in flat or gently rolling, often degraded, annual grassland.	No	Low	Habitat onsite is not suitable for this species.
Ramona Grasshopper Mouse (*Onychomys torridus ramona*)	SSC SDC Group II	Grasslands and sparse coastal sage scrub habitats.	No	Low	The survey area is located within the range of the species. Not observed during trapping surveys.
Bryant's (San Diego Desert) Woodrat (*Neotoma byrantii = N. lepida intermedia*)	SSC SDC Group II	Variety of shrub and desert habitats primarily associated with rock outcroppings, boulders, cacti, or areas of dense undergrowth.	Yes	**Present**	Species captured during small mammal trapping of the Addition.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Study Area? (Historical and/or current observations)	Potential to Occur	Rationale
Ringtail (*Bassariscus astutus*)	SDC Group II	Usually not found more than 1 km (0.6 mi) from permanent water. Suitable habitat consists of a mixture of forest and shrubland in close association with rocky areas or riparian habitats. Forages on ground, among rocks, in trees; usually near water.	No	Low	No suitable rocky habitat present.
American badger (*Taxidea taxus*)	SSC SDC Group II MSCP	Inhabit a diversity of habitats with principal requirements of sufficient food, friable soils, and relatively open, uncultivated ground. Grasslands, savannas, and mountain meadows near timberline are preferred.	No	Low	Marginal suitable habitat occurs on the Preserve and in the study area. Isolated from other grasslands. No tracks or burrows were observed during the surveys.
Mountain Lion (*Puma (=Felis) concolor*)	SDC Group II MSCP	Rocky areas, cliffs, and ledges that provide cover within open woodlands and chaparral, as well as riparian areas.	No	Moderate	No images observed on trail cameras. Suitable habitat present in the Addition. This species is generally rare to the west of I-15.
Southern Mule Deer (*Odocoileus hemionus fuliginata*)	SDC Group II MSCP	Oak woodlands, open scrub and young chaparral, low-elevation pine forests, riparian areas, and along the margins of meadows and grasslands.	Yes	**Present**	Observed on the Addition.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Study Area? (Historical and/or current observations)	Potential to Occur	Rationale

LEGEND:

STATUS:

Federal

FE - listed as endangered under the federal Endangered Species Act.

FT - listed as threatened under the federal Endangered Species Act.

FC- candidate species under the federal Endangered Species Act.

California

SE - listed as endangered under the California Endangered Species Act.

FP – fully protected species in California.

SSC - species of special concern in California.

San Diego County Group (SDC Group)

I = includes animal species that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirements that must be met.

II = includes animal species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action. These species tend to be prolific within their suitable habitat types.

San Diego Multiple Species Conservation Program (MSCP)

MSCP - Covered Species

MSCP NE – Narrow endemic species in the MSCP

References

Special Status information from CDFW 2018. Nomenclature and invertebrate descriptions from Hogan 2005, and USFWS 1997. Nomenclature and vertebrate descriptions from AOS (Chesser *et al.* 2018) SSAR 2018, Stephenson and Calcarone 1999, Bradley *et al.* 2014, and Unitt 2004.

Appendix E

Photo Book

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Representative Photographs

Photo 1 – Chamise chaparral on mesa on northeast side of Addition.

Photo 2 – Diegan coastal sage scrub on hillsides.

Photo 3 – Facing northeast from floodplain.
Non-native grassland in foreground, Diegan coastal sage scrub on hillsides.

Photo 4 – Facing southwest from center of Addition.
Giant reed break and Lusardi Creek in center left of photo.

Photo 5 – Pampas grass, non-native grassland, and arrorw weed.

Photo 6 – Spineshrub *(Adolphia californica)*

Photo 7 – San Diego sagewort *(Artemisia palmeri)*

Photo 8 – Belding's orange-throated whiptail

Photo 9 – California striped racer in box trap.

Photo 10 – Southern alligator lizard released from trap.

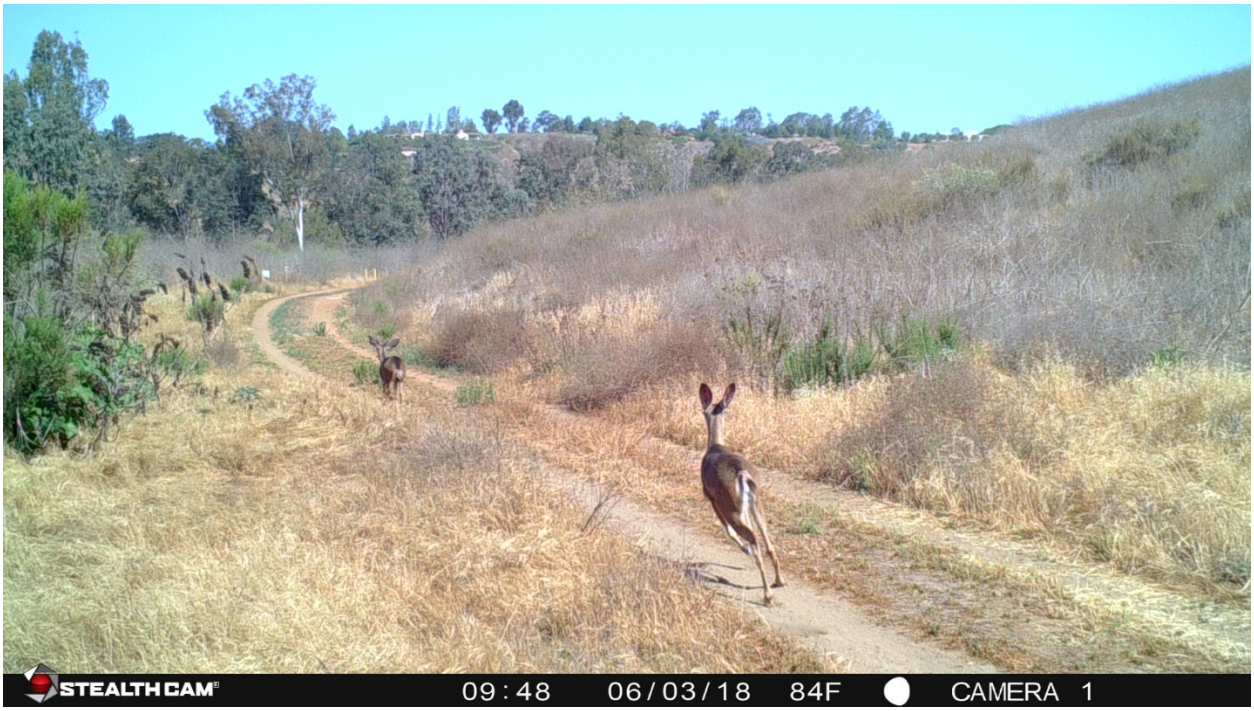

Photo 11 – Deer on road at camera 1.

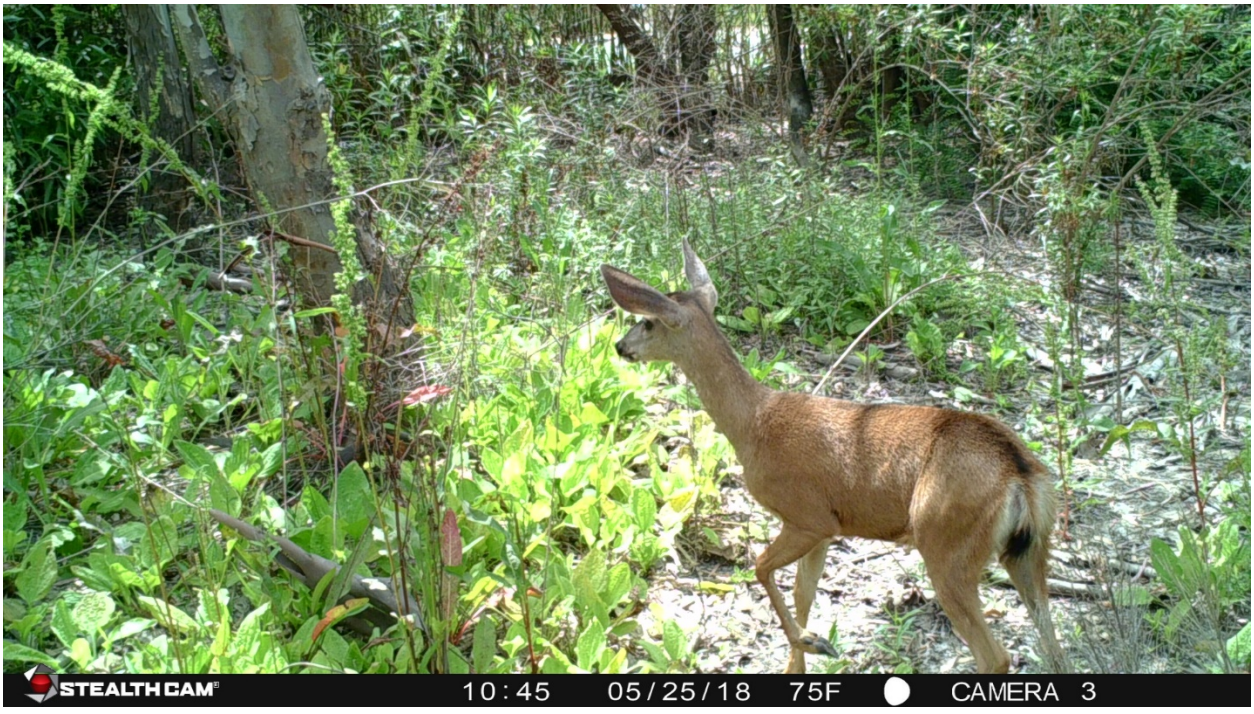

Photo 12 – deer in riparian area.

Photo 13 – bobcat in riparian area.

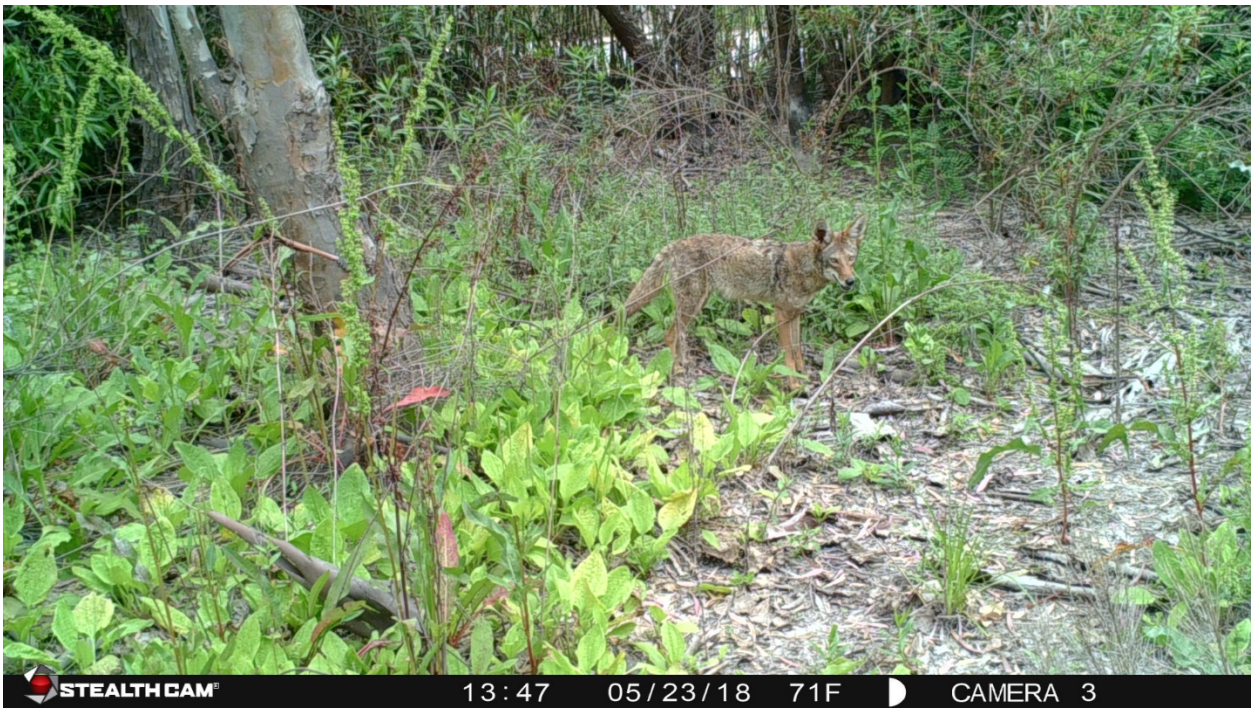

Photo 14 – Coyote in riparian area.