BASELINE BIODIVERSITY SURVEY REPORT FOR THE HELLHOLE CANYON PRESERVE ADDITIONS COUNTY OF SAN DIEGO DEPARTMENT OF PARKS AND RECREATION

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January 2021
Updated October 2021

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EXECUTIVE SUMMARY

Between November 2010 and February 2017, four parcels (a total of approximately 118 acres) were acquired by the County of San Diego (County) Department of Parks and Recreation (DPR) to expand the existing 1,907-acre Hellhole Canyon Preserve (Preserve) to form a contiguous Preserve totaling 2,025 acres. In January 2019, six more parcels (a total of approximately 553 acres) were acquired, expanding the Preserve's 2,025 acres to a new total of 2,578 acres. These ten parcels, which are not all contiguous with each other, will be referred to collectively as the Additions. The Additions are located within the planning boundaries of the Draft North County Multiple Species Conservation Program (MSCP) (County of San Diego 2017) and consist primarily of southern mixed chaparral, scrub oak chaparral, open coast live oak woodland, chamise chaparral, flat-topped buckwheat, disturbed/developed habitat, coastal scrub, and non-native grassland. The majority of the habitat is considered moderate- to very high-quality, although some areas of the Additions are considered lower quality due to habitat disturbance by unauthorized human activities (e.g., unauthorized trails). DPR proposes to manage the Additions in accordance with the existing Resource Management Plan for Hellhole Canyon Preserve (County of San Diego 2009), including Management Directives. The existing Resource Management Plan will be updated based on the survey information contained within this report.

The following biological inventory surveys were conducted within the Additions from winter 2019 through fall 2019: vegetation community mapping, rare plant surveys, invasive/non-native plant surveys, butterfly surveys, herpetological drift fence surveys, diurnal and nocturnal avian surveys, small mammal trapping, passive and active acoustical bat surveys, and medium and large mammal remote camera surveys. Additional focused Stephens' kangaroo rat (SKR) visual surveys and live-trapping were conducted within the Sierra Verde Addition in fall 2020.

Vegetation on the Additions consists of 22 vegetation alliances, associations, or semi-natural stands, including grassland, scrub, chaparral, riparian, and woodland habitats, as well as three land cover types as described by Oberbauer (2008). A total of 249 plant species were recorded within the Additions during baseline floristic surveys, including 61 non-native plant species and 6 special-status plant species. One of the detected special-status plant species is also covered by the Draft North County MSCP (County of San Diego 2017). A total of 161 wildlife species were observed or detected within the Additions during baseline surveys, including 26 invertebrates, 5 amphibians, 11 reptiles, 80 birds, and 39 mammals. Of these 161 species, 27 are special-status wildlife species. Four of the detected special-status wildlife species are also covered by the Draft North County MSCP.

Based on the surveys conducted in 2019 and 2020 and the presence of multiple special-status species within the Additions, management recommendations have been included to protect, preserve, and sustain populations of special-status species within the Additions. General management recommendations to protect special-status plant and wildlife species include monitoring and removing invasive non-native plant species, maintaining fences and signage to prevent unauthorized public access, surveying and monitoring for specific species, and reducing human-caused edge effects (e.g., introduction of invasive/non-native species and domestic pets, increase in trash/littering, and/or habitat destruction).

1.0 INTRODUCTION

1.1 PURPOSE OF THE REPORT

The purpose of this report is to document the results of the baseline biological surveys conducted from spring 2019 to fall 2020 on the ten recently acquired parcels (Additions) for the County of San Diego (County) Department of Parks and Recreation (DPR) (**Figures 1** and **2**). These Additions were acquired from 2010 to 2019 to expand the adjacent Hellhole Canyon Preserve (Preserve). The purpose of these surveys was to identify and map biological resources that exist on the Additions. This information will be used to update the existing Resource Management Plan for the Preserve (RMP 2009), which will include management directives that will provide the framework for managing and monitoring the resources on the newly acquired Additions.

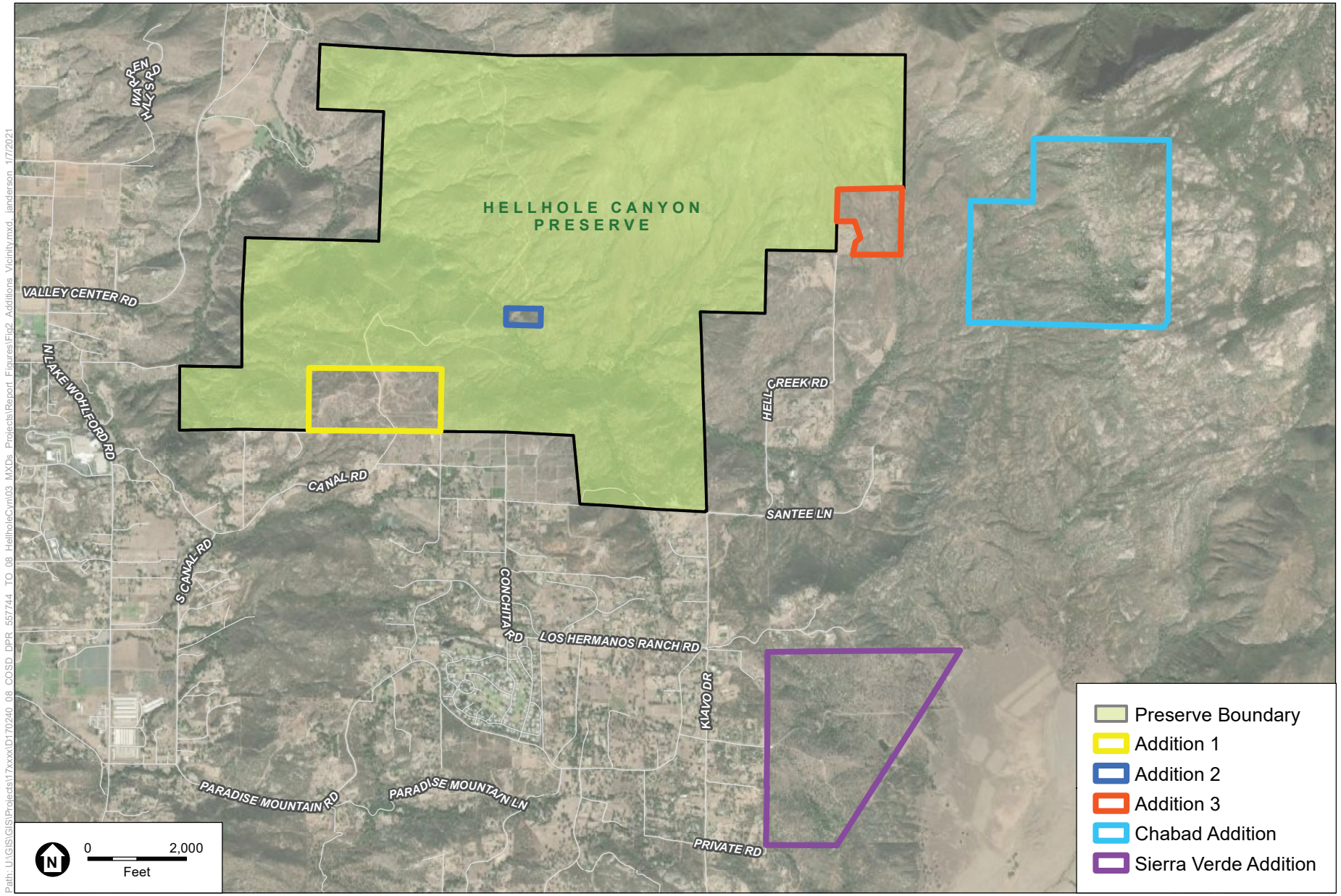
1.2 MULTIPLE SPECIES CONSERVATION PROGRAM CONTEXT

The Additions are located within the planning boundaries of the County's Draft North County Multiple Species Conservation Program (MSCP) (**Figure 3**). Upon approval, the Draft North County MSCP would assemble a preserve system to protect species and habitats covered by the plan in western, north-central San Diego County. The Draft North County MSCP includes a Draft Framework Resource Management Plan to guide the preparation of RMPs for lands conserved under the Draft North County MSCP.

This baseline report has been prepared based on the covered species list and vegetation tiers from the 2017 working draft of the Draft North County MSCP (County of San Diego 2017). Additionally, management recommendations for covered species are based on the 2018 working draft of the Framework Management Plan (County of San Diego 2018).

SOURCE: SanGIS, 2019.

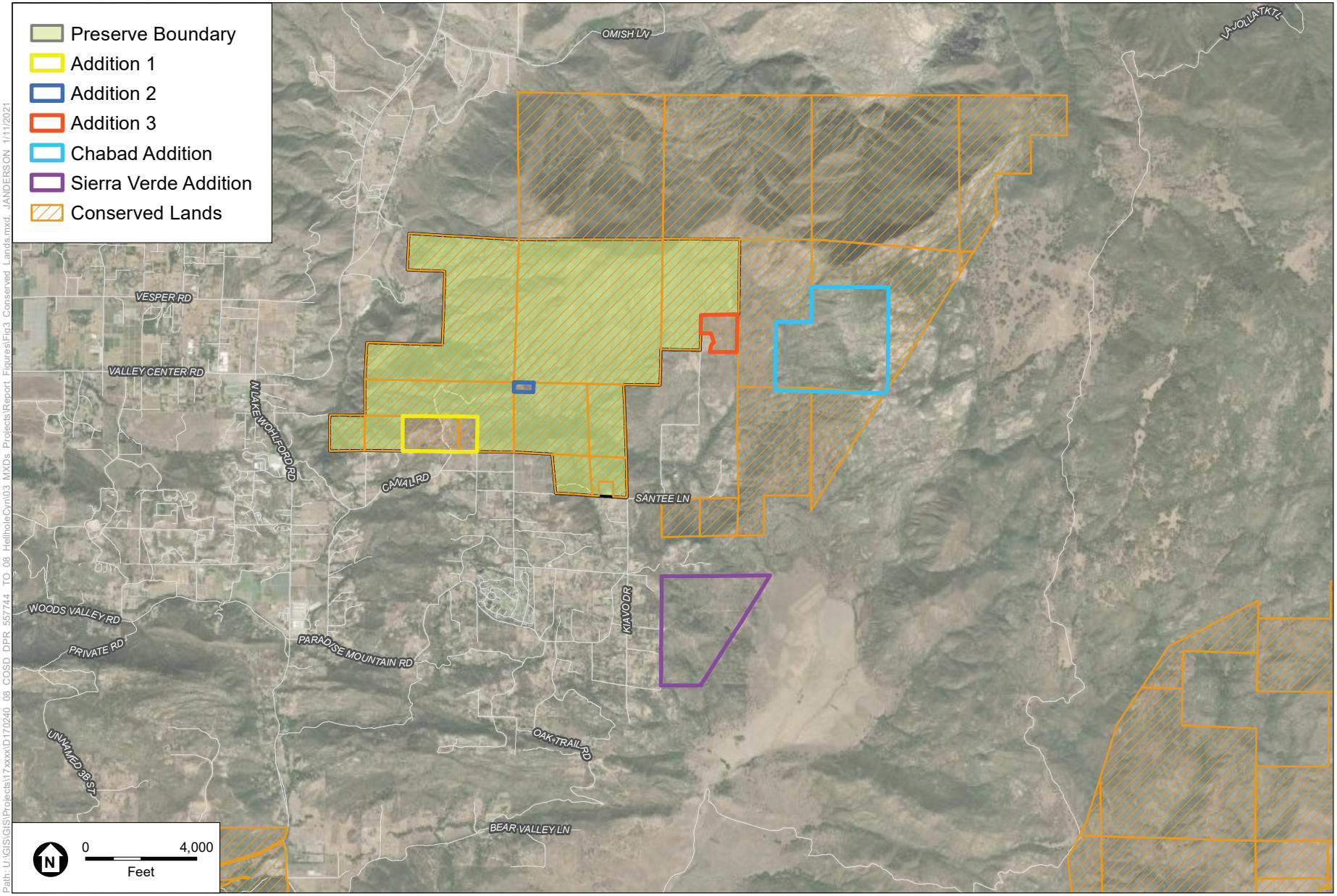
Figure 1
Regional Location



SOURCE: ESRI, 2019; SanGIS, 2019.

Figure 2
Additions Vicinity

ESA



SOURCE: ESRI, 2019; SanGIS, 2019.

Figure 3
Conserved Lands

ESA

2.0 STUDY AREA DESCRIPTION

2.1 PRESERVE LOCATION

The Additions are located in the eastern portion of the unincorporated area of Valley Center and are not open to the public (Figure 1). The Additions are located in the Boucher Hill and Rodriguez Mountain Quadrangles and within Township 11 South, Range 1 West in section 14 and Township 11 South, Range 1 East in sections 7, 8, and 19. The Additions encompass 671 acres and are a combination of ten parcels as shown in **Table 1** below. The Additions can be accessed from multiple access points in Valley Center, CA 92082.

Table 1. Additions Assessor's Parcel Numbers

Preserve Addition Area	Assessor's Parcel Numbers
Addition 1	189-080-11; 189-080-10
Addition 2	189-080-01
Addition 3	191-060-21
Chabad	191-060-06; 191-060-02; 191-060-01
Sierra Verde	191-180-08; 191-180-07; 191-180-05

2.2 GEOGRAPHICAL SETTING

The Additions are located in northeastern San Diego County in the Peninsular Geomorphic Range (Fuller et al. 2015) and consist of a mountain and drainages with oak woodland habitat, rocky hills, and valleys north and east of Paradise Mountain. Elevations within the Additions range from 1,500 feet to 3,750 feet above mean sea level, with the lowest elevation occurring within Hell Creek on Addition 3 and the highest elevation occurring on Rodriguez Mountain within the Chabad Addition. The western face of Rodriguez Mountain is located within the Chabad Addition. Unnamed streams and Hell Creek run through multiple Additions. The Additions are adjacent to rural residential development and preserved open space areas, including BLM-owned parcels and Hellhole Canyon Preserve. The Sierra Verde Addition is also adjacent to Rancho Guejito. A majority of the upland habitats of the Additions, notably chaparral and woodland habitats, are relatively undisturbed, having recovered significantly from past agricultural, ranching, and grazing activities that likely took place there previously.

2.3 GEOLOGY AND SOILS

The Additions contain eleven soil types belonging to six soil series (acid igneous rock land, Cieneba, Fallbrook, Las Posas, Bonsall, and rough broken land). The soil series mapped on the Additions (**Figures 4a** through **4c**) are residuum derived as follows: acid igneous rock land (acid igneous rock), Cieneba (granite and granodiorite), Fallbrook (granodiorite), Las Posas (sandstone and shale), Bonsall (weathered granite), and rough broken land (mixed residuum) (USDA 2019). The majority of the soils within the Additions are derived from granodiorite rock which is considered a normal soil type. Descriptions of each soil series and the attendant soil types were derived from the U.S. Department of Agricultural Natural Resources Conservation Service, and are discussed in further detail below.

2.3.1 Acid Igneous Rock Land

Acid igneous rock land series (AcG) is found in rough broken terrain. The topography ranges from low hills to steep mountains. Large boulders and rock outcrops of granite, quartz diorite, gabbro, basalt, and other rock types cover greater than 50 percent of the total area. The soil material consists of shallow, unweathered bedrock made up of acid igneous rock. This series is typical on mountains that have 15 to 75 percent slopes. The series is sourced from residuum derived from acid igneous rock and is 0 to 4 inches deep over lithic bedrock. Many areas are practically barren and have very rapid runoff. This series is found in higher elevation portions of Rodriguez Mountain in the Chabad Addition and constitutes approximately 20 percent of the Additions overall.

2.3.2 Cieneba Series

The Cieneba series (CmrG, CmE2, CnE2, CnG2, CIE2) consists of very shallow to shallow, excessively drained soils that formed in material weathered from granitic rock. This series is typical on hills and mountains with slopes that have 9 to 75 percent slopes. The series is sourced from residuum derived from granite and granodiorite and is 4 to 20 inches deep over hard rock. Runoff is low to high, somewhat excessively drained, with moderately rapid permeability in the soil, which is much slower in the weathered bedrock (USDA 2012). This series is found throughout the Additions and constitutes approximately 67 percent of the Additions overall.

2.3.3 Fallbrook Series

The Fallbrook series (FeE2, FaC2, FaD2, FvE) consists of deep, well drained soils that formed in material from deeply weathered granitic rock. This series is found on rolling hills with slopes of 5 to 30 percent. The series is sourced from residuum derived from granodiorite and is 24 to 32 inches deep over hard rock. Runoff is high, with well-drained soils and moderate high permeability

(USDA 2003). This series is found in the northeastern portion of the Sierra Verde Addition and throughout Addition 1 and constitutes roughly 10 percent of the Additions overall.

2.3.4 Las Posas Series

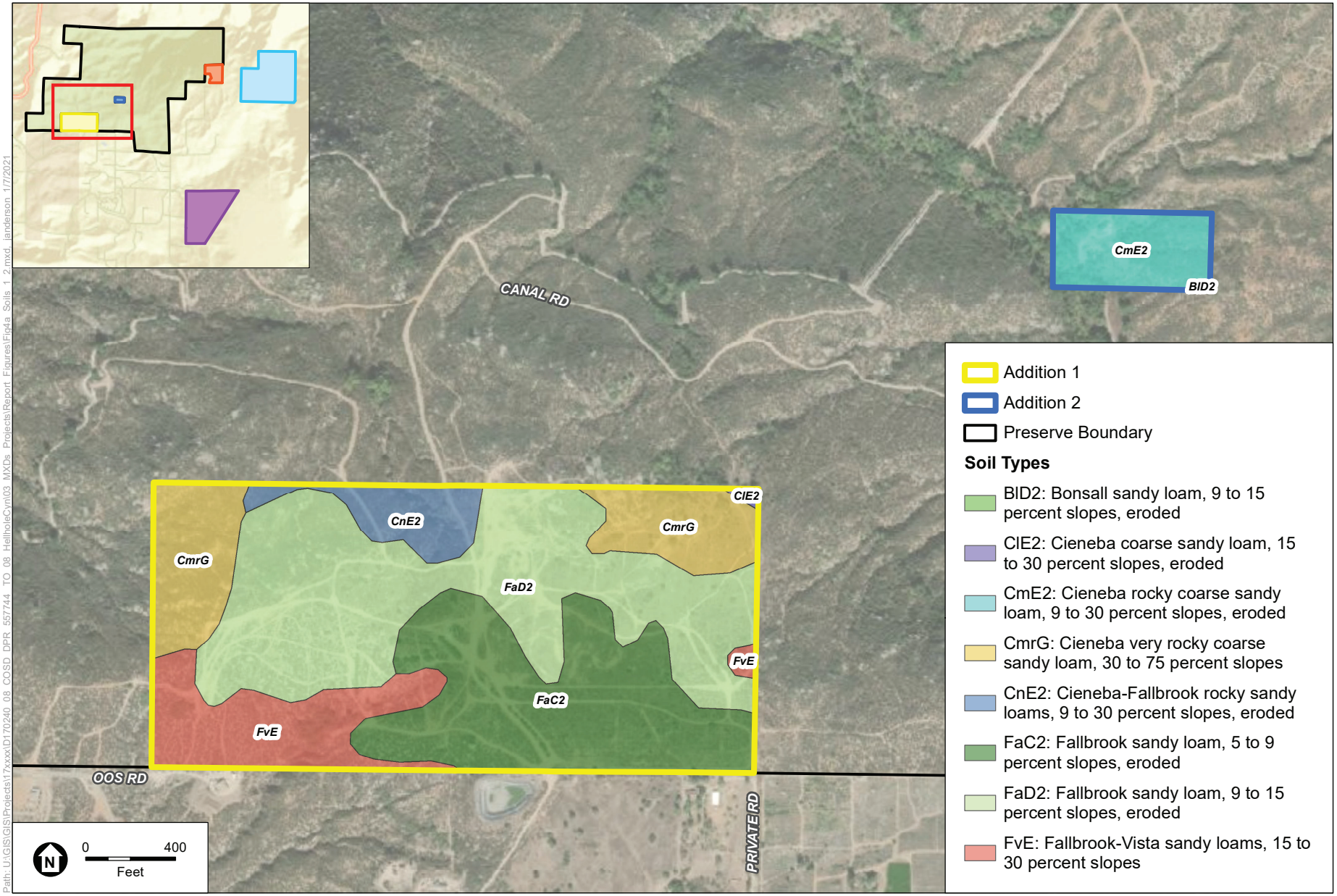
The Las Posas Series (LrG) consists of well-drained soils that formed in material weathered from sandstone and shale. This series is typical on steep to very steep terrain in upland hills with slopes of 30 to 65 percent. The series is sourced from calcareous residuum weathered from sandstone and shale and is 0 to 33 inches deep over paralithic bedrock. Runoff is rapid to very rapid and erosion hazard is high to very high (USDA 1997a). This series is found in the northwest portion of the Chabad Addition and constitutes less than 1 percent of the Additions overall.

2.3.5 Bonsall Series

The Bonsall series (BID2) consists of deep, moderately well drained soils that formed in material from weathered granitic rock. This series is found on hillsides with slopes of 9 to 15 percent. The series is sourced from residuum derived from granite. Runoff is very high, with moderately well drained soils, and very low to moderately low permeability (USDA 1997b). This series is found in the southeastern corner of Addition 2 and constitutes less than 1 percent of the Additions overall.

2.3.6 Rough Broken Land

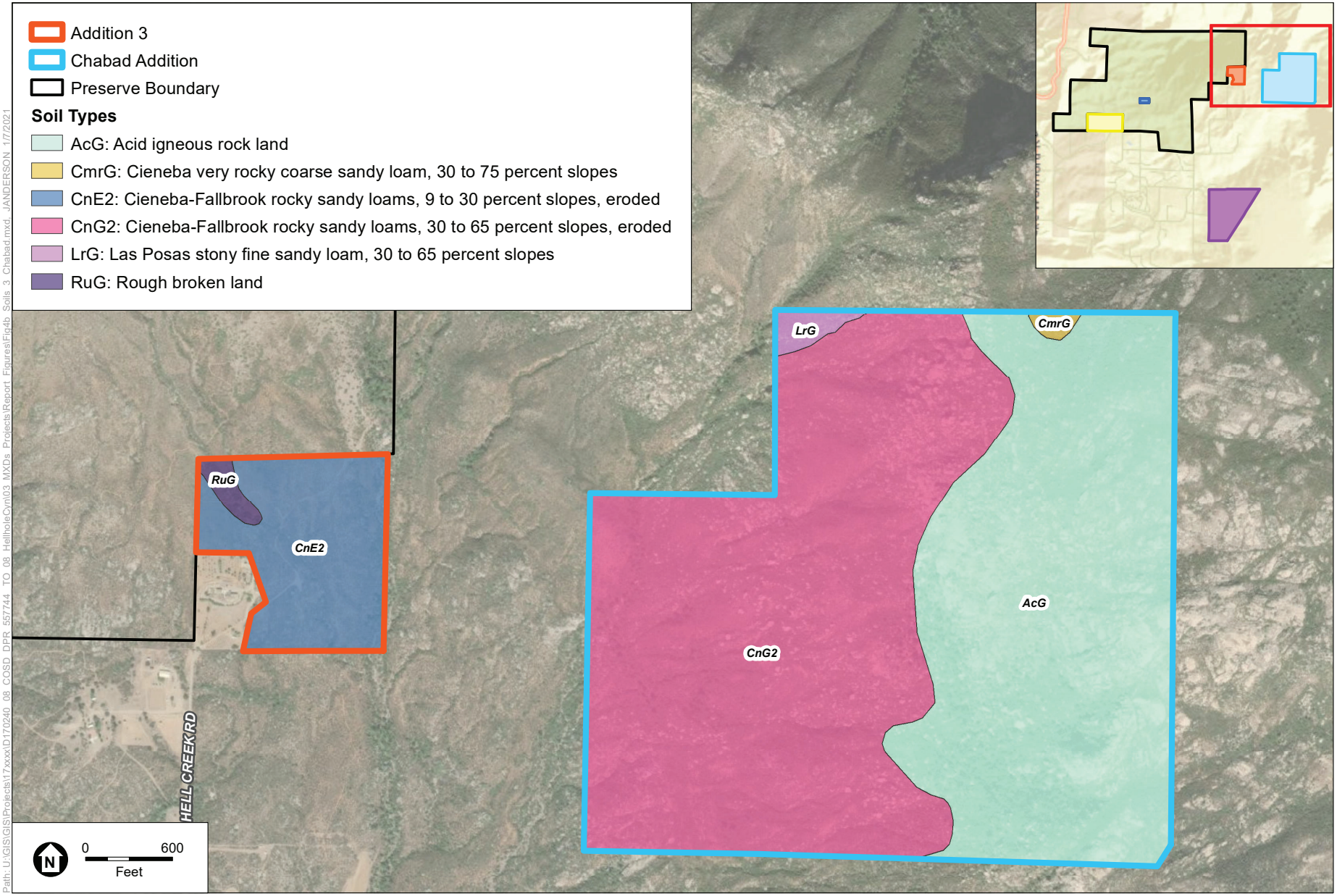
Rough broken land series (RuG) consists of well drained to excessively drained, shallow soil that formed from mixed residuum. The soils can be found on mountains within steep to very steep land dissected by many narrow “V-shaped” valleys and canyons with slopes of 30 to 75 percent. The series is sourced from mixed residuum and is 0 to 3 inches deep over unweathered, paralithic bedrock. Runoff is very rapid and erosion is very high. This series is found along the northern portion of Addition 3 and constitutes less than 1 percent of the Additions overall.



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

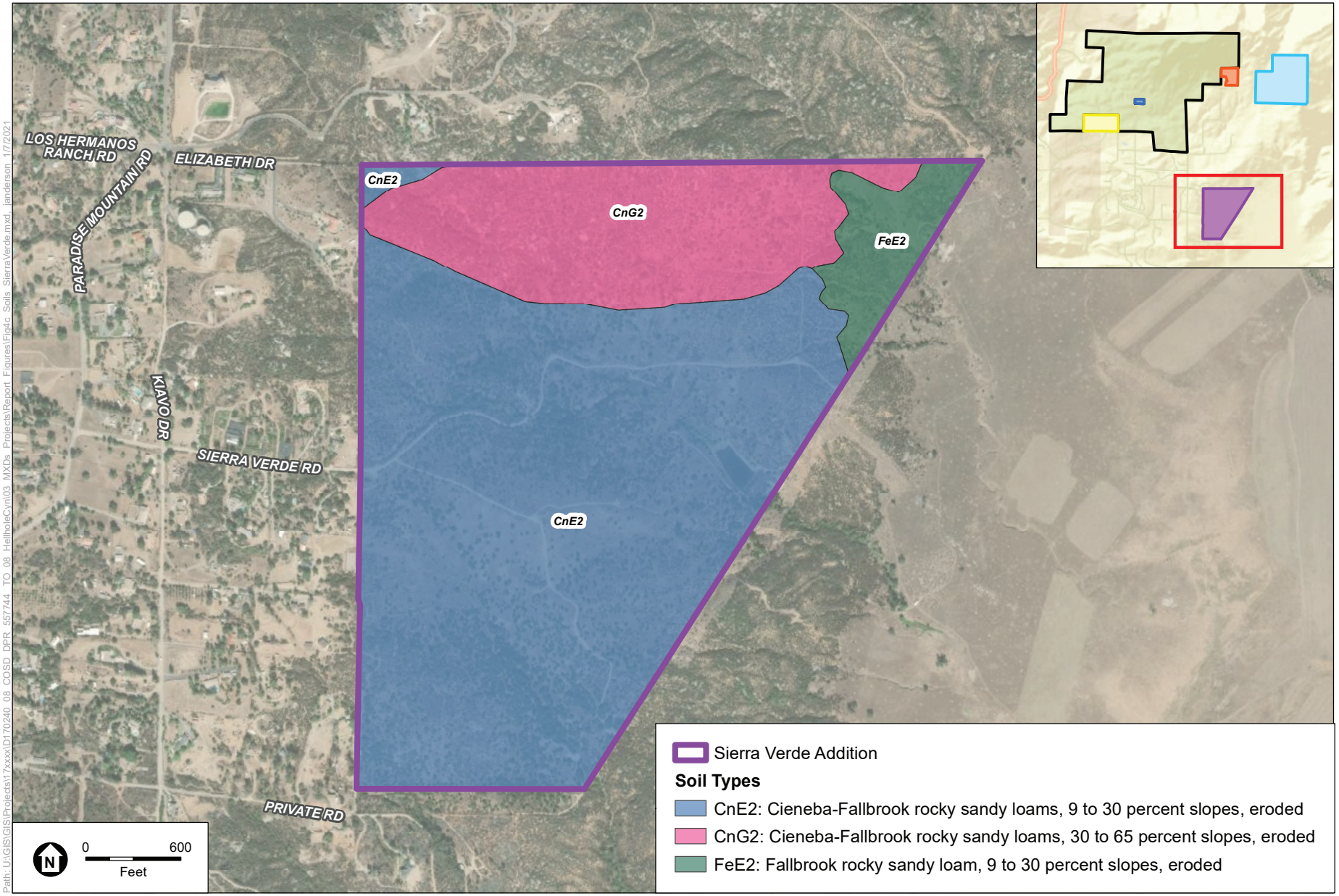
ESA

Figure 4a
Soils
Addition 1 and Addition 2



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

Figure 4b
Soils
Addition 3 and Chabad Addition



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

ESA

Figure 4c
Soils
Sierra Verde Addition

2.4 CLIMATE

The climate of the Additions is considered Mediterranean, with hot, dry summers and cool, wet winters (George 2019). The closest weather station to the Additions is located at Escondido 2, approximately 11 miles southwest of the Additions (Western Regional Climate Center 2020). Average annual precipitation at Escondido 2 is 14.93 inches of rain, with the greatest amount, 3.46 inches, falling in February (**Table 2**). July and August are the driest months, with an average of 0.08 inches of rain. August is the hottest month, with an average high temperature of 88.6 degrees Fahrenheit. Given the Additions' distance and higher elevation compared to the Escondido 2 weather station, temperature and precipitation values may vary slightly. Due to their location in Southern California, the Additions are subject to Santa Ana winds, which are hot, dry winds that blow from the Great Basin desert typically from September to May, which increases and enhances fire danger (Fovell 2007).

Table 2. Temperature and Precipitation Data for Escondido 2 Weather Station (042863)

Period of Record: May 1, 1979, through March 27, 2013													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**
Average Maximum Temperature (°F)	69.0	69.0	70.3	74.5	76.6	82.0	87.2	88.6	86.6	79.9	73.3	68.9	77.2
Average Minimum Temperature (°F)	43.1	44.4	47.1	50.4	54.6	58.1	62.1	63.3	61.4	55.2	46.6	41.8	52.3
Average Total Precipitation (inches)	3.00	3.46	2.71	1.14	0.26	0.12	0.08	0.08	0.20	0.74	1.33	1.82	14.93

SOURCE: WRCC 2020.

While California is prone to natural drought periods, California recently experienced an acute drought period lasting approximately 5.5 years, from December of 2011 through April 2017. By the winter of 2013–2014, California had experienced three below-normal rainfall seasons, causing lower groundwater levels and abnormally dry vegetation, which elevated wildfire risks. Although a heavy rain event occurred toward the beginning of 2016, drought conditions resumed by February of 2016 and continued until April of the following year (NOAA 2019). As of November 2019, San Diego County is still considered abnormally dry (NDMC 2019).

2.5 HYDROLOGY

The Additions are located within the San Luis Rey and San Dieguito Watersheds or Hydrologic Units (County of San Diego 2014). Addition 1, Addition 2, Addition 3, and the majority of the Chabad Addition fall within the San Luis Rey Watershed. The San Luis Rey Watershed contains three hydrologic areas: Lower San Luis, Monserate, and Warner Valley. The Additions within the San Luis Rey Watershed fall within the Monserate hydrologic area and within the Pauma

hydrologic sub-area. The San Luis Rey Watershed has two major water bodies: San Luis Rey River and Lake Henshaw. Hell Creek runs through the northwestern boundary of the Chabad Addition, then continues southeast through the southwestern boundary of Addition 2. An unnamed stream of Hell Creek also runs along the eastern boundary of Addition 3, before draining into Hell Creek south of the Preserve. West of the Preserve, Hell Creek connects with Paradise Creek, a tributary of the San Luis Rey River.

The Sierra Verde Addition and the eastern boundary of the Chabad Addition fall within the San Dieguito Watershed. The San Dieguito Watershed contains five hydrologic areas: Solana Beach, Hodges, San Pasqual, Santa Maria Valley, and Santa Ysabel. The Additions within the San Dieguito Watershed fall within the San Pasqual hydrological area and within the Guejito sub-area. The San Dieguito Watershed has four major water bodies: San Dieguito River, Santa Ysabel Creek, Lake Hodges, and Sutherland Reservoir. The Sierra Verde Addition is intersected by an unnamed stream that drains southwest of the Preserve into Guejito Creek, a tributary of the Santa Ysabel Creek.

2.6 FIRE HISTORY

Based on historical fire data from the California Department of Forestry and Fire Protection (CalFIRE) and San Diego Geographic Information Source (SanGIS), the Additions have been affected by five different wildfires (**Table 3** and **Figure 6**) according to records beginning in 1913 (SanGIS 2019; CalFIRE 2019). The most recent fire was the Poomacha Fire of October 2007, which burned approximately 46 percent of the Additions. The Paradise Fire in 2003 also burned a majority (99 percent) of the Additions. The Additions are located within an area of high wildland fire potential (County of San Diego 2019).

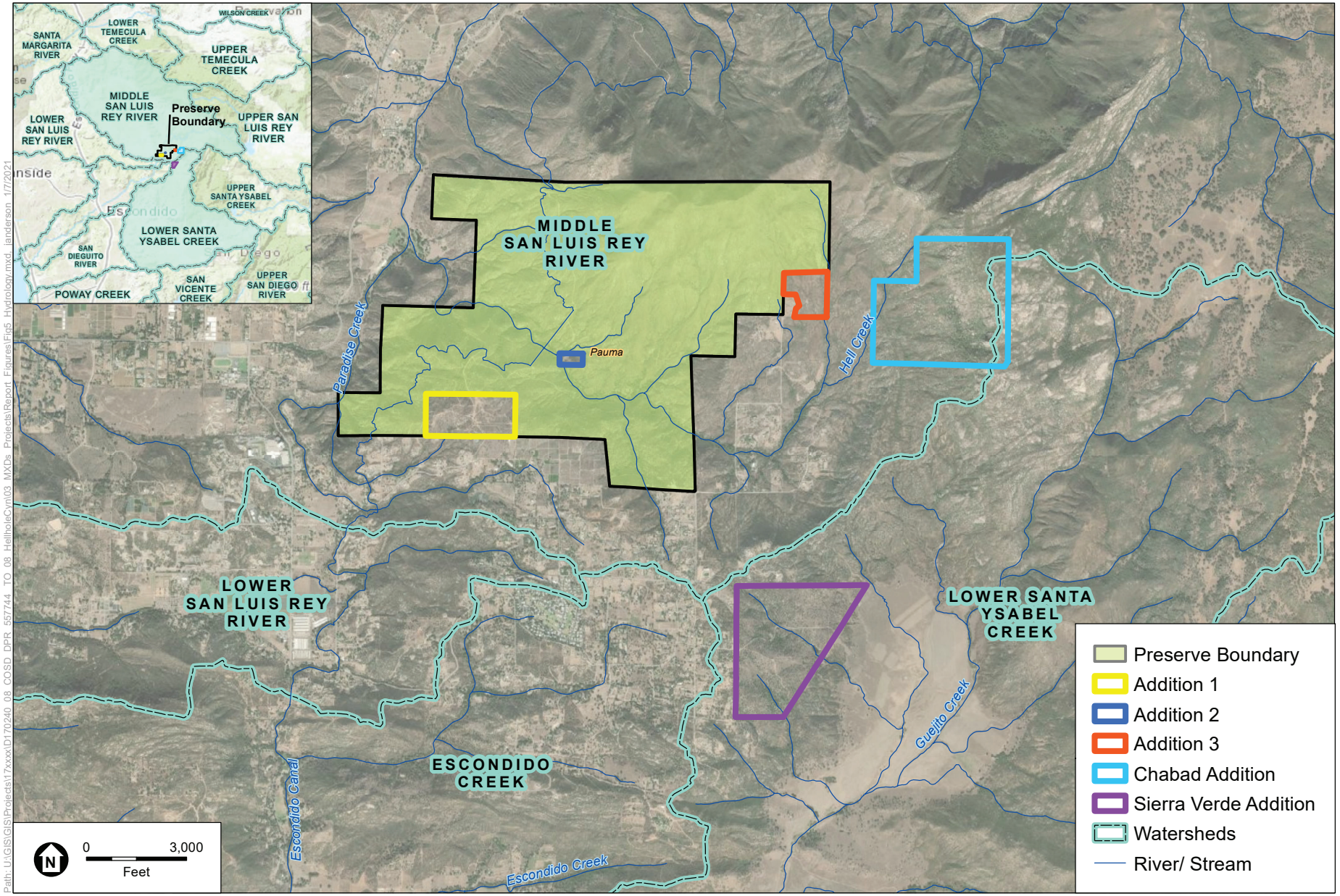
Table 3. Additions Fire Interval Data

Fire Year	Fire Name	Interval (years)	Acreage Burned on Additions	Percent of Additions Burned
1926	Unnamed	–	17.31	3
1950	Guejito	24	343.40	51
1999	Canal	49	9.21	1
2003	Paradise	4	670.51	99
2007	Poomacha	4	310.96	46

SOURCE: SanGIS 2019; CalFIRE 2019.

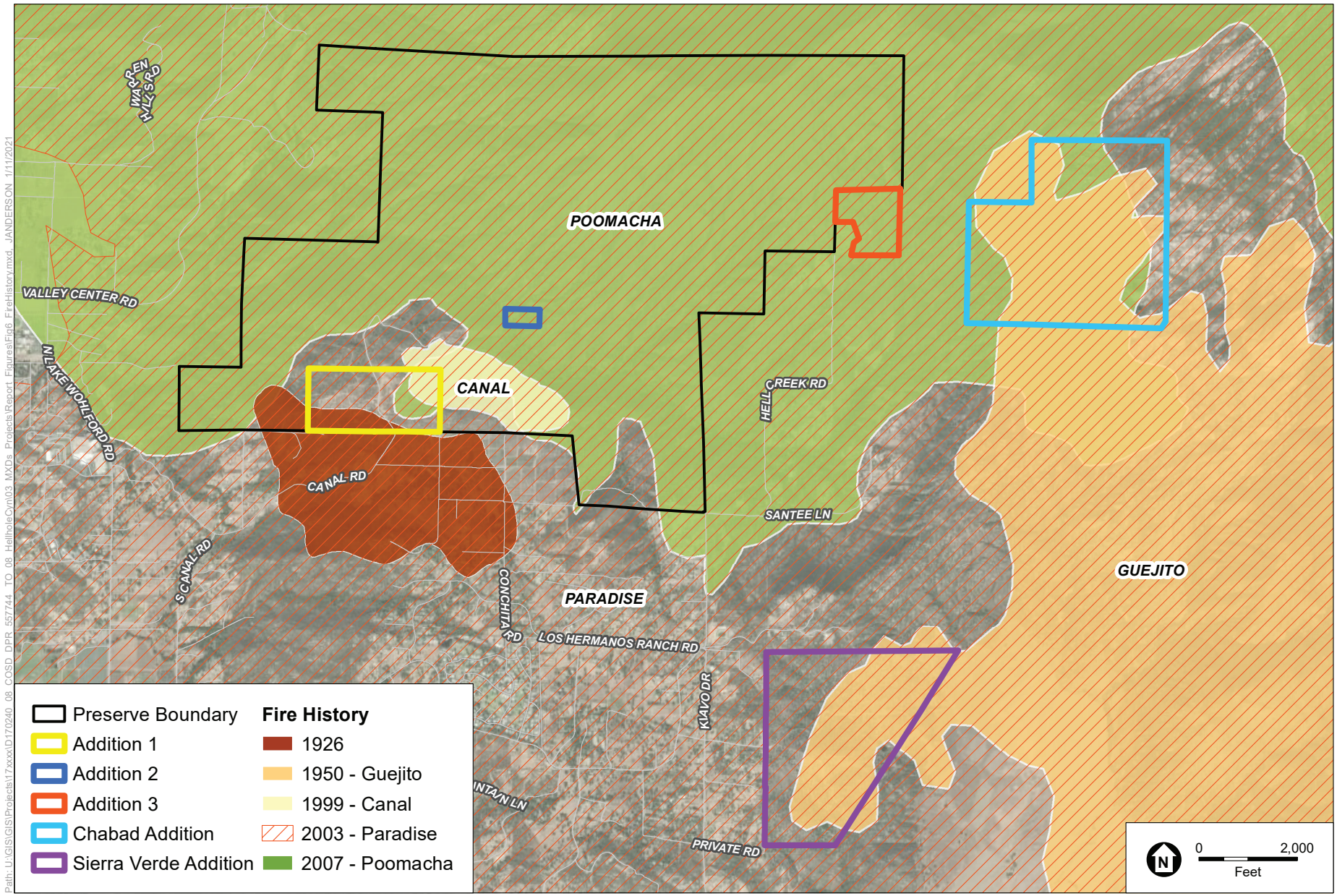
2.7 TRAILS

While Hellhole Canyon Preserve is open to the public, the Additions have no authorized trails and are not open to the public. However, there are several dirt access roads within the Additions that are used by authorized vehicles for management purposes. Addition 1 has been subjected to long periods of disturbance from the creation of numerous dirt trails by off-road vehicles and unauthorized use. Access has been limited with gates and barbed wire fencing at the entrance on Canal Road. Addition 2 has one dirt access road in the western portion of the Addition. This vehicular dirt access road is for Preserve personnel and utility access to the Escondido Canal. A homestead was also once present on this Addition but burned during one of the fires. Addition 3 has one dirt access road traversing southwest to northeast through the Addition and ends at an unnamed stream. There are also unauthorized foot trails present on this Addition. The Sierra Verde Addition has two dirt vehicular access roads running west to east and southeast to northwest. The west to east access road was originally an access point to Rancho Guejito and to the power distribution line. The southeast to northwest access road originally led to a homestead located within the southeast portion of the Addition. There are also numerous unauthorized foot trails and off-road vehicular paths on this Addition. The Chabad Addition is the only Addition where no unauthorized trails (neither foot nor vehicular) were observed.



SOURCE: ESRI, 2019; SanGIS, 2019.

Figure 5
Hydrology



SOURCE: ESRI, 2019; SanGIS, 2019.

Figure 6
Fire History

3.0 METHODS

Baseline biological surveys were conducted on the Additions between March 2019 and November 2020. **Table 4** lists the survey dates and personnel who conducted the surveys, and the type of survey conducted. Botanical surveys included vegetation mapping, rare plant surveys, and invasive non-native plant species mapping. Wildlife surveys included butterfly surveys, aquatic surveys, herpetological drift fence surveys, diurnal and nocturnal avian surveys, small mammal trapping, focused Stephens' kangaroo rat (*Dipodomys stephensi*; SKR) visual surveys and live-trapping, passive and active acoustical bat surveys, and medium and large mammal remote camera surveys.

Table 4. Survey Type, Dates, Number, Personnel, and Survey Conditions

Survey Date	Survey Number	Personnel	Conditions[1]
Reconnaissance Site Visit			
February 27, 2019	Initial Site Visit	Paige Anderson	NA
Botanical Surveys			
March 25 through March 28, 2019	1 – Vegetation Mapping	Douglas Gordon-Blackwood, Cailin Lyons, Alanna Sullivan, Adrienne Lee	NA
May 13 through May 17, 2019	2 – Rare/Invasive Non-Native Plants	Douglas Gordon-Blackwood, Paige Anderson, Alanna Sullivan, Lisa Maier	NA
Butterfly Surveys			
May 14, 2019	1a	Barbra Calantas	Start: 76°F, wind 0 mph, 0% CC, Visibility: good End: 81°F, wind: 3 mph 0% CC, Visibility: good
May 24, 2019	1b	Alanna Sullivan, Lisa Maier	Start: 68°F, wind 0 mph, 0% CC, Visibility: good End: 77°F, wind: 3 mph 0% CC, Visibility: good
May 28, 2019	1c	Barbra Calantas, Lisa Maier	Start: 61°F, wind 1 mph, 0% CC, Visibility: good End: 70°F, wind: 4 mph 0% CC, Visibility: good
Herpetofauna Array Surveys			
April 8 through April 12, 2019	1a	Paige Anderson, Kristin Wanner, Kris Alberts*	NA
April 15 through April 19, 2019	1b	Cailin Lyons, Julie Stout, Kris Alberts*	NA
May 6 through May 10, 2019	2	Karl Fairchild, Kris Alberts*	NA

Survey Date	Survey Number	Personnel	Conditions[1]
June 4 through June 6, 2019	3	Paige Anderson, Cailin Lyons, Kris Alberts*	NA
June 24, 25, 28, 2019	4	Cailin Lyons, Adrienne Lee, Kris Alberts*	NA
Avian Nocturnal and Diurnal Surveys			
March 5, 2019	1a	Jaclyn Catino-Davenport, Adrienne Lee	Start: 37°F, wind 1 mph, 50% CC, Visibility: good End: 49°F, wind: 3 mph 0% CC, Visibility: good
March 11, 2019	1b	Jaclyn Catino-Davenport, Adrienne Lee	Start: 38°F, wind 3 mph, 0% CC, Visibility: good End: 41°F, wind: 0 mph 30% CC, Visibility: good
March 15, 2019	1c	Jaclyn Catino-Davenport, Adrienne Lee	Start: 46°F, wind 6 mph, 0% CC, Visibility: good End: 57°F, wind: 13 mph 0% CC, Visibility: good
March 18, 2019	1d	Jaclyn Catino-Davenport, Adrienne Lee	Start: 44°F, wind 0 mph, 0% CC, Visibility: good End: 45°F, wind: 6 mph 0% CC, Visibility: good
May 6, 2019	2a	Jaclyn Catino-Davenport, Lisa Maier	Start: 55°F, wind 2.5 mph, 100% CC, Visibility: good End: 53°F, wind: 8 mph 100% CC, Visibility: good
May 7, 2019	2b	Jaclyn Catino-Davenport, Lisa Maier	Start: 50°F, wind 0 mph, 100% CC, Visibility: fair End: 52°F, wind: 1.5 mph 100% CC, Visibility: fair
May 28, 2019	2c	Robert Sweet, Adrienne Lee	Start: 50°F, wind 0 mph, 30% CC, Visibility: good End: 68°F, wind: 2 mph 0% CC, Visibility: good
May 29, 2019	2d	Robert Sweet, Adrienne Lee	Start: 45°F, wind 1 mph, 40% CC, Visibility: good End: 70°F, wind: 3 mph 0% CC, Visibility: good
July 8, 2019	3a	Jaclyn Catino-Davenport, Adrienne Lee	Start: 58°F, wind 1 mph, 100% CC, Visibility: good End: 58°F, wind: 3 mph 100% CC, Visibility: good
July 9, 2019	3b	Jaclyn Catino-Davenport, Annakaren Larriva	Start: 58°F, wind 1 mph, 100% CC, Visibility: good End: 56°F, wind: 4 mph 0% CC, Visibility: good
July 10, 2019	3c	Jaclyn Catino-Davenport, Adrienne Lee	Start: 58°F, wind 1 mph, 0% CC, Visibility: good End: 82°F, wind: 3 mph 0% CC, Visibility: good
July 11, 2019	3d	Jaclyn Catino-Davenport, Adrienne Lee	Start: 64°F, wind 0 mph, 0% CC, Visibility: good End: 71°F, wind: 3 mph 0% CC, Visibility: good
September 25, 2019	4a	Haley Double*	Start: 68°F, wind 1 mph, 10% CC, Visibility: good End: 74°F, wind: 1 mph 30% CC, Visibility: good
September 26, 2019	4b	Haley Double*	Start: 60°F, wind 1 mph, 100% CC, Visibility: good End: 62°F, wind: 1 mph 100% CC, Visibility: fair
September 27, 2019	4c	Haley Double*	Start: 59°F, wind 0 mph, 100% CC, Visibility: fair End: 65°F, wind: 1 mph 95% CC, Visibility: good
October 4, 2019	4d	Tawni Gotbaum* Andy Steyers*	Start: 54°F, wind 1 mph, 0% CC, Visibility: good End: 53°F, wind: 1 mph 0% CC, Visibility: good

Survey Date	Survey Number	Personnel	Conditions[1]
Small Mammal Trapping			
May 13 through May 17, 2019 and May 20 through May 24, 2019	1	Karla Flores, Karl Fairchild	NA
Focused Stephens' Kangaroo Rat Surveys (Visual Survey and Live-Trapping)			
November 2 through November 4, 2020	1	Steven Chen*, Karla Flores	NA
Wildlife Cameras[2]			
March 5 through April 12, 2019	1	Paige Anderson, Alanna Sullivan, Julie Stout, Adrienne Lee, Jaclyn Catino-Davenport	NA
May 14 through June 16, 2019	2	Paige Anderson, Alanna Sullivan, Jaclyn Catino-Davenport, Adrienne Lee	NA
July 23 through August 23, 2019	3	Alanna Sullivan, Annakaren Larriva	NA
August 24 through September 24, 2019	4	Haley Double*, Tawni Gotbaum* Andy Steyers*	NA
Bats – Passive Surveys			
March 19 through March 26, 2019	1a	Julie Stout, Adrienne Lee	NA
March 26 through April 4, 2019	1b	Julie Stout, Adrienne Lee	NA
April 4 through April 11, 2019	1c	Julie Stout, Adrienne Lee	NA
June 4 through June 11, 2019	2a	Julie Stout, Lisa Maier	NA
June 11 through June 18, 2019	2b	Julie Stout, Lisa Maier	NA
July 2 through July 10, 2019	2c	Julie Stout, Adrienne Lee	NA
Bats – Active Survey			
March 19, 2019	1a	Julie Stout, Adrienne Lee	Start: 60°F, wind 0-2 mph, 0% CC, Visibility: good End: 50°F, wind: 0-2 mph 0% CC, Visibility: good
March 26, 2019	1b	Julie Stout, Adrienne Lee	Start: 69°F, wind 3 mph, 0% CC, Visibility: good End: 52°F, wind: 3 mph 0% CC, Visibility: good
April 4, 2019	1c	Julie Stout, Adrienne Lee	Start: 59°F, wind 0 mph, 60% CC, Visibility: good End: 54°F, wind: 0 mph 60% CC, Visibility: good

Survey Date	Survey Number	Personnel	Conditions[1]
June 4, 2019	2a	Julie Stout, Lisa Maier	Start: 73°F, wind 9 mph, 0% CC, Visibility: good End: 58°F, wind: 0 mph 0% CC, Visibility: good
June 11, 2019	2b	Julie Stout, Lisa Maier	Start: 91°F, wind 7 mph, 0% CC, Visibility: good End: 73°F, wind: 0 mph 0% CC, Visibility: good
July 2, 2019	2c	Julie Stout, Adrienne Lee	Start: 80°F, wind 7 mph, 0% CC, Visibility: good End: 66°F, wind: 3 mph 0% CC, Visibility: good

[1] NA = not applicable due to the survey spanning multiple days and multiple weather conditions
[2] Wildlife cameras were deployed on multiple days per survey number due to number of cameras and distance between camera locations. Survey date ranges consist of earliest camera deployment date and latest camera collection date; however, all cameras were deployed for a month at a time.
°F = degrees Fahrenheit; mph = miles per hour; CC = cloud cover
* = Blackhawk Environmental personnel

A review of state and federal databases for existing biological resource information for the Additions was conducted to provide baseline information regarding special-status biological resources potentially occurring on the Additions and in the surrounding area. Sources reviewed and used include the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2019a); California Natural Diversity Database (CNDDB) (CDFW 2019a); County of San Diego SanBIOS Database (SanBIOS) (County of San Diego 2019); and the U.S. Fish and Wildlife Service (USFWS) Environmental Conservation Online System (USFWS 2019). For all four databases, a search of a 1-mile radius around the Additions was conducted to determine if there were nearby known occurrences of special-status species (CDFW 2019a).

For purposes of this Baseline Biodiversity Report, species are considered special-status species if they meet at least one of the following criteria:

- Listed or proposed for listing (including candidate species[1]) under the federal Endangered Species Act (FESA) or California Endangered Species Act (CESA)
- California Department of Fish and Wildlife (CDFW) Species of Special Concern (CDFW 2019b)
- CDFW fully protected species (CDFW 2019b)
- CDFW watch list species (CDFW 2019b)

[1] Candidate species are those petitioned species that are actively being considered for listing under FESA, as well as those species for which the U.S. Fish and Wildlife Service has initiated a FESA status review, as announced in the *Federal Register*. Proposed species are those candidate species that were found to warrant listing and have been officially proposed for listing in the *Federal Register*. Under the California Endangered Species Act, candidate species are those species currently petitioned for state-listing status.

- Listed by CNPS as California Rare Plant Ranks (CRPRs) 1A (presumed extinct in California and rare/extinct elsewhere), 1B (rare, threatened, and endangered in California and elsewhere), 2A (presumed extinct in California, but more common elsewhere), 2B (rare, threatened, or endangered in California, but more common elsewhere), 3 (review list: plants about which more information is needed), and 4 (watch list: plants of limited distribution) (CNPS 2019b)
- Species considered sensitive by the County (County of San Diego 2010)
- Any species covered by the Draft North County MSCP (County of San Diego 2017)

3.1 VEGETATION COMMUNITIES/HABITAT

3.1.1 Vegetation Communities Mapping

Vegetation communities and land cover were delineated in the field by ESA biologists from March 25 through March 28, 2019. Mapping of the Additions was conducted by using reference points and locations on high-resolution aerial maps to delineate on the ArcGIS Collector (Collector app) mobile application. Mapping of the Additions included a 100-foot buffer pursuant to County guidelines (County of San Diego 2010). Surveys were conducted throughout the Additions, with all roads and trails visited, high points visited for panoramic views, and a cross-country traverse across the major parts of the Additions. Vegetation classification during field mapping was based on the Vegetation Classification Manual for Western San Diego County (VCM) (Sproul et al. 2011) and then cross-walked to the Holland (1986) classification system modified by Oberbauer (Oberbauer et al. 2008). Acreage calculations were generated using ArcGIS. Vegetation classifications described in Section 4.1 of this report follow the VCM.

3.2 PLANTS

3.2.1 Special-Status/Rare Plant Surveys

ESA botanists conducted comprehensive sensitive/rare plant surveys on the Additions on May 2 and 3 and June 6 through 8, 2019. Rare plant surveys were conducted in accordance with the County Guidelines Report Format and Content Requirements for Biological Resources (County of San Diego 2010); Guidelines for Conducting and Reporting Botanical Inventories of Federally Listed, Proposed, and Candidate Plants (USFWS 1996); Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities (CDFG 2009); and CNPS Botanical Survey Guidelines (CNPS 2001).

All accessible areas with a potential to support rare plant species were surveyed on foot. Surveys were floristic in nature; therefore, all plant species detected were recorded to inventory plant species on the Additions. For each rare plant species detected, attributes of relative abundance, general distribution, and global positioning system (GPS) coordinates were recorded within the Additions.

3.2.2 Invasive Non-Native Plant Species Mapping

Invasive non-native plant surveys were conducted by ESA biologists on May 13 through May 17, 2019. Special attention was given to the 29 invasive non-native plant species identified as priorities for near-term management and monitoring by the San Diego Environmental Mitigation Program Working Group in their Management Priorities for Invasive Non-Native Plants (Conservation Biology Institute 2012). When encountered, these species' locations were mapped with GPS sub-meter-accuracy and estimates of population size were recorded using the Collector app. Species of greatest concern include those rated by the California Invasive Plant Council (Cal-IPC) in the Invasive Plant Inventory Database (Cal-IPC 2019), existing on the Federal Invasive and Noxious Plant List (USDA Natural Resources Conservation Service 2014), or occurring on the California Noxious Weeds List (California Department of Food and Agriculture 2019). Species that were considered the most invasive or were represented in a few locations were of greatest priority for mapping individual locations. No Management Level 1 or 2 species were identified on the Additions (presence of these species would have required ESA to contact the County Project Manager within 7 days of detection to allow the County to treat these species promptly).

3.3 WILDLIFE

3.3.1 Invertebrates

General butterfly surveys were conducted on May 14, 24, and 28, 2019, to document the diversity of butterfly species within the Additions. The survey was conducted by ESA biologists slowly walking meandering transects across the Additions during the warmest and sunniest period of the day, from late morning to mid-afternoon, when butterfly activity was at its peak, following the Checklist Method (Royer et al. 1998). Areas with flowering plants or potential butterfly nectar sources were checked and existing trails were walked as they provided easy access through vegetation and butterflies often rest on bare ground. Binoculars were used to aid in butterfly identification. A habitat assessment for special-status butterfly species was conducted concurrently with the general butterfly survey. Any incidental observations of butterflies that were made during other biological surveys were recorded. Survey dates, times, personnel, and weather are shown in Table 4.

3.3.2 Herpetofauna

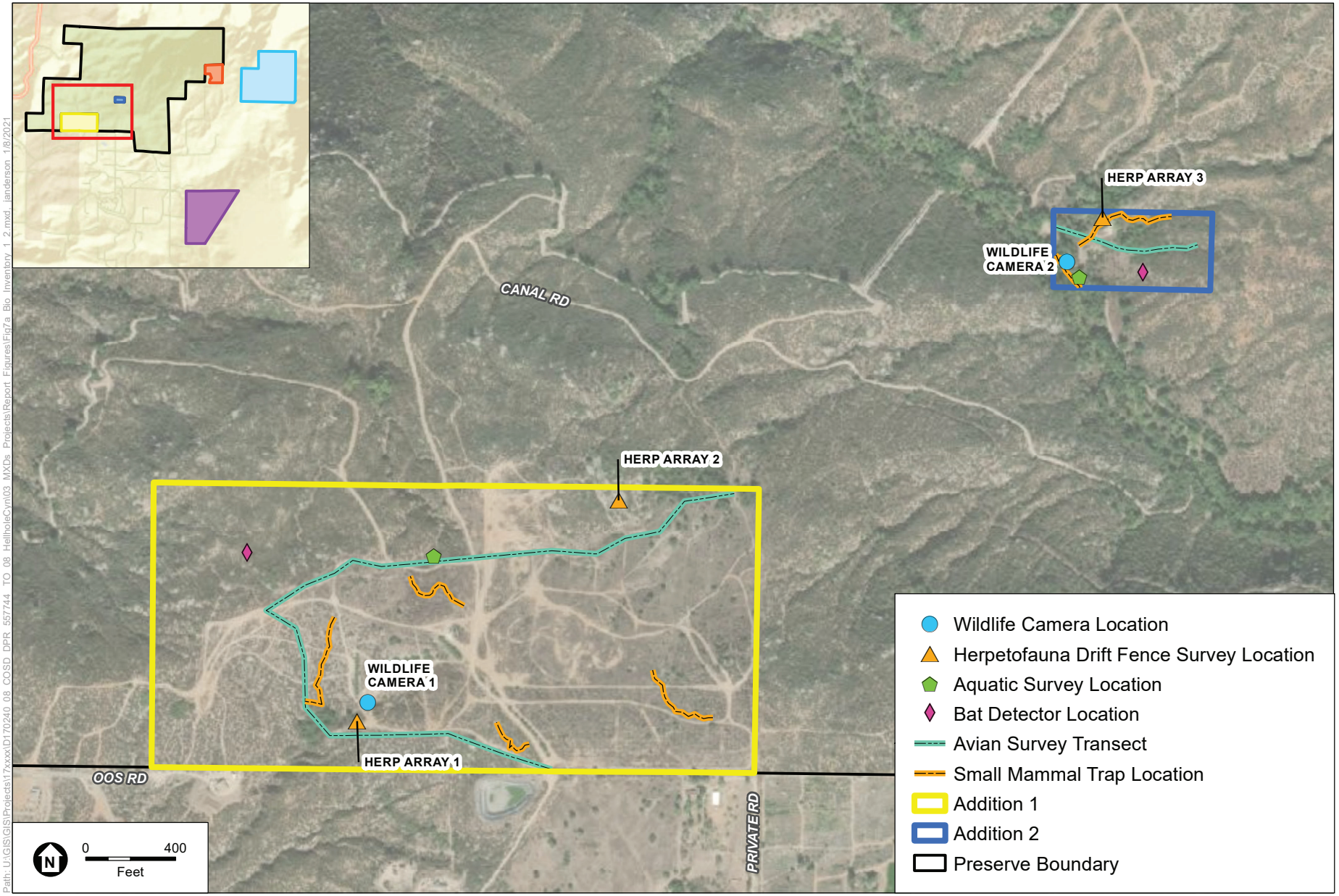
3.3.2.1 Aquatic Surveys

Aquatic surveys were conducted to document the presence of amphibian species within the Additions, specifically within Hell Creek and stock ponds (**Figures 7a** and **7c**). The aquatic survey consisted of a diurnal and a nocturnal survey, both performed on May 6, 2019. The diurnal portion of the survey was conducted by two biologists walking slowly along the creek banks/margins and in adjacent riparian habitat, visually searching for (but not disturbing) eggs, larvae, juveniles, and/or adults during daylight hours. If larvae or individuals were observed in the creek, dip netting was used to identify the larvae or individual to species. Dip nets had a sturdy wooden or aluminum handle with mesh size ranging from 2 to 4 millimeters. The nocturnal portion of the survey was conducted by two biologists walking slowly and carefully on the creek banks between 1 hour after dusk and midnight using strong headlamps or flashlights to visually identify individuals, egg masses, and/or larvae. Biologists would stop periodically and remain still and silent for approximately 15 minutes at appropriate sites to wait for calling amphibians.

3.3.2.2 General Herpetological Surveys

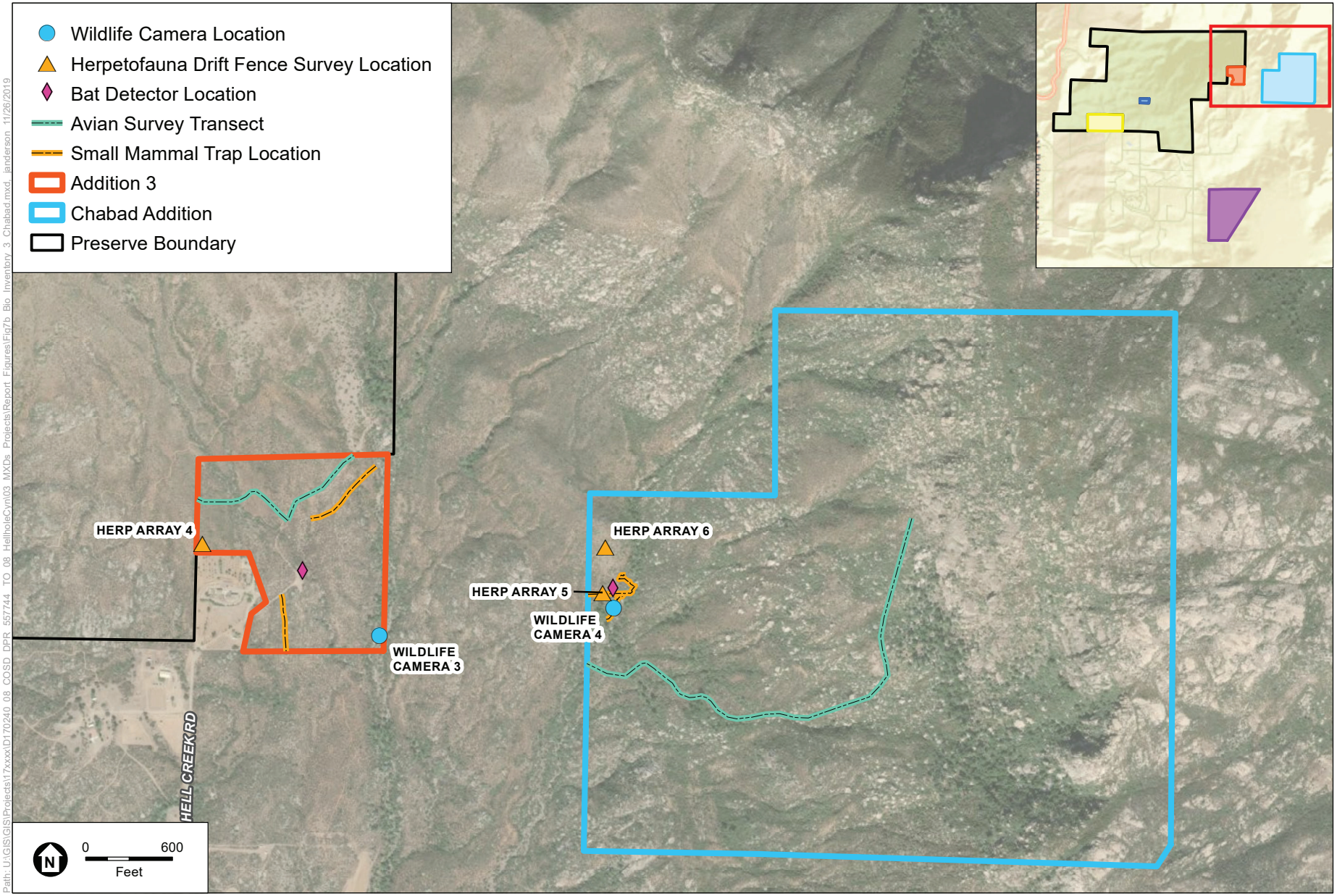
General herpetological surveys were conducted to document the presence of amphibian and reptile species within the Additions. Herpetological surveys were conducted using drift fences with a box funnel trap at each end of the fence (hereafter referred to as drift fence surveys). Biologists conducted a habitat assessment for herpetofauna by reviewing aerial data and vegetation community mapping and by walking the site to determine suitable locations for drift fences based on soil substrate, topography, and vegetative cover. The biologists assessed the Additions for the various herpetofaunal species that might occur, and strategically placed drift fences in representative areas for the various vegetation communities that occur within the Additions to fully capture the diversity of the herpetofauna on-site.

Nine drift fences with box funnel traps were installed on the Additions on April 8 and 15, 2019 (**Figures 7a** through **7c**). Each drift fence was 50 feet long and 1 foot tall (composed of thick, dark-green shade cloth), trenched about 2 inches into the ground and staked in place with one box funnel trap (12 by 8 by 18 inches) at each end. Each box funnel trap had two 28-inch-long drift fence "wings" protruding off the front of each trap to increase the size of the funnel. Box funnel traps capture any species that enter them, including small mammals; therefore, each box funnel trap contained a piece of PVC pipe (generally 1 to 2 inches in diameter by 3 to 4 inches in length) to provide shelter for captured herpetofauna, and pieces of cotton and a small amount of food to provide shelter and food for small mammals. For the drift fence location adjacent to a water source, a small, round ceramic bowl (4.8 by 0.8 inches) filled with water was included in the box funnel trap to ensure amphibians did not desiccate throughout the day. Each box funnel trap was covered with a 2 by 2 foot piece of plywood to protect captured animals from the heat of the sun.



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

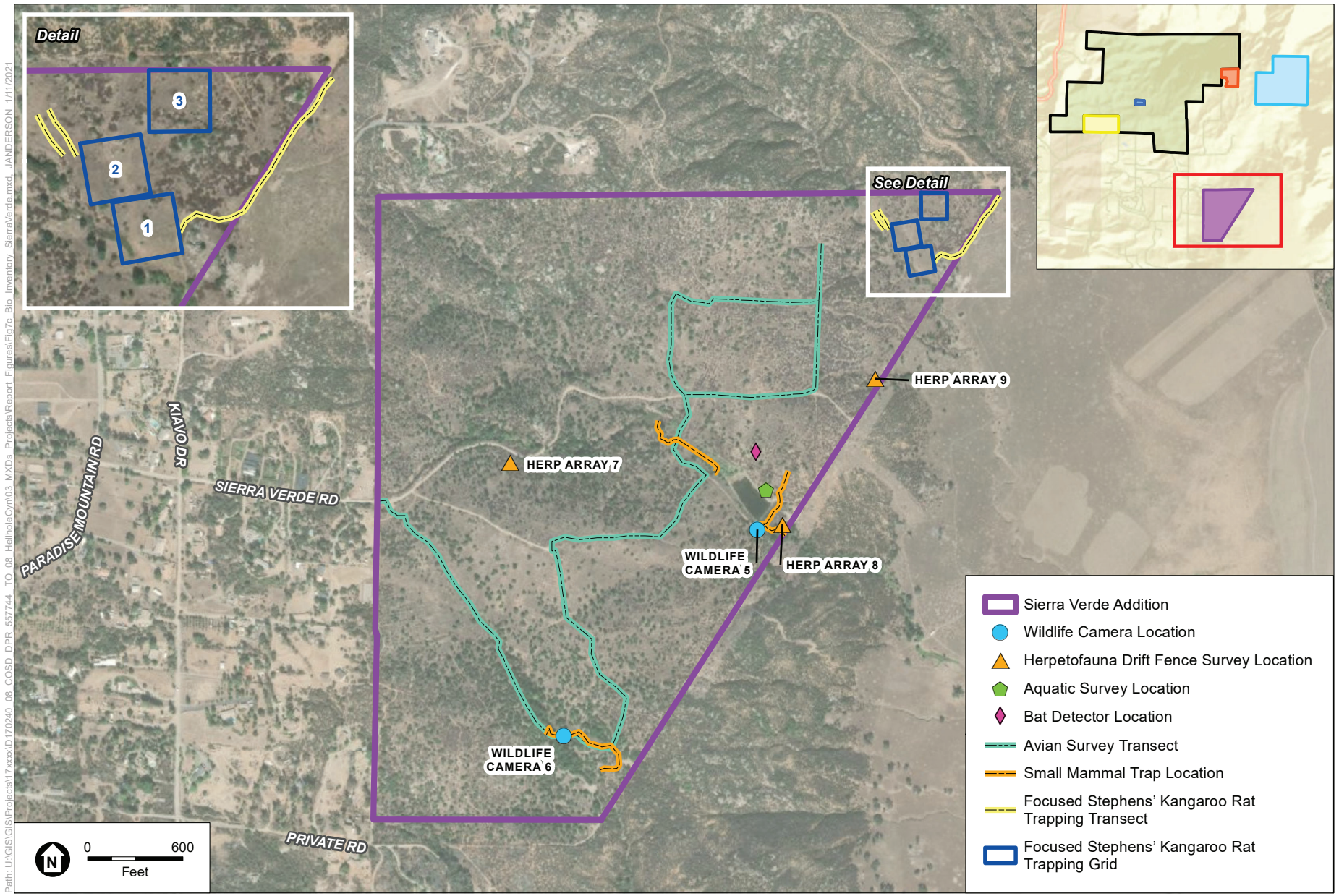
Figure 7a
Biological Inventory Locations
Addition 1 and Addition 2



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

ESA

Figure 7b
Biological Inventory Locations
Addition 3 and Chabad Addition



SOURCE: ESRI, 2020; SanGIS, 2020; ESA, 2020.

ESA

Figure 7c
Biological Inventory Locations
Sierra Verde Addition

Drift fences were monitored for approximately 4 days per month for 4 months (April through June 2019; see Table 4 for specific survey dates). Traps were opened on the first day and checked every morning for four consecutive mornings. When box funnel traps were "opened" on the first day of a trapping session, they were placed at the ends of the drift fence to capture any animals that encountered the fence and followed it into the box funnel traps. All species captured (including small mammal species) were identified to species (if possible) and released unharmed. Any incidental observations of amphibians and reptiles that were made while walking between drift fences and during other biological surveys were also recorded. Drift fences and funnel traps were removed upon survey completion on June 28, 2019. Representative photographs of amphibian and reptile species were taken when possible.

3.3.3 Birds

ESA conducted nocturnal and diurnal avian surveys throughout the Additions to document avian species that nest, winter, or migrate through the Additions. The surveys were conducted by two biologists walking meandering transects through all habitat types on the Additions (Figures 7a through 7c). ESA conducted a total of four 8-hour meandering transect surveys within the Additions. These four surveys were spaced throughout the year (March, May, July, and September/October 2019) to capture data from each season, including spring and early fall migration periods (Table 4).

Nocturnal avian surveys consisted of calling and listening for nocturnal birds in the pre-dawn hours before starting the diurnal surveys. The biologists arrived at the Additions two hours before sunrise and surveyed the Additions by walking dirt trails and listening and looking for various nocturnal species. The biologists periodically stopped and played vocal recordings (via Android phone or similar playback device) of nocturnal species with potential to occur, including common poorwill (*Phalaenoptilus nuttallii*), lesser nighthawk (*Chordeiles acutipennis*), western screech-owl (*Megascops kennicottii*), barn owl (*Tyto alba*), long-eared owl (*Asio otus*), burrowing owl (*Athene cunicularia*), short-eared owl (*Asio flammeus*), and great horned owl (*Bubo virginianus*). The recordings were played at nine locations throughout the Additions, where potentially suitable habitat existed for the various nocturnal species. If a nocturnal species was already heard on the Additions prior to playback, the vocal recording for the species was not played.

Once the sun rose, vocal playback for nocturnal species ceased and the biologists recorded diurnal avian species detected either visually or aurally. Diurnal surveys consisted of walking meandering transects along the dirt trails within the Additions and recording all avian species detected, without playing any vocal recordings. Additionally, the biologists surveyed any canyons, ridges, or areas with good vantage points.

For both nocturnal and diurnal avian surveys, the biologists recorded the avian species, number of individuals, and the GPS location for any special-status avian species detected. Weather conditions, such as temperature, wind, cloud cover, and visibility, were recorded during each survey as well. Incidental observations of avian species that were made during other biological surveys were also recorded.

3.3.4 Mammals

3.3.4.1 Small Mammals

Small mammal trapping was conducted in May 2019 to document the diversity of small mammal species within the Additions. Prior to the start of trapping, biologists conducted a habitat assessment for small mammals by reviewing aerial data and vegetation community mapping and walking the Additions.

Surveys were conducted according to the standard live-trapping protocols established by CDFW. The spring/summer trapping session consisted of a total of eight nights. Nine-inch collapsible Sherman traps with modified trapdoors were strategically set in eight distinct areas that had potential to capture a representative sampling of small mammals within the Additions based on vegetation communities and habitat conditions, such as terrain and soil type. Traps were placed in locations to minimize exposure to direct sunlight, and in locations where small mammals might frequent, such as along rock ledges, in front of woodrat nests, rock outcrops, runs, and burrow entrances. If ants were detected within or adjacent to traps, the traps were adjusted slightly to a location that was free of ants. The specific locations where traps were set are depicted in Figures 7a through 7c.

Each trapping area consisted of at least one meandering transect that contained 30 traps (spaced 5 to 7 meters apart). However, Trapping Area 1 on Addition 1 was in highly disturbed land cover; therefore, trapping intensity was increased to a total of 60 traps. A total of 270 traps were set during spring/summer 2019 surveys to sample the small mammal species at the Additions. Traps were opened and baited with a commercial bird seed mix containing sunflower seeds and millet in the late afternoon hours, and were checked early the following morning before direct sunlight could cause temperatures to rise in the traps and result in possible mortality. When a small mammal was captured in a trap, it was identified to species and then released. All traps were closed in the morning to prevent any wildlife from entering the traps during the heat of the day.

In addition to the above-mentioned trapping, small mammals were captured during drift fence surveys for herpetofauna species. All small mammal species captured during drift fence surveys were identified to species (if possible) and released unharmed.

Focused Stephens' Kangaroo Rat Surveys

A visual survey of a 45-acre area within the northeastern portion of the Sierra Verde Addition where SKR has historically been observed was conducted on November 2, 2020 by permitted biologist Steven Chen (TE-95006A; MOU SC-012551) and ESA biologist Karla Flores (SC-10572). Areas surveyed consisted primarily of non-native grasslands with scattered patches of California buckwheat scrub. Specifically, surveyors searched for SKR activity and habitat such as suitable vegetation, friable soils, burrow clusters, tail drag marks, and dust bath sites. Areas with suitable habitat and with kangaroo rat activity were temporarily marked with a pin flag for subsequent live-trapping.

Following the visual survey, three live-trapping grids and three transect lines were established using 105 Sherman XLK traps (3 inches x 3.75 inches x 12 inches) (Figure 7c). The live-trapping grids consisted of 25 traps arranged in a 5 x 5 orientation with 10-meter spacing between the traps thus creating a 50-meter x 50-meter-squared grid survey plot. Transects 1, 2, and 3 consisted of 5, 5, and 20 traps, respectively. Transect lines were only set up in areas of suitable habitat for opportunistic trapping when a grid could not be established, such as areas along a road or in areas where there was not sufficient habitat to set up a grid. All traps were baited with bird seed and locations were mapped using ArcGIS Collector. Traps were opened near sunset, first trap check occurred at midnight, and final trap check and closure occurred at sunrise. Animals captured were identified to species and when applicable to subspecies level, then released unharmed at their capture location. To differentiate between SKR and the co-occurring Dulzura kangaroo rat (*Dipodomys simulans*; DKR), each kangaroo rat was examined carefully for distinguishing characteristics. Data including species, weight, age (e.g., adult, sub-adult, juvenile), sex (e.g., male or female), reproductive condition (e.g., scrotal, pregnant, lactating, non-reproductive), and ear length (when applicable) were also recorded. Live-trapping efforts ensued for two nights from November 2–4, 2020.

3.3.4.2 Bats

ESA conducted a daytime roosting habitat assessment, emergence surveys and active acoustic monitoring, and passive acoustic surveys. The methodology of each survey type is described below.

Roosting Habitat Assessment

Daytime habitat assessment surveys were conducted on March 19, 26, and April 4, 2019, to assess the presence and value of roosting habitat at appropriate geological formations and habitats, such as rocky outcroppings, caves, and snags, if present on-site. The assessment was conducted prior to

and coinciding with the setup of passive acoustic equipment. During the habitat assessment, two biologists walked throughout the Additions, focusing on searching rocky areas for crevices or caves, trees with cavities or sloughing bark, and the presence of riparian or open water habitats, which are of high foraging value to certain bats. If potential roost sites were identified during the habitat assessment survey, roost sites were visually inspected for guano, staining, and other signs of bat presence.

Emergence Surveys and Active Acoustic Monitoring

Emergence surveys and active acoustic monitoring were conducted over six nights including three nights in spring (March–April 2019) and three nights in summer (June–July 2019) to capture the bat migration period and summer maternity season. Emergence surveys and active acoustic monitoring were conducted by a biologist using a high-beam flashlight and handheld Echo Meter Touch acoustic detector. Surveys and monitoring were conducted approximately 30 minutes before sunset to an hour after sunset in key habitats identified during the daytime habitat assessment. Monitoring was conducted on foot from existing roads and trails where possible. During the surveys, biologists noted bat behavior and any observations of bats emerging from roost sites (if present).

Passive Acoustic Surveys

Five Wildlife Acoustics Inc. SM4 bat echolocation detectors were passively deployed in spring (March 19 through April 11, 2019) to capture migratory and year-round resident species, and in summer (June 4 through 18, 2019 and July 2 through 10, 2019) to document species during the summer/maternity season. The locations of the five detectors were selected to maximize the diversity of bat species detected by geographically separating the detectors and placing them near different habitat areas, and to maximize accessibility by using existing trails while limiting the potential for vandalism by distancing the detectors from direct trail access (Figures 7a through 7c). These locations were used for both spring and summer surveys. The detectors had SMM-U2 microphones mounted approximately 10 to 12 feet above ground level. The Addition 1 detector was placed within the Chamise – Mission Manzanita Association on a northwest-facing hill in the western portion of the Addition. The Addition 2 detector was placed on an open slope near the old homestead near the edge of Southern Coast Live Oak Riparian Forest habitat along Hell Creek. The Addition 3 detector was placed within the Chamise – Mission Manzanita – Scrub Oak Association on an east-facing hill in the center of the Addition. The Chabad Addition detector was placed within the Chamise – Mission Manzanita – Hoaryleaf Ceanothus Association on a southeast-facing hill in the western portion of the Addition. The Sierra Verde Addition detector was placed within the Laurel Sumac Alliance near the north side of the pond in the eastern portion

of the Addition (Figures 7a through 7c). Representative photographs were taken of bat detectors and are shown in **Appendix E**.

The detectors were programmed to turn on and off 30 minutes before solar sunset and after solar sunrise, and default settings were modified to trigger recording at 5 kilohertz. Bat calls were automatically recorded by the units during the monitoring period. The bat detector equipment was removed at the end of each passive survey period.

The recorded bat calls were processed using Sonobat Version 4.4.1, using the region and subregion classifiers for southwest California [c20190609]. Manual vetting of automatically identified calls was performed by manually reviewing subsets of calls for each species. Manual vetting consisted of reviewing individual calls and comparing them to a reference library of bat calls. Where initial manual review indicated misclassifications of call groups (e.g., groupings by minimum frequency, species, season, or time of night), these groups were manually reviewed and identified to most likely species. Many bat species have overlapping call repertoires; therefore, not all bat calls can be conclusively identified to a species. Identifications for inconclusive calls were deferred to the most likely species based on a combination of automatic species identification, survey-specific trends noted during manual call review, and species expected to occur based on known seasonal and geographic distribution. Relative activity indexes were then calculated for each species based on the number of call files recorded per species per night multiplied by 10.

3.3.4.3 Medium to Large Mammals

Remote wildlife cameras were used to document the diversity of medium and large mammals that occur or move through the Additions. Six Bushnell 20MP Trophy Cam Low Glow Trail Camera HD Aggressor cameras were set in areas that were likely being utilized by wildlife (i.e., signs of scat and/or tracks present) (Figures 7a through 7c). All cameras were positioned approximately 2 to 3 feet off the ground to best record medium- to large-sized wildlife.

The cameras were set to have “low sensitivity” to movement such that anything from a small bird to large mule deer would likely trigger the cameras to start taking photographs but vegetation moving in the wind would not. Most medium- to large-sized objects that moved within the camera’s field of view would trigger the camera to take photos. Once triggered, the wildlife cameras were set to take a series of three photographs, 1 second apart. The cameras were set to continue to take a series of three photographs until movement in front of the camera was no longer detected as a result of the animal leaving the field of view (i.e., no time would elapse between triggers). To prevent vandalism and theft, each camera was locked inside specialized security boxes and the words “wildlife movement study” were written on the boxes. All six wildlife cameras were attached to trees. The cameras were oriented away from the sun (to the extent

practical) and were positioned to take photos of wildlife walking along the creek or a trail, headed either toward or away from the wildlife camera. Representative photographs were taken of all six wildlife cameras locations (Appendix E).

All six wildlife cameras were turned on and run for four survey periods from March 5 through April 12; from May 14 through June 16; from July 23 through August 23; and from August 24 through September 24, 2019 (Table 4). Wildlife cameras were deployed on multiple days per survey period due to number of cameras and distance between camera locations. Survey date ranges consist of earliest camera deployment date and latest camera collection date; however, all cameras were deployed for a month at a time. The photographs were then reviewed and categorized based on the species detected. It was noted that the Addition 3 and Sierra Verde 1 wildlife cameras malfunctioned and captured only one photograph once triggered during survey periods 3 and 4 (July 23 through September 24, 2019). It was also noted that the Sierra Verde 2 wildlife camera malfunctioned and captured 10-second videos once triggered during survey periods 3 and 4 (July 23 through September 24, 2019). All cameras were removed on October 4, 2019.

4.0 RESULTS AND DISCUSSION

4.1 VEGETATION COMMUNITIES/HABITAT

Vegetation community classification was based on two separate systems: the VCM (Sproul et al. 2011) and the Holland (1986) (as modified by Oberbauer et al. 2008) classification system. Field mapping was conducted in spring 2019 according to the VCM and then cross-walked to the Holland/Oberbauer classification system. Final Hellhole Canyon Preserve Additions habitat mapping and acreage calculations were updated to be consistent with the 2021 Targeted Monitoring Plan habitat mapping effort (ESA 2021). Acreages of the vegetation communities on the Additions are listed in **Table 5,** *Vegetation Communities/Land Cover Type Acreages for Hellhole Canyon Preserve Additions*. Vegetation communities according to the VCM and Holland/Oberbauer classification system are shown in **Figures 8a** through **8f**, respectively. Representative photographs of vegetation found on the Additions during surveys are located in Appendix E.

The predominant vegetation community within the Additions is *Adenostoma fasciculatum – Xylococcus bicolor – Ceanothus crassifolius* (Chamise – Mission Manzanita – Hoaryleaf Ceanothus) Association. It composes more than 28 percent of the combined acreages of the Additions with more than 190 acres. Other vegetation communities include: *Quercus agrifolia* (Coast Live Oak) Alliance, *Quercus agrifolia/Quercus (berberidifolia, x acutidens)* (Coast Live Oak/Scrub Oak) Association, *Quercus agrifolia/Toxicodendron diversilobum/Grass* (Coast Live Oak/Poison Oak/Grass) Association, *Salix gooddingii* (Goodding's Black Willow) Association, *Adenostoma fasciculatum – (Eriogonum fasciculatum, Artemisia californica, Salvia mellifera)* (Chamise – [California Buckwheat, California Sagebrush, Black Sage]) Association, *Adenostoma fasciculatum – Ceanothus crassifolius* (Chamise – Hoaryleaf Ceanothus) Association, *Adenostoma fasciculatum – Ceanothus tomentosus* (Chamise – Ramona Lilac) Association, *Adenostoma fasciculatum – Xylococcus bicolor* (Chamise – Mission Manzanita) Association, *Adenostoma fasciculatum – Xylococcus bicolor – Ceanothus tomentosus* (Chamise – Mission Manzanita – Ramona Lilac) Association, *Adenostoma fasciculatum – Xylococcus bicolor – Quercus (berberidifolia, x acutidens)* (Chamise – Mission Manzanita – Scrub Oak) Association, *Artemisia californica – Eriogonum fasciculatum – Malosma laurina* (California Sagebrush – California Buckwheat – Laurel Sumac) Association, *Baccharis salicifolia* (Mulefat) Association, *Ceanothus leucodermis* (Chaparral Whitethorn) Association, *Eriogonum fasciculatum* (California Buckwheat) Association, *Acmispon glaber (Lotus scoparius)* (Coastal Deerweed) Association, *Malosma laurina* (Laurel Sumac) Alliance, *Quercus (berberidifolia, x acutidens) – Ceanothus leucodermis* (Scrub Oak – Chaparral Whitethorn) Association, *Quercus (berberidifolia, x acutidens)* (Inland Scrub Oak) Association, *Quercus (berberidifolia, x acutidens) – Adenostoma fasciculatum* (Scrub Oak – Chamise) Association, *Bromus diandrus* (Ripgut Brome) Semi-Natural Stand Type, *Bromus rubens* (Red Brome) Semi-Natural Stand Type, Mediterranean California Naturalized Annual and Perennial Grassland Semi-

Natural Stands, , Ramona LilacRamona LilacNon-Native Woodland land covers, open water land covers, and disturbed/developed land covers.

Table 5. Vegetation Communities/Land Cover Type Acreages for Hellhole Canyon Preserve Additions

Holland/Oberbauer	San Diego Vegetation Classification Manual		Additions Acreage[1]
Herbaceous	***Alliance Level***	***Association Level***	
42200 Non-Native Grassland	*Bromus (diandrus, hordeaceus) – Brachypodium distachyon* Semi-Natural Stands	5.8.2 *Bromus diandrus* Semi-Natural Stand Type; Ripgut Brome Semi-Natural Stand Type	0.44
	Bromus rubens – Schismus (arabicus, barbatus) Semi Natural Stands	5.9.1 *Bromus rubens* Semi-Natural Stand Type; Red Brome Semi-Natural Stand Type	2.95
	Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands (5.21)	N/A	5.80
Scrub			
32000 Coastal Scrub	*Malosma laurina* Alliance (4.35)	N/A	11.11
32500 Disturbed Diegan Coastal Sage Scrub	*Acmispon glaber* Alliance	4.32.1 *Acmispon glaber (Lotus scoparius)* Association; Coastal Deerweed Association	0.12
32500 Diegan Coastal Sage Scrub	*Artemisia californica – Eriogonum fasciculatum* Alliance	4.7.1 *Artemisia californica – Eriogonum fasciculatum – Malosma laurina* Association; California Sagebrush – California Buckwheat – Laurel Sumac Association	0.33
32800 Disturbed Flat-Topped Buckwheat	*Adenostoma fasciculatum – Xylococcus bicolor* Alliance	4.2.2 *Adenostoma fasciculatum – Xylococcus bicolor – Ceanothus crassifolius* Association; Chamise – Mission Manzanita – Hoaryleaf Ceanothus Association	2.84
	Eriogonum fasciculatum Alliance	4.23.1 *Eriogonum fasciculatum* Association; California Buckwheat Association	23.65
	Acmispon glaber Alliance	4.32.1 *Acmispon glaber (Lotus scoparius)* Association; Coastal Deerweed Association	1.29
32800 Flat-Topped Buckwheat	*Eriogonum fasciculatum* Alliance	4.23.1 *Eriogonum fasciculatum* Association; California Buckwheat Association	42.66
	Acmispon glaber Alliance	4.32.1 *Acmispon glaber (Lotus scoparius)* Association; Coastal Deerweed Association	2.19

Holland/Oberbauer	San Diego Vegetation Classification Manual		Additions Acreage[1]
37120 Southern Mixed Chaparral	*Adenostoma fasciculatum* Alliance	4.1.2 *Adenostoma fasciculatum – (Eriogonum fasciculatum, Artemisia californica, Salvia mellifera)* Association; Chamise – (California Buckwheat, California Sagebrush, Black Sage) Association	2.07
		4.1.3 *Adenostoma fasciculatum – Ceanothus crassifolius* Association; Chamise – Hoaryleaf Ceanothus Association	2.81
		4.1.4 *Adenostoma fasciculatum – Ceanothus tomentosus* Association; Chamise – Ramona Lilac Association	1.04
	Adenostoma fasciculatum – Xylococcus bicolor Alliance	4.2.2 *Adenostoma fasciculatum – Xylococcus bicolor – Ceanothus crassifolius* Association; Chamise – Mission Manzanita – Hoaryleaf Ceanothus Association	142.30
		4.2.3 *Adenostoma fasciculatum – Xylococcus bicolor – Ceanothus tomentosus* Association; Chamise – Mission Manzanita – Ramona Lilac Association	17.10
		4.2.6 *Adenostoma fasciculatum – Xylococcus bicolor – Quercus (berberidifolia, x acutidens)* Association; Chamise – Mission Manzanita – Scrub Oak Association	2.83
	Ceanothus leucodermis Alliance	4.16.1 *Ceanothus leucodermis* Association; Chaparral Whitethorn Association	16.95
	Malosma laurina Alliance (4.35)	N/A	80.97
	Quercus (*berberidifolia,* x *acutidens*) – *Adenostoma fasciculatum* Alliance	4.38.1 *Quercus* (*berberidifolia, x acutidens*) – *Adenostoma fasciculatum* Association; Scrub Oak – Chamise Association	1.45
	Quercus agrifolia Alliance (3.6)	N/A	9.27
37200 Chamise Chaparral	*Adenostoma fasciculatum* Alliance	4.1.2 *Adenostoma fasciculatum – (Eriogonum fasciculatum, Artemisia californica, Saliva mellifera)* Association; Chamise – (California Buckwheat, California Sagebrush, Black Sage) Association	18.14
	Adenostoma fasciculatum – Xylococcus bicolor Alliance	4.2.1 *Adenostoma fasciculatum – Xylococcus bicolor*; Chamise – Mission Manzanita Association	8.32
		4.2.2 *Adenostoma fasciculatum – Xylococcus bicolor – Ceanothus crassifolius* Association; Chamise – Mission Manzanita – Hoaryleaf Ceanothus Association	20.98
		4.2.6 *Adenostoma fasciculatum – Xylococcus bicolor – Quercus (berberidifolia, x acutidens)*;	4.85

Holland/Oberbauer	San Diego Vegetation Classification Manual		Additions Acreage[1]
		Chamise – Mission Manzanita – Scrub Oak Association	
37820 *Ceanothus crassifolius* Chaparral	*Adenostoma fasciculatum* Alliance	4.1.3 *Adenostoma fasciculatum – Ceanothus crassifolius* Association; Chamise – Hoaryleaf Ceanothus Association	1.37
37900 Scrub Oak Chaparral	*Quercus* (*berberidifolia, x acutidens*) Alliance	4.37.3 *Quercus* (*berberidifolia,* x *acutidens*) – *Ceanothus leucodermis* Association; Scrub Oak – Chaparral Whitethorn Association	104.79
	Quercus (*berberidifolia,* x *acutidens*) – *Adenostoma fasciculatum* Alliance	4.38.1 *Quercus* (*berberidifolia,* x *acutidens*) – *Adenostoma fasciculatum* Association; Scrub Oak – Chamise Association	0.87
Riparian			
63310 Mulefat Scrub	*Baccharis salicifolia* Alliance	4.11.1 *Baccharis salicifolia* Association; Mule Fat Association	0.20
Woodland			
61310 Southern Coast Live Oak Riparian Forest	*Quercus agrifolia* Alliance (3.6)	N/A	0.30
		3.6.2 *Quercus agrifolia/Quercus (berberidifolia,* x *acutidens)* Association; Coast Live Oak/Scrub Oak Association	2.61
	Salix gooddingii Alliance	3.8.1 *Salix gooddingii* Association; Goodding's Black Willow Association	0.39
71161 Disturbed Open Coast Live Oak Woodland	*Quercus agrifolia* Alliance (3.6)	N/A	23.21
71161 Open Coast Live Oak Woodland	*Quercus agrifolia* Alliance (3.6)	N/A	68.61
		3.6.4 *Quercus agrifolia/Toxicodendron diversilobum*/Grass Association; Coast Live Oak/Poison Oak/Grass Association	3.60
	Adenostoma fasciculatum – Xylococcus bicolor Alliance	4.2.2 *Adenostoma fasciculatum – Xylococcus bicolor – Ceanothus crassifolius* Association	24.11
79000 Non-Native Woodland	N/A	N/A	0.90
Other			
64100 Open Water	N/A	N/A	1.70
11300 Disturbed/Developed	N/A	N/A	15.38
TOTAL			**670.51**

[1] Vegetation acreage may not sum due to rounding.

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- Addition 1
- Addition 2
- Preserve Boundary
- 100-ft Buffer

Vegetation Communities/Land Cover Types

Herbaceous

- 5.8.2 Ripgut Brome Semi-Natural Stand Type
- 5.9.1 Red Brome Semi-Natural Stand Type

Scrub

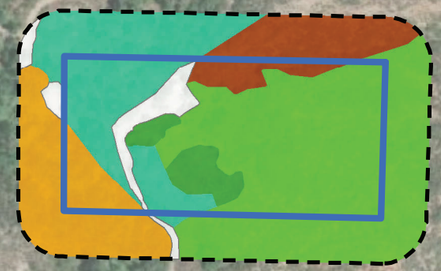
- 3.8.1 Goodding's Black Willow Association
- 4.1.2 Chamise – (California Buckwheat, California Sagebrush, Black Sage) Association
- 4.1.3 Chamise – Hoaryleaf Ceanothus Association
- 4.1.4 Chamise – Ramona Lilac Association
- 4.2.1 Chamise – Mission Manzanita Association
- 4.2.2 Chamise – Mission Manzanita – Hoaryleaf Ceanothus Association
- 4.2.3 Chamise – Mission Manzanita – Ramona Lilac Association
- 4.2.6 Chamise – Mission Manzanita – Scrub Oak Association
- 4.23.1 California Buckwheat Association
- 4.32.1 Deerweed Association
- 4.7.1 California Sagebrush – California Buckwheat – Laurel Sumac Association

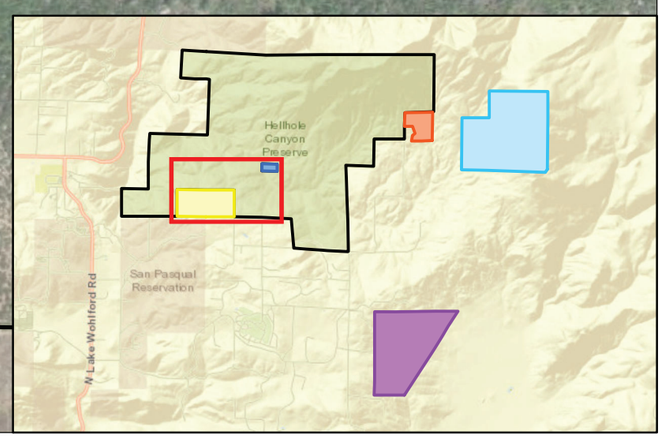
Woodland

- 3.6.4 Coast Live Oak/Poison Oak/Grass Association

Other

- Disturbed/Developed
- Non-Native Woodland
- Open Water

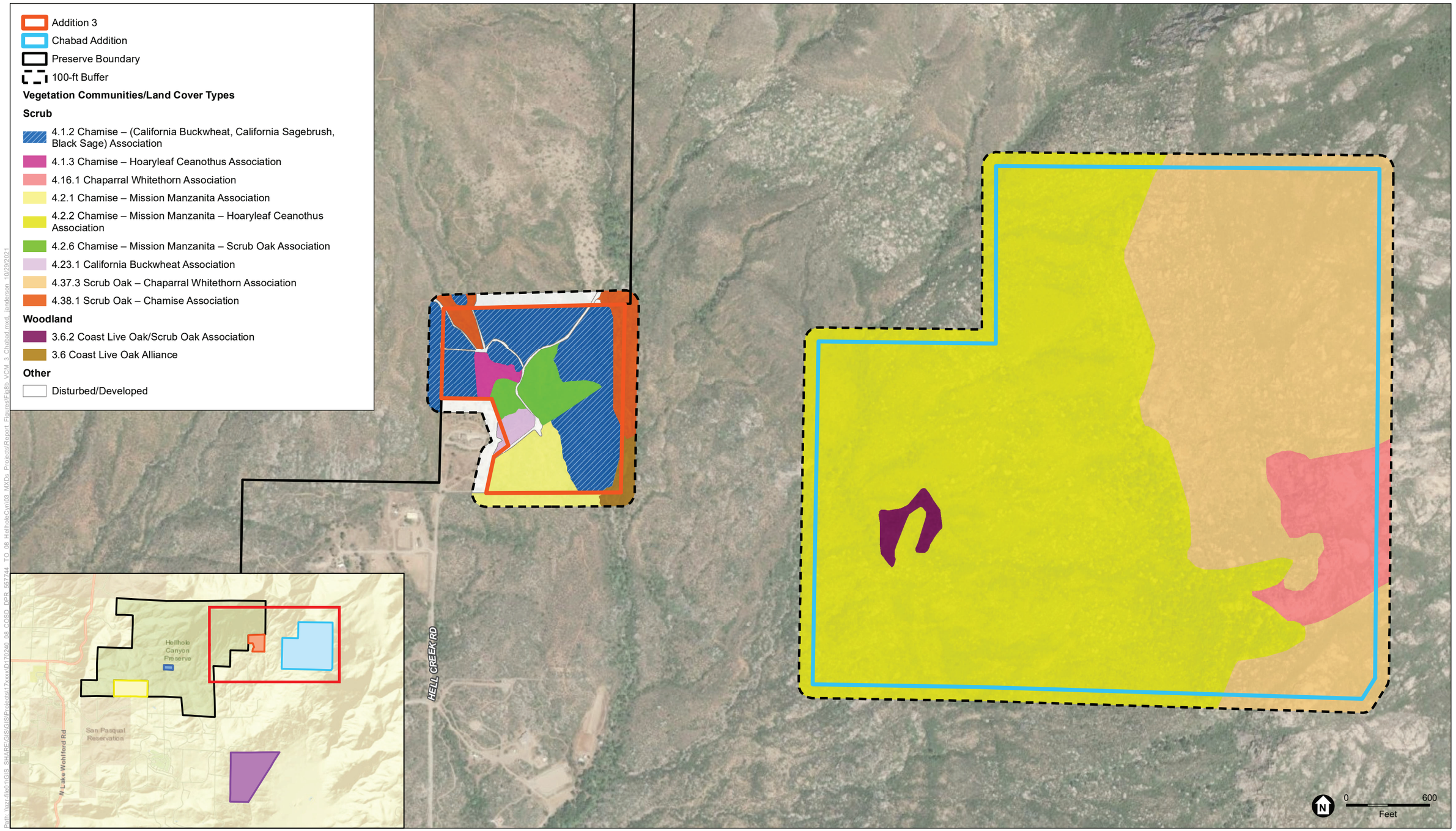




SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

Figure 8a
Vegetation Communities/Habitats (VCM Classification)
Addition 1 and Addition 2

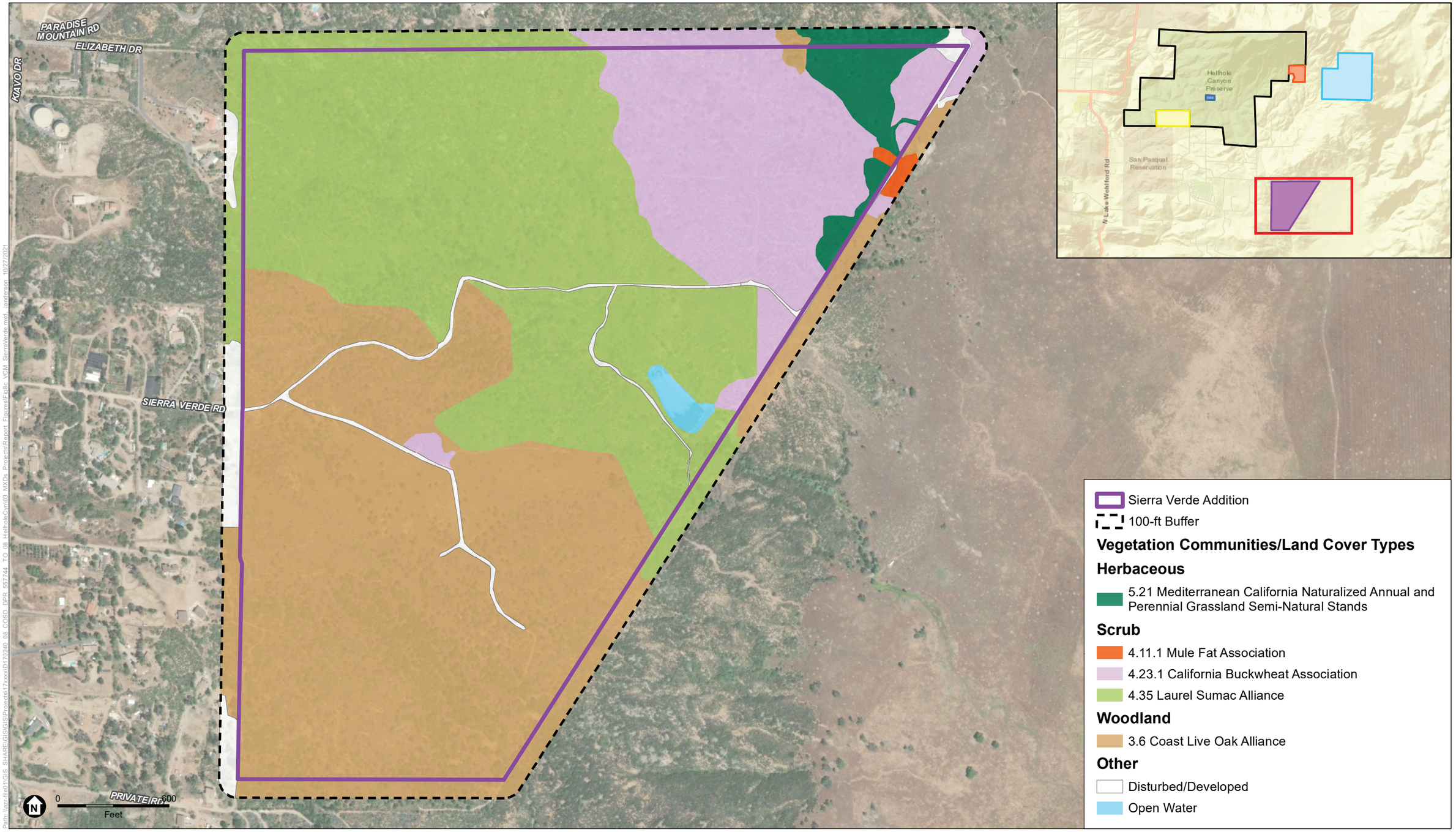
ESA



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

Figure 8b
Vegetation Communities/Habitats (VCM Classification)
Addition 3 and Chabad Addition

ESA



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

Figure 8c
Vegetation Communities/Habitats (VCM Classification)
Sierra Verde Addition

ESA

Addition 1
Addition 2
Preserve Boundary
100-ft Buffer

Vegetation Communities/Land Cover Types

Riparian

61310: Southern Coast Live Oak Riparian Forest

Upland

32800: Flat-topped Buckwheat
37120: Southern Mixed Chaparral
42200: Non-native Grassland (or Annual Grassland)
37200: Chamise Chaparral
32500: Diegan Coastal Sage Scrub
32800: Disturbed Flat-topped Buckwheat
32500: Disturbed Diegan Coastal Sage Scrub
79000: Non-Native Woodland
71161: Open Coast Live Oak Woodland

Other

11300: Disturbed/Developed
64100: Open Water

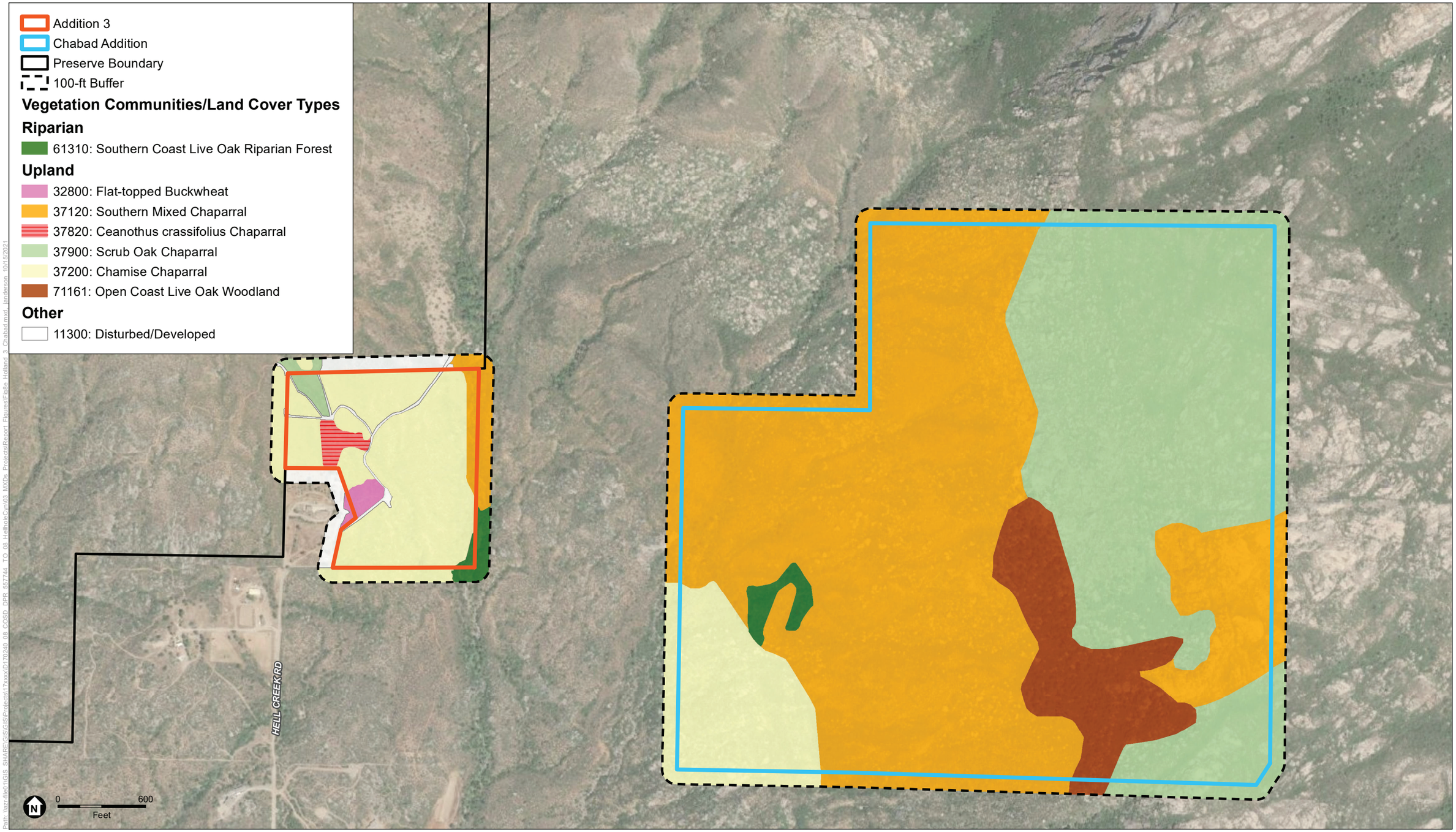
CANAL RD
OOS RD
PRIVATE RD
N
0
400
Feet
Hellhole Canyon Preserve
San Pasqual Reservation
N Lake Wohlford Rd

Path: \\arz-file01\GIS_SHARE\GIS\GIS\Projects\17xxxx\D170240_08 COSD_DPR_557744_TO_08 HellholeCyn\03_MXDs_Projects\Report_Figures\Fig8d_Holland_1_2.mxd_ janderson 10/15/2021

SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

ESA

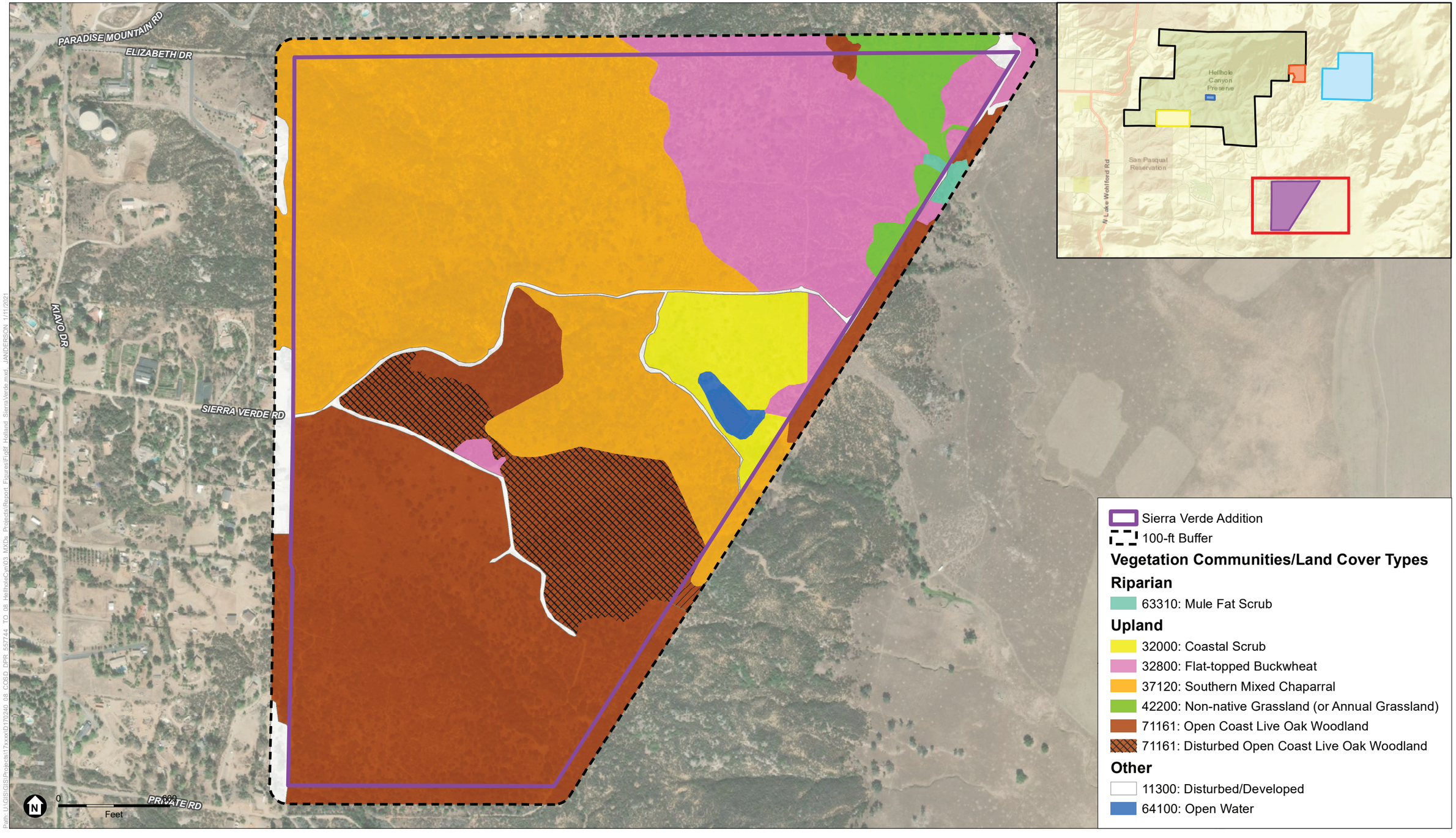
Figure 8d
Vegetation Communities/Habitats (Holland/Oberbauer Classification)
Addition 1 and Addition 2



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

ESA

Figure 8e
Vegetation Communities/Habitats (Holland/Oberbauer Classification)
Addition 3 and Chabad Addition



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SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

Figure 8f
Vegetation Communities/Habitats (Holland/Oberbauer Classification)
Sierra Verde Addition

ESA

The following vegetation communities and land cover type descriptions for the Additions follow those designated in the VCM.

4.1.1 Herbaceous

Ripgut Brome Semi-Natural Stand Type (5.8.2)

Ripgut brome semi-natural stand type (*Bromus diandrus* semi-natural stand type) is dominated by ripgut brome in the herbaceous canopy, particularly in disturbed areas. This brome is most prominent at dominating native grasslands, the understory of oak woodlands, and other vegetation types (Sproul et al. 2011). It invades low areas with deeper soils creating dense cover and biomass that create dense perpetual thatch. Other brome species, such as soft-chess brome (*Bromus hordeaceus*), are often subdominant with other weedy plant species. This vegetation community occurs in the west-central portion of Addition 2 where it covers approximately 0.44 acres. The dominant grasses and herbs within this community include ripgut brome, red brome (*Bromus madritensis* ssp. *rubens*), slender oat (*Avena barbata*), annual yellow sweetclover (*Melilotus indicus*), and shortpod mustard (*Hirschfeldia incana*). This habitat is listed as Tier III in the Draft North County MSCP (County of San Diego 2017).

Red Brome Semi-Natural Stand Type (5.9.1)

Red brome semi-natural stand type (*Bromus rubens* semi-natural stand type) is dominated by red brome in an open herbaceous canopy. Non-native herb species are often subdominant to codominant; however, native herb species can also be subdominant. This vegetation type occurs in areas with drier site conditions and poorer soils than areas that support ripgut brome, purple false brome (*Brachypodium distachyon*), and black mustard (*Brassica nigra*) (Sproul et al. 2011). This vegetation community occurs in the east-central portion of Addition 1 where it covers approximately 2.95 acres. The dominant grasses and herbs within this community include red brome, longbeak stork's bill (*Erodium botrys*), common sandaster (*Corethrogyne filaginifolia*), and clustered tarweed (*Deinandra fasciculata*). This habitat is listed as Tier III in the Draft North County MSCP (County of San Diego 2017).

Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands (5.21)

Mediterranean California naturalized annual and perennial grassland semi-natural stands consists of dominant non-native grasses and forbs that have replaced native types through repeated soil disturbance and introduction of non-native plant species (Sproul et al. 2011). This vegetation community type occurs in the northeast corner of the Sierra Verde Addition on approximately

5.8 acres. These areas are dominated by weedy non-native species, including ripgut brome, slender oat, longbeak stork's bill, annual yellow sweetclover, and hairy vetch (*Vicia villosa*). However, a few native species, including poison oak (*Toxicodendron diversilobum*), California buckwheat (*Eriogonum fasciculatum*), and Menzie's fiddleneck (*Amsinckia menziesii*) were detected within this community as well. This habitat is listed as Tier III in the Draft North County MSCP (County of San Diego 2017).

4.1.2 Scrub

Chamise – (California Buckwheat–California Sagebrush–Black Sage) Association (4.1.2)

Chamise – (California Buckwheat–California Sagebrush–Black Sage) Association (*Adenostoma fasciculatum/Eriogonum fasciculatum/Artemisia californica/Salvia mellifera* Association) consists of a continuous but more often open canopy dominated by chamise with a combination of the three other species as subdominant. Herb cover is generally diverse and can include both native and non-native grasses. This association is a mix of chaparral and coastal sage scrub as it occurs both as a mature, stable shrub community or an early transitional stage of other shrublands in response to fire or other disturbance (Sproul et al. 2011). This vegetation community occurs on approximately 2.07 acres in the southeast corner of Addition 1, and approximately 18.14 acres throughout Addition 3. The dominant shrub within this community is chamise with California buckwheat, California sagebrush, black sage, and coastal deerweed as subdominant shrubs. This habitat is listed as Tier I in the Draft North County MSCP (County of San Diego 2017).

Chamise–Hoaryleaf Ceanothus Association (4.1.3)

Chamise–Hoaryleaf Ceanothus Association (*Adenostoma fasciculatum–Ceanothus crassifolius* Association) consists of a mostly continuous shrub canopy codominated by chamise and hoaryleaf ceanothus. Additional shrub species can occur as subdominants. Herb diversity and cover are generally low except after fires. This association typically occupies xeric interior sites in cismontane areas (Sproul et al. 2011). This vegetation community occurs on approximately 2.81 acres in the southwest corner of Addition 1, and approximately 1.37 acres in the west-central portion of Addition 3. The dominant shrubs within this community include chamise and hoaryleaf ceanothus. Additional subdominant shrubs detected include laurel sumac, hairyleaf redberry (*Rhamnus pilosa*), sugar bush, Alderson's rush-rose (*Crocanthemum aldersonii*), sticky monkeyflower, and black sage. This habitat is listed as Tier I typified by chamise chaparral and Tier III for areas typified by *Ceanothus crassifolius* chaparral in the Draft North County MSCP (County of San Diego 2017).

Chamise–Ramona Lilac Association (4.1.4)

Chamise–Ramona Lilac Association (*Adenostoma fasciculatum–Ceanothus tomentosus* Association) consists of a mostly continuous canopy cover dominated by chamise and Ramona lilac. Additional shrub species can occur as codominants. Herb cover and diversity is generally low, but can increase following fire (Sproul et al. 2011). This vegetation community occurs on approximately 1.04 acres in the south-central portion of Addition 1. The dominant shrubs within this community include chamise and Ramona lilac. Subdominant shrubs detected include laurel sumac, sugar bush, California buckwheat, and black sage. This habitat is listed as Tier I in the Draft North County MSCP (County of San Diego 2017).

Chamise–Mission Manzanita Association (4.2.1)

Chamise–Mission Manzanita Association (*Adenostoma fasciculatum–Xylococcus bicolor* Association) consists of a continuous shrub canopy codominated by chamise and Mission manzanita. Additional subdominant shrubs and herbs occur primarily in openings. Herb diversity and cover are generally low except after fires. This association occurs in the cismontane foothills south of the Tranverse Range (Sproul et al. 2011). This vegetation community occurs on approximately 3.40 acres in the northeast portion of Addition 1, and approximately 4.92 acres in the southern portion of Addition 3. The dominant shrubs within this community include chamise and Mission manzanita. Additional shrubs detected include laurel sumac, California buckwheat, hoaryleaf ceanothus, and lemonade berry (*Rhus integrifolia*). This habitat is listed as Tier I in the Draft North County MSCP (County of San Diego 2017).

Chamise–Mission Manzanita–Hoaryleaf Ceanothus Association (4.2.2)

Chamise–Mission Manzanita–Hoaryleaf Ceanothus Association (*Adenostoma fasciculatum–Xylococcus bicolor–Ceanothus crassifolius* Association) consists of the three plant species occurring as codominants in an open or continuous canopy. Additional subdominant shrub species are often present as well. Herb cover in openings and following fire can be diverse (Sproul et al. 2011). This vegetation community occurs on approximately 2.84 acres in the north-central portion of Addition 1 and approximately 187.39 acres in the western half of the Chabad Addition. The dominant shrubs within this community include chamise, Mission manzanita, Ramona lilac, and hoaryleaf ceanothus. Additional shrubs detected include laurel sumac, sugar bush (*Rhus ovata*), California buckwheat, and black sage. This habitat is listed as Tier I for areas typified by southern mixed chaparral vegetation and Tier II for areas typified by coastal sage scrub vegetation in the Draft North County MSCP (County of San Diego 2017).

Chamise–Mission Manzanita–Ramona Lilac Association (4.2.3)

Chamise–Mission Manzanita–Ramona Lilac Association (*Adenostoma fasciculatum–Xylococcus bicolor–Ceanothus tomentosus* Association) consists of the three plant species occurring as codominants in an open or continuous canopy. Additional shrub species can occur as codominants. Diverse herb cover often occurs in openings and can increase following fire (Sproul et al. 2011). This vegetation community occurs on approximately 17.10 acres in the northwest and south-central portions of Addition 1. The dominant shrubs within this community include chamise, Mission manzanita, Ramona lilac, and hoaryleaf ceanothus. Additional shrubs detected include laurel sumac, sugar bush, California buckwheat, and black sage. This habitat is listed as Tier I in the Draft North County MSCP (County of San Diego 2017).

Chamise–Mission Manzanita–Scrub Oak Association (4.2.6)

Chamise–Mission Manzanita–Scrub Oak Association (*Adenostoma fasciculatum–Xylococcus bicolor–Quercus [berberdifolia, x acutidens*] Association) often occurs as an open canopy codominated by the three shrub species. Additional shrub species can occur as subdominants. Herb diversity and cover are generally low except after fires (Sproul et al. 2011). This vegetation community occurs on approximately 2.83 acres in the eastern half of Addition 2, and 4.85 acres in the center of Addition 3. The dominant shrubs within this community include chamise, Mission manzanita, and scrub oak. Additional shrubs detected include black sage, hairyleaf redberry, sawtooth goldenbush, California matchweed (*Gutierrezia californica*), hoaryleaf ceanothus, and Ramona lilac. This habitat is listed as Tier I in the Draft North County MSCP (County of San Diego 2017).

California Sagebrush–California Buckwheat–Laurel Sumac Association (4.7.1)

California Sagebrush–California Buckwheat–Laurel Sumac Association (*Artemisia californica–Eriogonum fasciculatum–Malosma laurina* Association) consists of the three plant species occurring as codominants, often occurring with subdominant shrub species. Herb cover is usually open and with high species diversity. This association can occur both as a mature stable shrub community or as an early transitional stage of other shrublands in response to fire or other disturbance (Sproul et al. 2011). This vegetation community occurs on approximately 0.33 acres in the north-central portion of Addition 2. California sagebrush and California buckwheat are codominant within this community with laurel sumac occurring in scattered locations. This habitat is listed as Tier II in the Draft North County MSCP (County of San Diego 2017).

Chaparral Whitethorn Association (4.16.1)

Chaparral Whitethorn Association (*Ceanothus leucodermis* Association) consists of a shrub canopy dominated by chaparral whitethorn and low cover of other subdominant shrubs. Diverse herb cover often occurs in openings and can increase following fire (Sproul et al. 2011). This vegetation community occurs on approximately 16.95 acres in the southeast corner of the Chabad Addition. This community predominantly consists of chaparral whitethorn, with chamise, California buckwheat, and white sage (*Salvia apiana*) occurring in some areas at very low densities. This habitat is listed as Tier I in the Draft North County MSCP (County of San Diego 2017).

California Buckwheat Association (4.23.1)

California Buckwheat Association (*Eriogonum fasciculatum* Association) consists of an open shrub canopy dominated or codominated by California buckwheat. Subdominant shrubs are common and a diverse herb cover occurs predominantly in openings. This association may represent an early transitional phase of other shrub associations or occur as a relatively stable association in ecotonal areas (Sproul et al. 2011). This vegetation community occurs on approximately 27.72 acres throughout Addition 1, approximately 0.94 acres in the west-central portion of Addition 3, and approximately 37.65 acres in the northeast portion of the Sierra Verde Addition. California buckwheat is the dominant shrub within this community. Subdominant shrubs of this association include coastal deerweed, sawtooth goldenbush, black sage, white sage (*Salvia apiana*), and chaparral yucca (*Hesperoyucca whipplei*). Herbaceous plants occuring in the openings of this association include red brome, slender oat, rattail fescue (*Festuca myuros*), and Musky stork's bill (*Erodium moschatum*). This habitat is listed as Tier II in the Draft North County MSCP (County of San Diego 2017).

Coastal Deerweed Association (4.32.1)

Coastal Deerweed Association (*Acmispon glaber* [=*Lotus scoparius*] Association) consists of dominant coastal deerweed open shrub canopy, often occurring with subdominant shrubs. This association is considered early transitional, resulting from natural post-fire regeneration (Sproul et al. 2011). This vegetation community occurs generally in the eastern portion of Addition 1, where it covers approximately 3.60 acres. Coastal deerweed is the dominant shrub and subdominant shrubs detected within this community include California sagebrush, California buckwheat, and sawtooth goldenbush (*Hazardia squarrosa*). This habitat is listed as Tier II in the Draft North County MSCP (County of San Diego 2017).

Laurel Sumac Alliance (4.35)

Laurel Sumac Alliance (*Malosma laurina* Alliance) consists of a shrub canopy dominated or codominated by laurel sumac. Additional shrub species occur as subdominants and emergent trees such as southern black walnut (*Juglans californica*), coast live oak (*Quercus agrifolia*), or western sycamore (*Platanus racemosa*) may also be present. Shrubs are usually less than 5 meters and can exist as an open to continuous canopy, with a generally sparse herbaceous layer below (Sproul et al. 2011). This vegetation community occurs from the northwest corner to the east-central portion of the Sierra Verde Addition where it covers approximately 92.08 acres. The dominant shrub within this community is laurel sumac, with California buckwheat and coastal deerweed as subdominant shrubs in many areas. Herbaceous plants occurring in the openings of this association include longbeak stork's bill, wild oat (*Avena* sp.), and red brome. This habitat is listed as Tier I for areas typified by southern mixed chaparral vegetation and Tier II for areas typified by coastal sage scrub vegetation in the Draft North County MSCP (County of San Diego 2017).

Scrub Oak–Chaparral Whitethorn Association (4.37.3)

Scrub Oak–Chaparral Whitethorn Association (*Quercus [berberidifolia, x acutidens] –Ceanothus leucodermis* Association) consists of a continuous shrub canopy codominated by scrub oak and chaparral whitethorn. Due to taxonomic uncertainty, both scrub oak species are included within this association. Additional shrub species can occur as subdominants. Herb diversity and cover are relatively low, mostly occurring in openings, but can increase in response to fire (Sproul et al. 2011). This vegetation community occurs on approximately 104.79 acres on the rocky slopes associated with Rodriguez Mountain in the eastern half of the Chabad Addition. The dominant shrubs within this community include scrub oak and chaparral whitethorn. Additional shrub species detected include chamise and California buckwheat occurring in some areas at very low densities. Few herbaceous plants occur in the openings of this association. This habitat is listed as Tier III in the Draft North County MSCP (County of San Diego 2017).

Scrub Oak–Chamise Association (4.38.1)

Scrub Oak–Chamise Association (*Quercus [berberdifolia, x acutidens] –Adenostoma fasciculatum* Association) consists of a continuous shrub canopy codominated by scrub oak and chamise. Due to taxonomic uncertainty, both scrub oak species are included within this association. Additional shrub species can occur as subdominants. Herbaceous diversity and cover are relatively low, mostly occurring in openings and increasing in response to fire (Sproul et al. 2011). This vegetation community occurs on approximately 2.32 acres in the northwest corner and along the eastern border of Addition 3. The dominant shrubs within this community include scrub oak and chamise. Additional shrub species detected include woollyleaf ceanothus, hoaryleaf

ceanothus, sticky monkeyflower (*Diplacus aurantiacus*), black sage, California sagebrush, California buckwheat, and poison oak. This habitat is listed as Tier I for areas typified by southern mixed chaparral and Tier III for areas typified by scrub oak chaparral in the Draft North County MSCP (County of San Diego 2017).

Coast Live Oak Alliance (3.6)

Coast Live Oak Alliance (*Quercus agrifolia* Alliance) consists of coast live oak stands in either mesic uplands or riparian or semi-riparian settings. Trees are generally less than 30 meters tall with an open to continuous canopy. Additional tree species can occur, and shrub and herbaceous canopies are variable. Fire is the main natural process affecting upland stands but both fire and fluvial processes, such as erosion, can impact regeneration of riparian or semi-riparian stands (Sproul et al. 2011). Stands of coast live oak can be eliminated by repeated fires at short intervals. This vegetation community occurs on approximately 9.27 acres in the southern half of the Sierra Verde Addition. Coast live oak is the dominant tree species within this community, intermixed with species typical of chaparral such as ceanothus (*Ceanothus* spp.) and laurel sumac. This habitat is listed as Tier I in the Draft North County MSCP (County of San Diego 2017).

4.1.3 Riparian

Mulefat Association (4.11.1)

Mulefat Association (*Baccharis salicifolia* association) consists of a shrub canopy dominated by mulefat. Additional shrub species can occur as subdominants and emergent wetland trees can also be present. The herbaceous understory is generally diverse. This association is an open riparian scrub that is most often transitional to more fully developed riparian woodlands (Sproul et al. 2011). This vegetation community occurs on approximately 0.20 acres along the eastern border of the Sierra Verde Addition. The dominant shrub within this community is mulefat, with Goodding's black willow as an emergent wetland tree species, with non-native grasses in the understory. This habitat is listed as Tier I in the Draft North County MSCP (County of San Diego 2017).

4.1.4 Woodland

Coast Live Oak Alliance (3.6)

Coast Live Oak Alliance (*Quercus agrifolia* Alliance) consists of coast live oak stands in either mesic uplands or riparian or semi-riparian settings. Trees are generally less than 30 meters tall with an open to continuous canopy. Additional tree species can occur, and shrub and herbaceous canopies are variable. Fire is the main natural process affecting upland stands but both fire and

fluvial processes, such as erosion, can impact regeneration of riparian or semi-riparian stands (Sproul et al. 2011). Stands of coast live oak can be eliminated by repeated fires at short intervals. This vegetation community occurs on approximately 0.30 acres in the southeast corner of Addition 3 and approximately 91.82 acres in the southern half of the Sierra Verde Addition. Coast live oak is the dominant tree species within this community. Additional tree, shrub, and herbaceous species detected include western sycamore, scrub oak, poison oak, California blackberry (*Rubus ursinus*), Pacific sweet pea (*Lathyrus vestitus*), and California mugwort (*Artemisia douglasiana*). This habitat is listed as Tier I in the Draft North County MSCP (County of San Diego 2017).

Coast Live Oak–Scrub Oak Association (3.6.2)

Coast Live Oak–Scrub Oak Association (*Quercus agrifolia–Quercus [berberidifolia, x acutidens]* Association) consists of an open tree canopy dominated by coast live oak and scrub oak diagnostically present in the shrub canopy. Additional shrub species can occur as subdominants in the shrub canopy. Herb cover occurs in openings. This association is typical of mesic slopes where coast live oak is not associated with riparian vegetation types (Sproul et al. 2011). This vegetation community occurs on approximately 2.61 acres in the west-central portion of the Chabad Addition. Coast live oak is the dominant tree species within this community. Additional shrub and herbaceous species detected include scrub oak and chaparral whitethorn. This habitat is listed as Tier I in the Draft North County MSCP (County of San Diego 2017).

Coast Live Oak–Poison Oak–Grass Association (3.6.4)

The Coast Live Oak–Poison Oak–Grass Association (*Quercus agrifolia–Toxicodendron diversilobum*–Grass Association) consists of a tree canopy dominated by coast live oak, a shrub canopy with poison oak present, and an herbaceous understory of native and non-native species. Herb diversity is high and cover is generally intermittent to continuous, including many ruderal species. This association typically occurs higher on the hydrologic profile where many upland shrubs and ruderal plants are prevalent above the fluvial regime (Sproul et al. 2011). This vegetation community occurs on approximately 2.42 acres in the northeast corner and southern border of Addition 1, and approximately 1.19 acres in the northwest portion of Addition 2. Coast live oak represents 50 percent of the relative tree cover in this vegetation community. Subdominant shrubs detected include blue elderberry (*Sambucas nigra* ssp. *caerulea*) and coyote brush (*Baccharis pilularis*). Ripgut brome is the dominant grass species in the herbaceous understory. This habitat is listed as Tier I in the Draft North County MSCP (County of San Diego 2017).

Goodding's Black Willow Association (3.8.1)

Goodding's Black Willow Association (*Salix gooddingii* association) is dominated by Goodding's black willow in an open to closed tree canopy with other riparian tree species, subdominant shrubs, and wetland-affiliated herbaceous plants (Sproul et al. 2011). This vegetation community occurs in the southwest corner of Addition 2, where it covers approximately 0.39 acres. Goodding's black willow is the dominant tree species within this community. Additional riparian tree species detected include coast live oak and western sycamore. Subdominant shrubs and wetland-affiliated herbaceous plants within this community include poison oak, southern honeysuckle (*Lonicera subspicata*), desert wild grape (*Vitis girdiana*), and coyote brush (*Baccharis pilularis*). This habitat is listed as Tier I in the Draft North County MSCP (County of San Diego 2017).

Non-Native Woodland (79000)

Land designated as non-native woodland not dominated by eucalyptus (*Eucalyptus* spp.) or tamarisk (*Tamarix* spp.) is not addressed by the VCM; therefore, this description follows Oberbauer et al. (2008). Non-native woodland consists of exotic trees, usually intentionally planted, but not maintained or artificially irrigated. This vegetation community occurs on approximately 0.90 acres in the center of Addition 1. Exotic trees detected within this community include avocado (*Persea americana*) and olive (*Olea europaea*).

4.1.5 Other

Open Water (64100)

Land designated as open water habitat are not addressed by the VCM; therefore, this description follows Oberbauer et al. (2008). Open water habitat consists of areas that were inundated with water during vegetation mapping surveys. Open water within the Additions consist of stock ponds with standing water for most of the year due to above-average winter and spring rainfall. Approximately 0.32 acres in Addition 1 and 1.38 acres in the Sierra Verde Addition were mapped as open water habitat. These areas were generally devoid of vegetation, but non-native plant species, such as shortpod mustard, were observed bordering the ponds.

Disturbed/Developed Habitat (11300)

Land designated as disturbed habitat is not addressed by the VCM; therefore, this description follows Oberbauer et al. (2008). Disturbed habitat consists of areas that have been physically disturbed and are no longer recognizable as a native vegetation community but continue to retain a soil substrate. Vegetation is nearly exclusively composed of non-native species, including

ornamentals or ruderal exotic species (Oberbauer et al. 2008). Approximately 10.91 acres in Addition 1, 0.33 acres in Addition 2, 1.06 acres in Addition 3, and 3.07 acres in the Sierra Verde Addition were mapped as disturbed/developed habitat. The disturbed/developed habitat within the Additions consists primarily of access roads, unauthorized trails, and areas disturbed by off-highway vehicles and/or erosion. These areas generally consist of bare ground but contain scattered non-native plant species, including slender oat, ripgut brome, longbeak stork's bill, treasure flower (*Gazania linearis*), and artichoke thistle (*Cynara cardunculus*). This habitat is listed as Tier IV in the Draft North County MSCP (County of San Diego 2017).

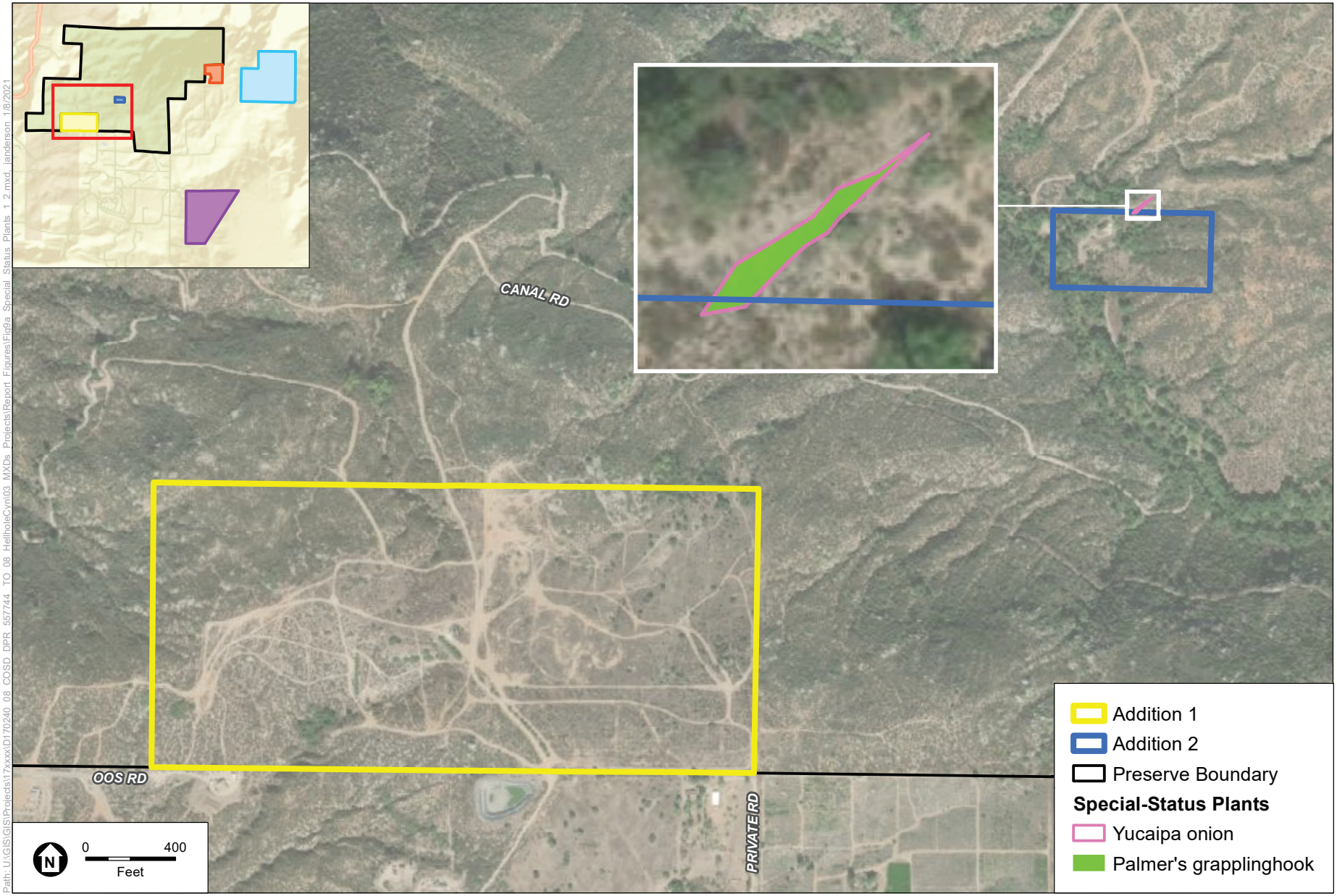
4.2 PLANTS

A total of 249 species of plants were observed on the Additions during the 2019 baseline surveys. Of these 249 species, 61 species are non-native species. Six special-status rare plants, including Yucaipa onion (*Allium marvinii*), Palmer's grappling hook (*Harpagonella palmeri*), Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*), Fish's milkwort (*Polygala cornuta* var. *fishiae*), Engelmann oak (*Quercus engelmannii*), and rush-like bristleweed (*Xanthisma junceum*), were documented on the Additions and are discussed below and shown on **Figures 9a** through **9c**. A complete list of plant species observed on the Additions is included in **Appendix A**.

4.2.1 Special-Status Plant Species Observed

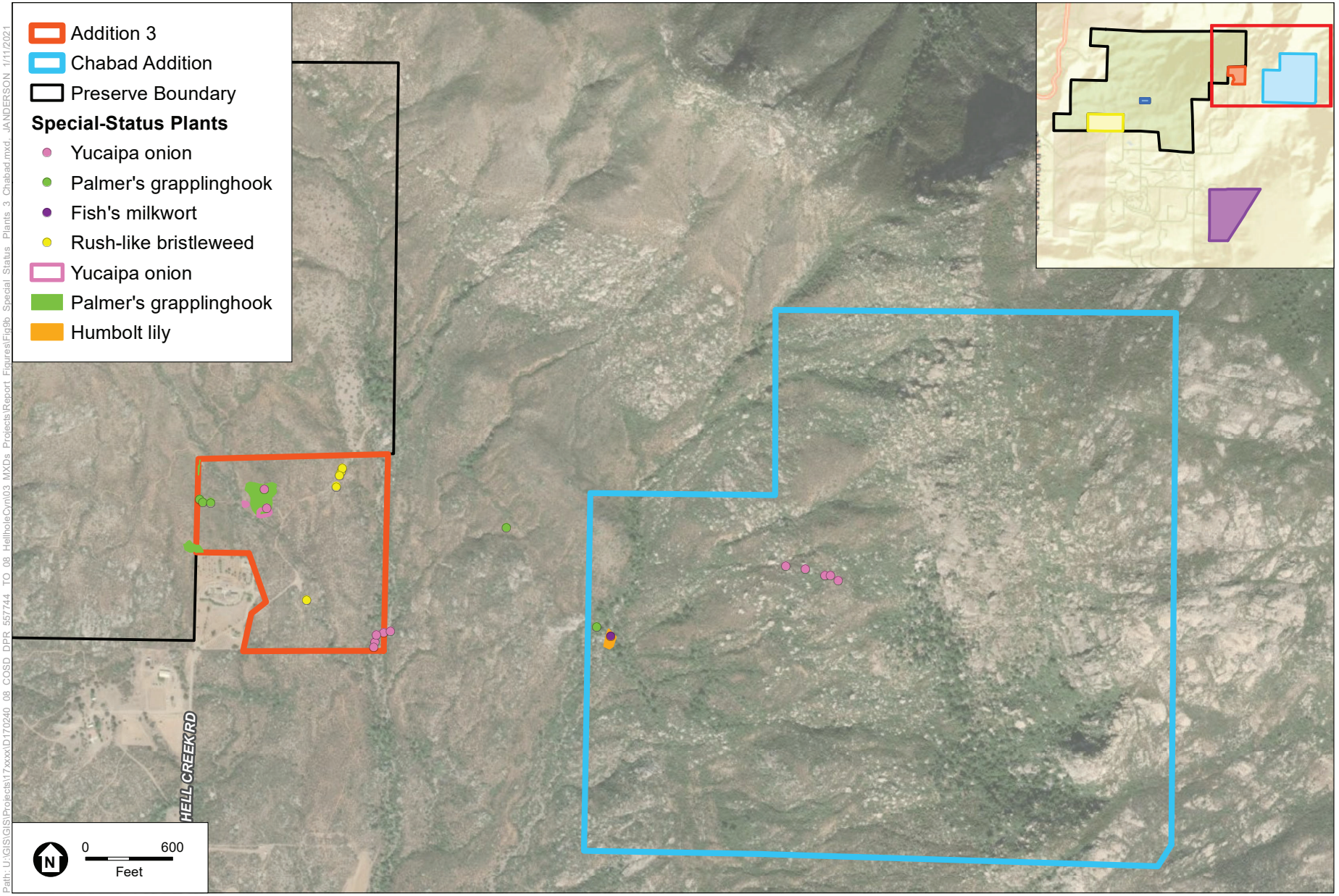
Yucaipa Onion (*Allium marvinii*)
CRPR 1B.2

Yucaipa onion is a perennial bulbiferous herb that produces white to pinkish flowers from March to April and bright red bulbs. It ranges from Kern County to Baja California, Mexico where it grows in clay openings on dry slopes and ridges of hills and mountains, such as those of the Peninsular Ranges, Transverse Ranges, and Southern California Coast Ranges. This species is threatened by non-native plants, urbanization, and alteration of fire regimes.



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

Figure 9a
Special-Status Plant Species
Addition 1 and Addition 2



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

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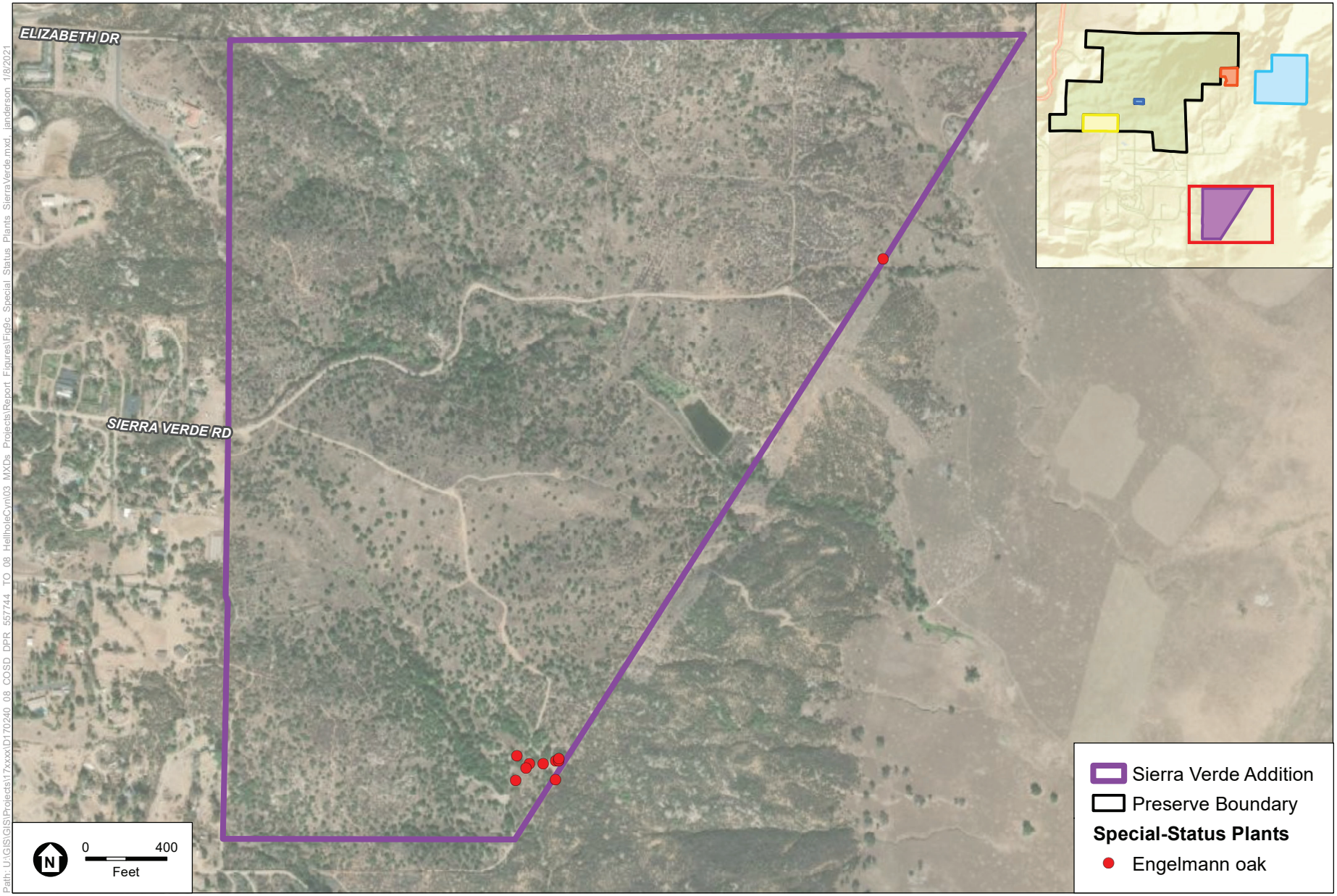
Figure 9b
Special-Status Plant Species
Addition 3 and Chabad Addition



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

ESA

Figure 9c
Special-Status Plant Species
Sierra Verde Addition

This species was detected within clay soils in chaparral openings within Addition 2, Addition 3, and the Chabad Addition (Figures 9a and 9b).

Palmer's Grapplinghook (*Harpagonella palmeri*)
CRPR 4.2, County List D

Palmer's grapplinghook is a small annual with stems lined with occasional small, pointed leaves and spiny, white flowers with hooked bristles. It is native to the desert and coastal regions of California, Arizona, and Baja California, Mexico, where it can be found within chaparral and coastal scrub communities. It grows within openings of vegetation on sandy and gravelly soil, particularly on south-facing slopes. The highest concentration of collections has been from southwestern San Diego County.

The species was detected in the openings in southern mixed chaparral, chamise chaparral, and Diegan coastal sage scrub on clay soils within Addition 2, Addition 3, and the Chabad Addition (Figures 9a and 9b).

Humboldt Lily (*Lilium humboldtii* ssp. *ocellatum*)
CRPR 4.2, County List D

Humboldt lily is a perennial bulbiferous herb that produces large, showy flowers with dark red or maroon spots on golden-orange petals from March to July. It ranges from Santa Barbara County to northern Baja California, Mexico and on some of the Channel Islands, where it can be found growing in shaded openings within chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland habitats. This species is threatened by development and horticultural collection.

This species was detected within canyon bottoms within the Chabad Addition (Figure 9b). A representative photograph of this species is shown in Appendix E.

Fish's Milkwort (*Polygala cornuta* var. *fishiae*)
CRPR 4.3, County List D

Fish's milkwort is a perennial deciduous shrub that produces magenta to purple flowers from May to August. It ranges from Santa Barbara County to Baja California, Mexico, where it can be found in chaparral, cismontane woodland, and riparian woodland habitats.

This species was detected within canyon bottoms within the Chabad Addition (Figure 9b).

Engelmann Oak (*Quercus engelmannii*)
CRPR 4.2, County List D, MSCP Covered Species

Engelmann oak is a perennial deciduous tree that grows 16 to 26 feet high in oak woodlands or grassland habitats. Engelmann oak is predominantly found in the foothills of San Diego County, but scattered observations extend up into Los Angeles and southwestern San Bernardino Counties, and down into Baja California, Mexico. Engelmann oak often occurs with coast live oak, in savannah-like habitats with annual grasses, or in areas where white sage occurs. It is drought-tolerant and will regrow new leaves following rain after going dormant. Reiser (2001) indicates that Engelmann oak populations are relatively stable in Southern California, but reproduction has been limited as a result of cattle grazing and herbivory by small mammals and deer. The introduction of feral pig (*Sus scrofa*) in the county in recent years and wild turkey (*Meleagris gallopavo*) in the early 1990s further exacerbates problems with oak reproduction, as both species consume acorns. Engelmann oak is known to hybridize with scrub oak (*Quercus berberidifolia*) (Baldwin et al. 2012).

Engelmann oak was detected within the southeast portion of the Sierra Verde Addition (Figure 9c).

Rush-Like Bristleweed (*Xanthisma junceum*)
CRPR 4.3, County List D

Rush chaparral-star is a low-growing perennial herb with spindly stems that generates bright yellow sunflower-shaped flowers from May to January. It ranges from San Diego County to northern Baja California, Mexico and east into Arizona and Sonora, Mexico, where it can be found in coastal and inland slopes and canyons of chaparral and coastal scrub habitats.

This species was detected on southeast-facing slopes within Addition 3 (Figure 9b).

4.2.2 Special-Status Plant Species with High Potential to Occur

In addition to the special-status plant species documented during the field surveys, one special-status plant species has a high potential to occur on the Additions: Robinson's peppergrass (*Lepidium virginicum* var. *robinsonii*). The evaluation of their potential for occurrence was based on the elevation, soils, and vegetation communities present on the Additions, and the range and distribution of species within the vicinity of the Additions. Life history, habitat occurring on the Additions rationale for potential to occur, and sensitivity status for this species are detailed below.

A table of all special-status plant species evaluated for a potential to occur on the Additions is included in the **Appendix B**.

Robinson's Peppergrass (*Lepidium virginicum* var. *robinsonii*)
CRPR 4.3, County List D

Robinson's peppergrass is an annual herb with small, white flowers that bloom from January to July. It occurs in chaparral and coastal scrub habitats within Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, Santa Cruz Island, San Diego, and Ventura Counties and extends into Baja California, Mexico. It generally grows in foothill landscapes that are relatively dry, away from the coast in Southern California.

One individual was detected adjacent to Addition 2 during the 2008 baseline biological surveys for the original Preserve (TAIC 2008). Suitable chaparral and coastal sage scrub habitat occurs within the Additions, particularly Addition 2 and the Chabad Addition.

4.2.3 Invasive Non-Native Plants

A total of 61 non-native plant species were detected within the Additions during botanical surveys in spring/summer 2019. **Table 6** lists the 14 target invasive non-native species that were mapped within the Additions, along with their associated Management Priority Level (Conservation Biology Institute 2012) and Cal-IPC Inventory Ranking (Cal-IPC 2019). Target invasive non-native species were selected based on their invasive potential, prevalence throughout the Additions, and ability for management. These target invasive non-native plant species locations are shown on **Figures 10a** through **10c**. Non-native plants are present throughout the Additions, particularly along dirt roads, trails, and around grassy areas.

Table 6. Invasive Non-Native Plant Species with High Priority for Removal on the Additions[1]

Common Name	Scientific Name	Cal-IPC Rating[2]	CBI Management Priority for Invasive Non-native Plants[3]
Pampas Grass	*Cortaderia selloana*	High	Management Level 3
Artichoke Thistle	*Cynara cardunculus*	Moderate	Management Level 3
Sweet Fennel	*Foeniculum vulgare*	High	Management Level 4
Tamarisk	*Tamarix ramosissima*	High	NA
Iceplant	*Carpobrotus edulis*	High	NA
Treasure Flower	*Gazania linearis*	Moderate — Alert	NA
Tree Tobacco	*Nicotiana glauca*	Moderate	NA
Fountain Grass	*Pennisetum setaceum*	Moderate	NA
Mexican Fan Palm	*Washingtonia robusta*	Moderate	NA
Eucalyptus (River Red Gum)	*Eucalyptus camaldulensis*	Limited	NA
Eucalyptus (Southern Blue Gum)	*Eucalyptus globulus*	Limited	NA
Olive Tree	*Olea europea*	Limited	NA
Peruvian Pepper Tree	*Schinus molle*	Limited	NA
Golden Wattle	*Acacia pycnantha*	Watch	NA

[1] Species are included in this table due to their potential for being invasive and the feasibility of removal from the Additions since they currently remain in low enough numbers for removal and eradication.

[2] **Source**: Cal-IPC Invasive Plant Inventory Database, 2019. Overall rating listed for southwest region, factoring impact, invasiveness, distribution, and documentation level.

Cal-IPC 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.

[3] **Source**: San Diego Environmental Mitigation Program Working Group in their Management Priorities for Invasive Non-native Plants. Conservation Biology Institute (CBI) 2012.

Management Levels for San Diego County's Natural Community Conservation Programs (NCCP):

Level 3 – Containment: Eradication with coordinated programs by management unit or watershed.

Level 4 – Directed Management: Control within reserve or sub-management unit to benefit NCCP resources.

Level 5 – Directed Suppression: Suppression, typically to allow recovery of disturbed site, improve re-vegetation success, or benefit NCCP resources.

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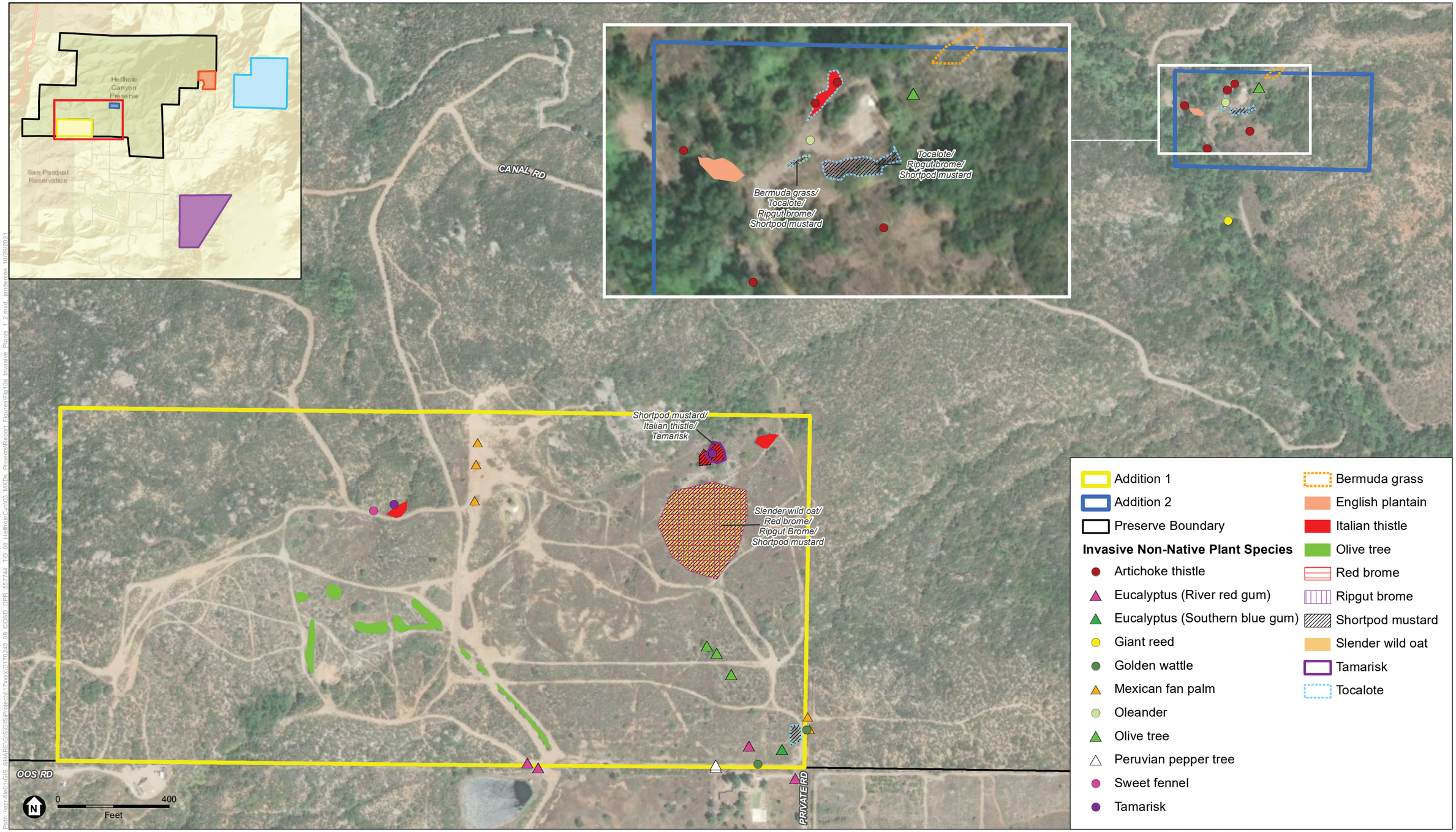
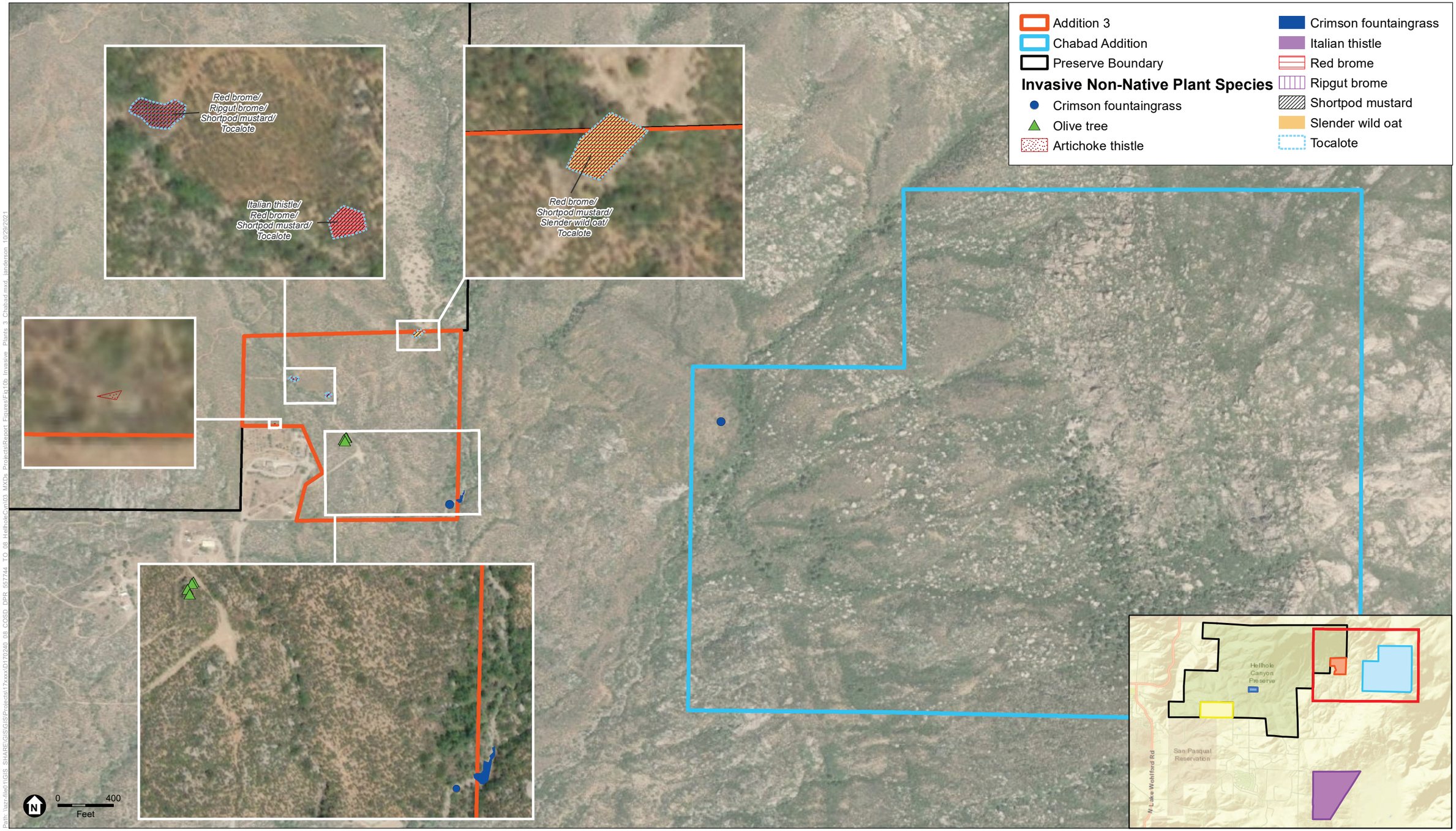


Path: \\azr-file01\GIS_SHARE\GIS\GIS\Projects\17xxxx\D170240_08_COSD_DPR_557744_TO_08_HellholeCyn\03_MXDs_Projects\Report_Figures\Fig10a_Invasive_Plants_1_2.mxd_landerson_10/29/2021

SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

Figure 10a
Invasive Non-Native Plant Species
Addition 1 and Addition 2

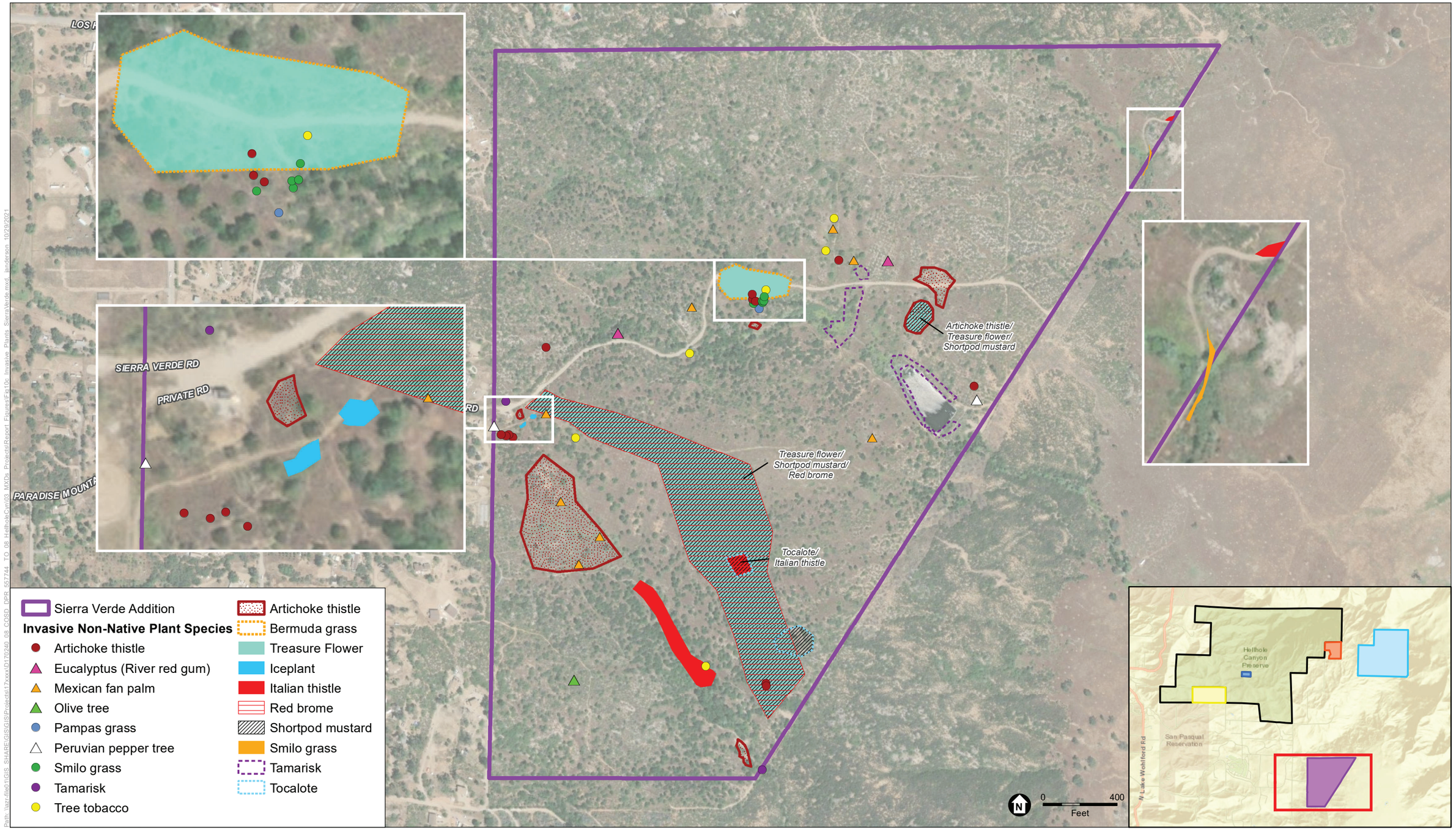
ESA



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

Figure 10b
Invasive Non-Native Plant Species
Addition 3 and Chabad Addition

ESA



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

Figure 10c
Invasive Non-Native Plant Species
Sierra Verde Addition

ESA

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Pampas Grass (*Cortaderia selloana*)

Pampas grass is an invasive perennial grass species that has spread along the coast of California, in the Coast Ranges, Central Valley, western Transverse Ranges, and Mojave Desert due to ornamental planting and as an erosion control species. It produces large plumes containing up to 100,000 seeds that are widely dispersed by wind. It can be found within dunes, bluffs, coastal shrublands, marshes, inland riparian areas, and disturbed areas, where it can quickly colonize bare ground (Cal-IPC 2019). This species was detected in a single location on the Sierra Verde Addition (Figure 10c).

Artichoke Thistle (*Cynara cardunculus*)

Artichoke thistle is a large, perennial thistle that can grow to 8 feet tall with grayish-colored, spiny leaves and large purple flowerheads. This species is likely a wild biotype of the commercial globe artichoke (Cal-IPC 2019). Seedlings develop a deep taproot during the first year, but do not flower until typically their second year. This species was detected in various locations on Addition 2, Addition 3, and the Sierra Verde Addition (Figures 10a through 10c).

Sweet Fennel (*Foeniculum vulgare*)

Sweet fennel is an invasive perennial species that has a high ability to spread. It has established dense local populations throughout California, such as in the Marine Corps Base Camp Pendleton, where it has drastically altered the composition and structure of the landscape and prevented the recovery of native vegetation from disturbance. It is an upright, branching species that produces aromatic yellow-green leaves and small yellow flowers in compound umbels. This species can be found within grasslands, coastal scrub, riparian, and wetland communities (Cal-IPC 2019). It was detected in a single location on Addition 1 (Figure 10a).

Tamarisk (*Tamarix ramosissima*)

Tamarisk is a tree or shrub that can grow to 20 feet. This species is widely spread throughout California, often in riparian areas such as rivers, lake and pond margins, roadsides, and ditches, where it can significantly impact underground water tables and surface water availability (Cal-IPC 2019). It produces tiny scale- or awl-like leaves and flowers ranging in color from white to dark pink. Its roots extract salt from deep soil layers and excrete it through its leaves. Leaf litter increases the salinity of the upper soil profile, inhibiting the growth, survival, and recruitment of native vegetation. This species was detected in a single location on Addition 1 and in multiple locations on the Sierra Verde Addition (Figures 10a and 10c).

Iceplant (*Carpobrotus edulis*)

Iceplant is an invasive succulent shrub found throughout coastal California and the Channel Islands due to ornamental planting. This species propagates by seed and vegetatively, where even small stem fragments can regenerate into a new plant. It can grow into dense mats within coastal scrub, grasslands, chaparral, bluffs, dunes, and beaches, where it increases soil organic matter over time, allowing new non-native species to invade (Cal-IPC 2019). This species was detected in two locations on the Sierra Verde Addition (Figure 10c).

Treasure Flower (*Gazania linearis*)

Treasure flower is an herbaceous perennial native to South Africa that produces showy, daisy-like flowers. It is widely used in ornamental cultivation in Southern California as a mat-forming or clumping ornamental. It is able to invade grassland and riparian areas. This species was observed on the Sierra Verde Addition growing in multiple locations (Figure 10c).

Tree Tobacco (*Nicotiana glauca*)

Tree tobacco is a short-lived shrub or tree that can grow up to 20 feet tall. It was introduced to California approximately 100 years ago and can be found in disturbed areas, in vacant lots, along roadsides and streamsides, and in other riparian areas (Cal-IPC 2019). This species was detected in two locations on the Sierra Verde Addition in various locations (Figure 10c).

Fountain Grass (*Pennisetum setaceum*)

Fountain grass is a coarse-tufted perennial grass species that grows primarily along the Southern California coast. Fountain grass is well adapted to fire and can increase in density following a burn (Cal-IPC 2019). It is commonly found within chaparral, grassland, and coastal dune and scrub habitats. This species was detected in one location on Addition 3 and one location on the Chabad Addition (Figure 10b).

Mexican Fan Palm (*Washingtonia robusta*)

Mexican fan palm is a single-trunked palm tree found in the San Francisco Bay area, in southern Sacramento Valley, and along the Southern California coast. It was introduced as a common landscape ornamental that escaped and became invasive in riparian areas, orchards, and landscaped areas. It can create monospecific stands in riparian areas where the dead fronds can become a fire hazard (Cal-IPC 2019). This species was detected in various locations on Addition 1, Addition 2, and the Sierra Verde Addition (Figures 10a and 10c).

Eucalyptus (*Eucalyptus camaldulensis/globulus*)

Eucalyptus (river red gum and southern blue gum) are fast-growing trees that can reach heights of 180 feet tall. These species are widely spread throughout the coastal regions of California, often in disturbed, riparian, coastal grasslands, and forest areas (Cal-IPC 2019). Groves can expand into intact adjacent scrub, woodland, or grassland habitats. The long, glossy leaves have flammable plant compounds and decompose very slowly, increasing leaf litter and the risk of fire. These species were detected in various locations on both Addition 1 and the Sierra Verde Addition and a single location on Addition 2 (Figures 10a and 10c).

Olive Tree (*Olea europaea*)

Olive is an evergreen tree that is native to the Mediterranean region. This species was most likely planted historically but is no longer actively maintained. It can grow to 30 feet tall with very small, fragrant, white flowers, and lance-shaped leaves. This species was detected in various locations on both Addition 1 and the Sierra Verde Addition and a single location on Addition 2 (Figures 10a and 10c).

Peruvian Pepper Tree (*Schinus molle*)

Peruvian pepper tree is an evergreen shrub or tree that often occur in upland habitats. This species can be prolific, producing fruits that get eaten and dispersed by wildlife, and root shoots that can result in dense monotypic growth within the tree canopy. This species was detected in various locations on both Addition 1 and the Sierra Verde Addition (Figures 10a and 10c).

Golden Wattle (*Acacia pycnantha*)

Golden wattle is a tree native to southeastern Australia. It can grow to a height of 30 feet with profuse, fragrant, golden flowers. This species is an escaped ornamental plant that is commonly found growing along roadsides and in nearby woodlands. This species was detected in two locations on Addition 2 (Figure 10a).

4.3 WILDLIFE

A total of 161 wildlife species were detected and/or observed during surveys conducted from March 2019 to November 2020: 26 invertebrates, 5 amphibians, 11 reptiles, 80 birds, and 39 mammals. A total of 27 special-status wildlife species were observed or detected, and are shown in **Figures 11a** through **11c**. A comprehensive list of wildlife species observed or detected on the

Additions is included in **Appendix C**. Representative photographs of wildlife species found on the Additions during surveys are located in Appendix E.

4.3.1 Invertebrates

A number of invertebrates observed were incidentally observed or caught within the Additions and were identified to genus when feasible. These include orb-weaver spider (Family *Araneidae*), darkling beetle (*Eleodes* sp.), Pacific coast tick (*Dermacentor occidentalis*), European honey bee (*Apis mellifera*), and sphinx moth (*Euproserpinus* sp.).

4.3.1.1 Butterflies

Twenty-one species of butterfly were detected during butterfly surveys on the Additions. Most of the butterfly species detected are relatively common throughout San Diego County and no special-status butterfly species were detected. Commonly detected butterflies included pacific orangetip (*Anthocharis sara*), dainty sulphur (*Nathalis iole*), silvery blue (*Glaucopsyche lygdamus*), common buckeye (*Junonia coenia*), marine blue (*Leptotes marina*), Behr's metalmark (*Apodemia virgulti*), painted lady (*Vanessa cardui*), and California dogface (*Zerene eurydice*). While no special-status butterfly species were detected, potential habitat for one special-status species, Harbison's dun skipper, was present within the Additions, and is discussed in further detail in Section 4.3.6.

4.3.2 Herpetofauna

4.3.2.1 Amphibians

A total of five amphibian species were detected within the Additions. Four of the five species were documented during the aquatic survey (**Table 7**). One detected species, western spadefoot toad (*Spea hammondii*), is a special-status species. The other four species documented were Baja California treefrog (*Pseudacris hypochondriaca hypochondriaca*), California treefrog (*Pseudacris cadaverina*), western toad (*Anaxyrus boreas halophilus*), and California toad (*Anaxyrus boreas halophilus*).

Table 7. Aquatic Diurnal/Nocturnal Survey Results

Common Name	Scientific Name	Status[a]	Addition[1]	Addition[2]	Sierra Verde
Baja California Treefrog	*Pseudacris hypochondriaca hypochondriaca*	None	Dozens of tadpoles in pond.	Dozens of tadpoles in creek. Adults observed and heard calling.	Hundreds of tadpoles in the pond system.
California Treefrog	*Pseudacris cadaverina*	None	—	Dozens of tadpoles in creek. Adults observed and heard calling.	—
Western Spadefoot Toad	*Spea hammondii*	SSC, MSCP, Group 2	Several tadpoles observed in pond. Several neonatal juveniles were observed in burrows and deep mule deer tracks in the pond margin.	—	Hundreds of tadpoles in the pond system. Dozens of juvenile toadlets were observed along the pond margins. Five individual juveniles were buried in wet sandy soils of the lower pond's upper riverine margin.
Western Toad	*Anaxyrus boreas*	None	—	—	Hundreds of tadpoles in the pond system. Thousands of juvenile toadlets were observed along the pond margins. Adults heard calling from pond margins. Estimated many hundreds in the pond system.

4.3.2.2 Reptiles

A total of eleven reptile species were detected within the Additions. All eleven species were detected during drift fence surveys, including seven lizard species and four snake species, with a total of twenty-four reptile captures (**Table 8**). Three special-status reptile species, Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), coastal western whiptail (*Aspidoscelis tigris stejnegeri*), and Coronado skink (*Plestiodon skiltonianus interparietalis*) were detected during drift fence surveys or incidentally within the Additions; these are discussed in detail in Section 4.3.5.

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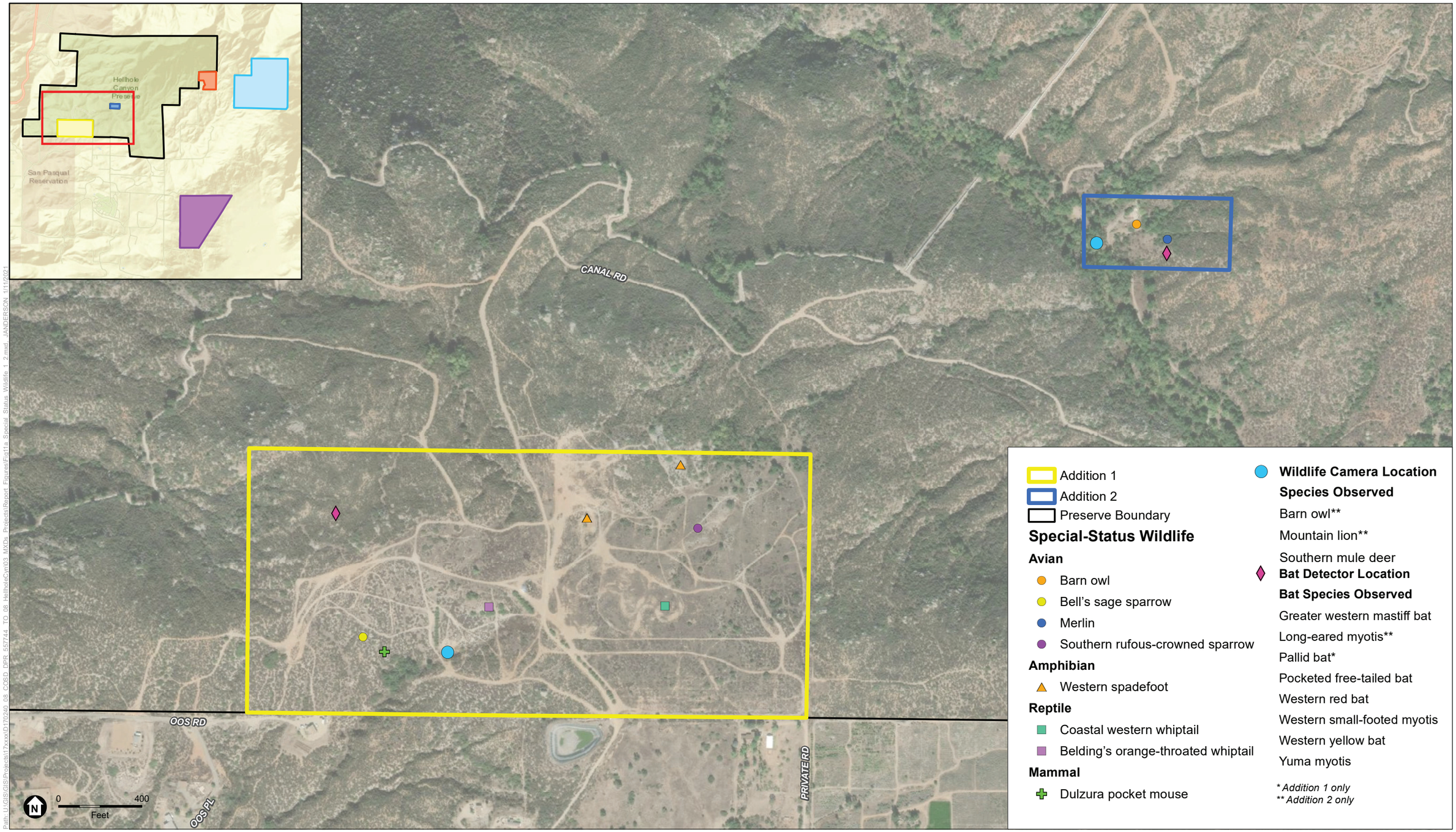
Table 8. Herpetofauna Drift Fence Captures

Common Name	Scientific Name	Status[a]	Array (Number of Captures)																																					Total Number of Captures
			Week 1 (April 8–12 and 15–19, 2019)										Week 2 (May 20–24, 2019)										Week 3 (June 4–6, 2019)										Week 4 (July 24, 25, 28 2019)										
			1	2	3	4	5	6	7	8	9	Noted	1	2	3	4	5	6	7	8	9	Noted	1	2	3	4	5	6	7	8	9	Noted	1	2	3	4	5	6	7	8	9	Noted	
Lizards																																									
Belding's Orange-Throated Whiptail	*Aspidoscelis hyperythra beldingi*	WL, Group 2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	*	—	—	—	—	2	—	—	—	*	2
Coastal Western Whiptail	*Aspidoscelis tigris stejnegeri*	SSC, Group 2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	*	—	—	—	—	—	1	—	—	*	2
Southern Alligator Lizard	*Elgaria multicarinata*	None	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Coronado skink[b]	*Plestiodon skiltonianus interparietalis*	WL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0
Granite Spiny Lizard	*Sceloporus orcutti*	None	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	1
Western Fence Lizard	*Sceloporus occidentalis*	None	—	2	—	—	—	—	—	—	—	*	—	—	—	—	—	—	—	—	—	*	—	—	1	—	—	—	—	1	—	—	—	—	—	—	1	—	—	—	5
Western Side-Blotched Lizard	*Uta stansburiana elegans*	None	—	—	—	—	—	—	—	—	—	*	—	—	—	—	—	—	1	—	—	*	—	—	—	—	—	—	—	—	—	*	—	—	—	—	—	—	—	—	*	1
Snakes																																								
California Striped Racer	*Coluber lateralis*	None	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	*	2
Gopher Snake	*Pituophis catenifer*	None	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	*	—	—	—	—	—	1	—	—	—	4
California Kingsnake	*Lampropeltis californiae*	None	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	3	—	—	5
Southern Pacific Rattlesnake	*Crotalus oreganus helleri*	None	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Amphibians																																								
Baja California Treefrog	*Pseudacris hypochondriaca*	None	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1	—	—	4
Western Spadefoot Toad	*Spea hammondii*	SSC, MSCP, Group 2	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	6	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1	—	9
Western Toad	*Anaxyrus boreas*	None	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	9	—	—	—	—	—	—	—	—	—	—	—	11
California Toad	*Anaxyrus boreas halophilus*	None	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10	2	4	—	16
Total Number of Herpetofauna Captures			**1**	**2**	**1**	**1**	—	—	—	**4**	—	—	—	**1**	—	—	—	—	**1**	**8**	—	—	—	**1**	**1**	**1**	**1**	—	**1**	**12**	—	—	—	—	—	—	**2**	**3**	**12**	**6**	**5**	—	**64**

[a] SSC = CDFW Species of Special Concern; WL = CDFW Watch List; MSCP = Covered under the Draft North County MSCP ; Group 2 = Animals declining but not in immediate threat of extinction or extirpation (County).

[b] Species only noted incidentally during avian survey.

* Individual(s) or sign were observed incidentally during survey

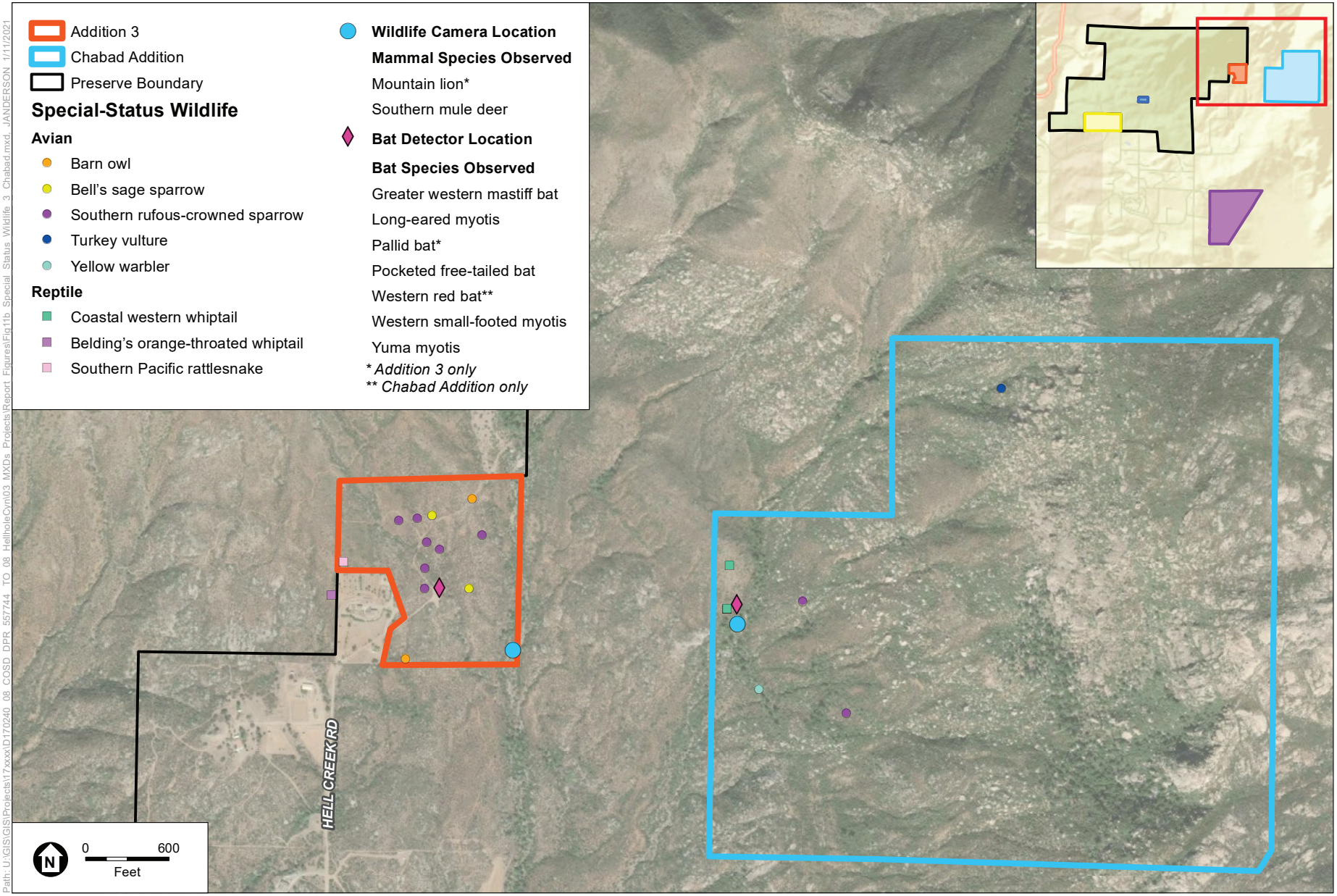


Path: U:\GIS\GIS\Projects\17xxxx\D170240_08_COSD_DPR_557744_TO_08_HellholeCyn\03_MXDs_Projects\Report_Figures\Fig11a_Special_Status_Wildlife_1_2.mxd JANDERSON 1/11/2021

SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

ESA

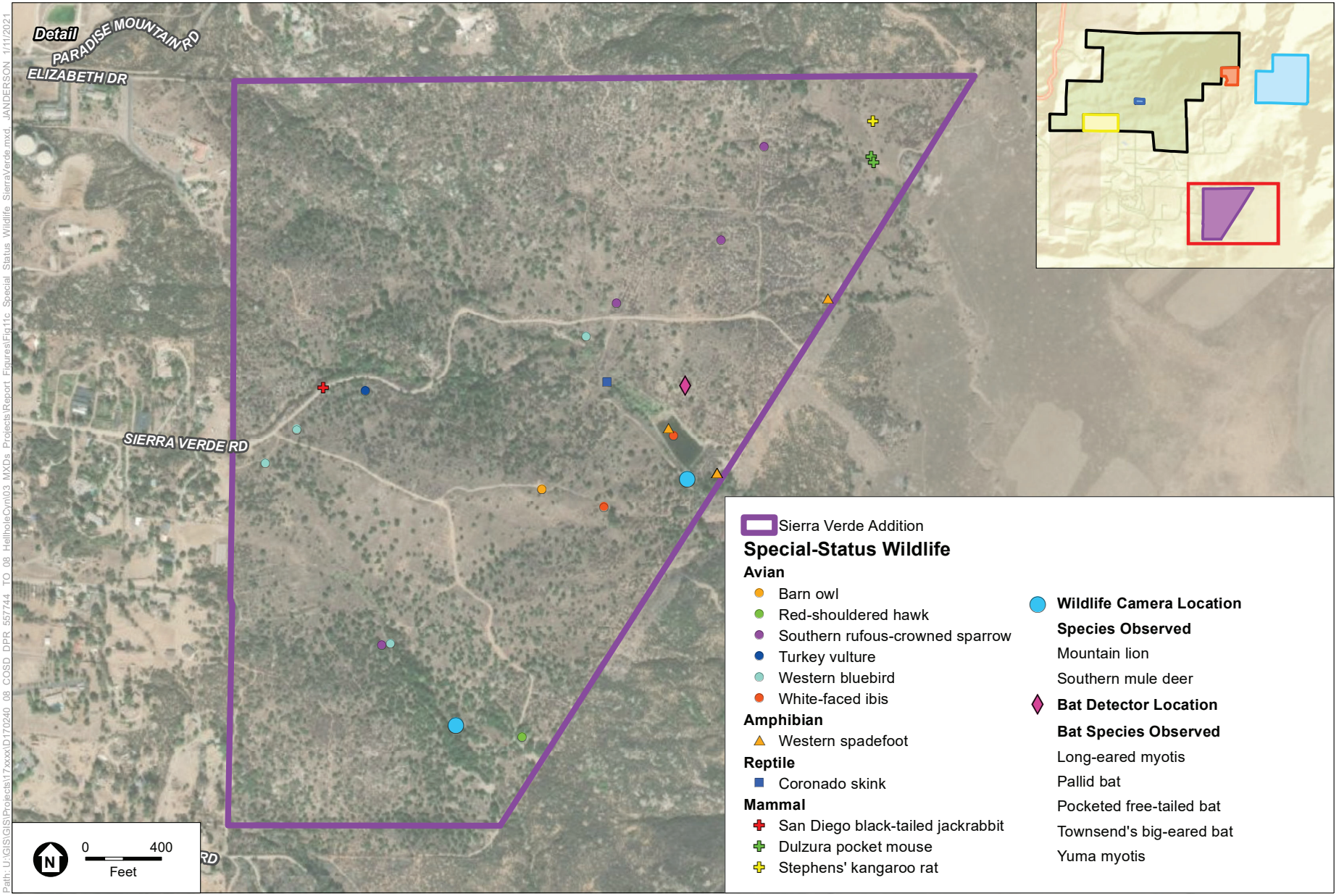
Figure 11a
Special-Status Wildlife Species
Addition 1 and Addition 2



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

ESA

Figure 11b
Special-Status Wildlife Species
Addition 3 and Chabad Addition



SOURCE: ESRI, 2020; SanGIS, 2020; ESA, 2020.

ESA

Figure 11c
Special-Status Wildlife Species
Sierra Verde Addition

4.3.3 Birds

A total of 80 bird species were observed within the Additions during avian surveys in March, May, July, September, and October 2019, and incidentally during other baseline biological surveys (**Table 9**). Of these, a total of nine special-status bird species were observed during avian surveys: white-faced ibis (*Plegadis chihi*), turkey vulture (*Cathartes aura*), red-shouldered hawk (*Buteo lineatus*), barn owl (*Tyto alba*), merlin (*Falco columbarius*) western bluebird (*Sialia mexicana*), Bell's sage sparrow (*Artemisiospiza belli*), Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) and yellow warbler (*Setophaga petechial*). These species are discussed in further detail in Section 4.3.5. The full list of all avian species detected is located in Appendix C.

The most common species observed in terms of numbers of individuals recorded were wrentit (*Chamaea fasciata*), California towhee (*Melozone crissalis*), common raven (*Corvus corax*), mourning dove (*Zenaida macroura*), bushtit (*Psaltriparus minimus)*, spotted towhee (*Pipilo maculatus*), and California quail (*Callipepla californica*). The following birds were detected during nocturnal surveys: lesser nighthawk (*Chordeiles acutipennis*), common poorwill (*Phalaenoptilus nuttallii*), barn owl (*Tyto alba*), great horned owl (*Bubo virginianus*), and western screech-owl (*Megascops kennicottii*).

Common resident species on the Additions include Bewick's wren (*Thryomanes bewickii*), California scrub jay (*Aphelocoma californica*), California thrasher (*Toxostoma redivivum*), California quail, California towhee, wrentit, blue-gray gnatcatcher (*Polioptila caerulea*), house finch (*Haemorhous mexicanus*), lesser goldfinch (*Spinus psaltria*), acorn woodpecker (*Melanerpes formicivorus*), American crow (*Corvus brachyrhynchos*), and Anna's hummingbird (*Calypte anna*). These species were observed during each survey and are presumed to nest within the Additions.

In addition to the resident species, some winter resident species were present within the Additions. These species are winter residents in coastal sage scrub and chaparral habitat within San Diego County and were detected only during the winter, early springtime (before they migrated north), or early fall (just arrived on their wintering grounds). This includes species such as American robin (*Turdus migratorius*), hermit thrush (*Catharus guttatus*), yellow-rumped warbler (*Setophaga coronata*), golden-crowned sparrow (*Zonotrichia atricapilla*), and white-crowned sparrow (Table 9). Few non-resident migratory species were detected within the Additions, but include orange-crowned warbler (*Setophaga celata*) and black-throated gray warbler (*Setophaga nigrescens*). These individual migratory species moved through the Additions, but no large pulses of migratory birds were detected. Generally, the habitat within the Additions appears to represent quality breeding and wintering habitat for species, with no major migratory corridors or continuous stands of riparian vegetation or large wetland areas where migratory birds would rest or stop during migration.

Table 9. Avian Survey Results

Common Name by Family	Scientific Name	Winter (03/05/19–03/18/19)	Spring (05/06/19–05/29/19)	Summer (07/08/19 – 07/11/19)	Fall (09/25/19 – 10/04/19)	Incidental Observations	Status[a]
Anatidae							
Mallard	*Anas platyrhynchos*	2[b]	–	1	2	–	
Bufflehead	*Bucephala albeola*	–	–	–	2	–	
Odontophoridae							
California Quail	*Callipepla californica*	2	27	15	22	X	
Phasianidae							
Wild Turkey	*Meleagris gallopavo*	–	–	–	–	X	
Columbidae							
Common Ground-Dove	*Columbina passerina*	–	–	–	5	–	
Band-Tailed Pigeon	*Patagioenas fasciata*	–	–	2	–	–	
Mourning Dove	*Zenaida macroura*	19	13	16	26	X	
Cuculidae							
Greater Roadrunner	*Geococcyx californianus*	1	–	–	–	X	
Caprimulgidae							
Lesser Nighthawk	*Chordeiles acutipennis*	–	–	X	–	–	
Common Poorwill	*Phalaenoptilus nuttallii*	X	X	X	X	X	
Apodidae							
White-Throated Swift	*Aeronautes saxatalis*	2	–	2	–	–	
Trochilidae							
Anna's Hummingbird	*Calypte anna*	2	1	5	13	X	
Costa's Hummingbird	*Calypte costae*	–	3	1	3	X	
Allen's Hummingbird	*Selasphorus sasin*	–	–	1	1	–	
Charadriidae							
Killdeer	*Charadrius vociferus*	–	–	–	1	–	

Common Name by Family	Scientific Name	Winter (03/05/19–03/18/19)	Spring (05/06/19–05/29/19)	Summer (07/08/19 – 07/11/19)	Fall (09/25/19 – 10/04/19)	Incidental Observations	Status[a]
Threskiornithidae							
White-Faced Ibis	*Plegadis chihi*	–	–	–	2	–	WL, Group 1
Cathartidae							
Turkey Vulture	*Cathartes aura*	–	–	1	–	X	Group 1
Accipitridae							
Red-Tailed Hawk	*Buteo jamaicensis*	2	–	2	3	X	
Red-Shouldered Hawk	*Buteo lineatus*	–	–	1	–	–	Group 1
Tytonidae							
Barn Owl	*Tyto alba*	X	–	X	X	X	Group 2
Strigidae							
Great Horned Owl	*Bubo virginianus*	X	X	X	X	X	
Western Screech-Owl	*Megascops kennicottii*	–	–	–	X	–	
Picidae							
Northern Flicker	*Colaptes auratus*	3	–	1	4	–	
Nuttall's Woodpecker	*Dryobates nuttallii*	1	–	1	2	–	
Acorn Woodpecker	*Melanerpes formicivorus*	6	6	4	20	X	
Falconidae							
Merlin	*Falco columbarius*	–	–	–	1	–	Group 2
Tyrannidae							
Pacific-Slope Flycatcher	*Empidonax difficilis*	–	1	1	–	–	
Ash-Throated Flycatcher	*Myiarchus cinerascens*	–	10	4	2	X	
Black Phoebe	*Sayornis nigricans*	–	–	2	2	–	
Say's Phoebe	*Sayornis saya*	1	–	–	1	–	
Cassin's Kingbird	*Tyrannus vociferans*	2	2	–	–	–	

Common Name by Family	Scientific Name	Winter (03/05/19–03/18/19)	Spring (05/06/19–05/29/19)	Summer (07/08/19 – 07/11/19)	Fall (09/25/19 – 10/04/19)	Incidental Observations	Status[a]
Corvidae							
California Scrub-Jay	*Aphelocoma californica*	16	11	11	19	X	
American Crow	*Corvus brachyrhynchos*	16[b]	1	1	15	X	
Common Raven	*Corvus corax*	51	10	8	11	X	
Hirundinidae							
Cliff Swallow	*Petrochelidon pyrrhonota*	–	15	15	–	–	
Northern Rough-Winged Swallow	*Stelgidopteryx serripennis*	–	–	–	2	–	
Tree Swallow	*Tachycineta bicolor*	10[b]	–	–	–	–	
Paridae							
Oak Titmouse	*Baeolophus inornatus*	2	–	3	6	X	
Aegithalidae							
Bushtit	*Psaltriparus minimus*	19	19	11	23	–	
Troglodytidae							
Canyon Wren	*Catherpes mexicanus*	2	3	1	2	–	
Rock Wren	*Salpinctes obsoletus*	–	–	–	1	–	
Bewick's Wren	*Thryomanes bewickii*	6	4	5	13	–	
House Wren	*Troglodytes aedon*	–	6	3	10	–	
Polioptilidae							
Blue-Gray Gnatcatcher	*Polioptila caerulea*	4	4	5	9	–	
Regulidae							
Ruby-Crowned Kinglet	*Regulus calendula*	1	–	–	–	–	
Sylviidae							
Wrentit	*Chamaea fasciata*	28	15	27	26	X	

Common Name by Family	Scientific Name	Winter (03/05/19–03/18/19)	Spring (05/06/19–05/29/19)	Summer (07/08/19 – 07/11/19)	Fall (09/25/19 – 10/04/19)	Incidental Observations	Status[a]
Turdidae							
Hermit Thrush	*Catharus guttatus*	2	–	–	–	–	
Western Bluebird	*Sialia mexicana*	3	–	1	2	–	Group 1
American Robin	*Turdus migratorius*	9	–	–	–	X	
Mimidae							
Northern Mockingbird	*Mimus polyglottos*	–	1	2	7	X	
Sage Thrasher	*Oreoscoptes montanus*	–	–	–	–	X	
California Thrasher	*Toxostoma redivivum*	7	12	11	10	–	
Bombycillidae							
Cedar Waxwing	*Bombycilla cedrorum*	1	–	–	–	–	
Ptiliogonatidae							
Phainopepla	*Phainopepla nitens*	–	4	4	2	X	
Fringillidae							
House Finch	*Haemorhous mexicanus*	5	15	7	15	–	
Lesser Goldfinch	*Spinus psaltria*	2	7	9	21	X	
Passerellidae							
Southern California Rufous-Crowned Sparrow	*Aimophila ruficeps canescens*	4	1	4	6	–	WL, Group 1
Bell's Sage Sparrow	*Artemisiospiza belli*	2	1	–	–	–	WL, Group 1
Lark Sparrow	*Chondestes grammacus*	1	4	5	–	–	
Song Sparrow	*Melospiza melodia*	–	2	–	2	–	
California Towhee	*Melozone crissalis*	22	23	19	23	X	
Fox Sparrow	*Passerella iliaca*	1	–	–	–	–	
Savannah Sparrow	*Passerculus sandwichensis*	–	–	–	3	–	
Spotted Towhee	*Pipilo maculatus*	12	20	16	21	X	

Common Name by Family	Scientific Name	Winter (03/05/19–03/18/19)	Spring (05/06/19–05/29/19)	Summer (07/08/19 – 07/11/19)	Fall (09/25/19 – 10/04/19)	Incidental Observations	Status[a]
Black-Chinned Sparrow	*Spizella atrogularis*	–	6	2	1	–	
Golden-Crowned Sparrow	*Zonotrichia atricapilla*	1	–	–	–	–	
White-Crowned Sparrow	*Zonotrichia leucophrys*	2	1	–	22	–	
Icteridae							
Red-Winged Blackbird	*Agelaius phoeniceus*	1	–	–	–	–	
Brewer's Blackbird	*Euphagus cyanocephalus*	–	–	–	1	–	
Hooded Oriole	*Icterus cucullatus*	–	1	3	–	–	
Brown-Headed Cowbird	*Molothrus ater*	–	–	–	–	X	
Western Meadowlark	*Sturnella neglecta*	3	1	–	2	–	
Parulidae							
Wilson's Warbler	*Cardellina pusilla*	–	1	–	8	–	
Orange-Crowned Warbler	*Leiothlypis celata*	–	3	–	3	–	
Yellow-Rumped Warbler	*Setophaga coronata*	15	–	–	10	–	
Black-Throated Gray Warbler	*Setophaga nigrescens*	–	–	–	2	–	
Yellow Warbler	*Setophaga petechia*	–	1	–	–	–	SSC, Group 2
Cardinalidae							
Lazuli Bunting	*Passerina amoena*	–	3	–	–	–	
Blue Grosbeak	*Passerina caerulea*	–	1	–	–	–	
Black-Headed Grosbeak	*Pheucticus melanocephalus*	–	1	–	1	X	
Number of Species Observed/Detected		**42**	**39**	**44**	**51**	**27**	

[a] WL: CDFW Watch List.
SSC: CDFW Species of Special Concern.
Group 1: Animals of high sensitivity (listed or specific natural history requirements) (County).
Group 2: Animals declining but not in immediate threat of extinction or extirpation (County).

X: species heard and/or number of individuals not determined.

[b] Flyover

Table 9 lists the bird species found during the avian surveys in 2019, as well as incidental avian observations from other baseline survey efforts. The numbers in Table 9 indicate the approximate number of individuals per species that were heard or observed during each survey. Avian diversity was highest in the fall (September/October) and lowest in the spring (May).

4.3.4 Mammals

4.3.4.1 Small Mammals

A total of fifteen small mammal species were detected within the Additions. Of these fifteen species, eight species, all rodents, were trapped within the Additions during the small mammal surveys. This included the special-status species Dulzura pocket mouse (*Chaetodipus californicus femoralis*), which is discussed in further detail in Section 4.3.5. The most common species trapped was DKR.

Table 10 provides a summary of the total number of individuals captured in each trapline during the spring/summer trapping sessions. For eight nights of trapping during spring/summer 2019, 270 traps were used, for a total of 2,160 "trap nights"—defined as one trap set for one night. There were 276 small mammal captures across those 2,160 trap nights for an approximate 12.8 percent trap night success rate.

In addition to the small mammals captured during small mammal surveys, seven small mammal species were incidentally captured during herpetological drift fence surveys. Of these, three species, cactus mouse (*Peromyscus eremicus*), western harvest mouse (*Reithrodontomys megalotis*), and desert gray shrew (*Notiosorex crawfordi crawfordi*) were not captured during small mammal trapping. The full list of all small mammal species detected is located in Appendix C.

Table 10. Small Mammal Trapping Results

Common Name	Scientific Name	Status[a]	Spring/Summer 2019 (5/13/19–5/17/19 and 5/20/19–5/24/19) Sampling Location								Total
			1	2	3	4	5	6	7	8	
Dulzura pocket mouse	*Chaetodipus californicus femoralis*	SSC, Group 2	—	2	—	—	—	—	—	—	2
Dulzura kangaroo rat	*Dipodomys simulans*	None	3	—	77	5	1	6	1	—	93
California vole	*Microtus californicus*	None	—	—	—	—	—	1	7	—	8
Big-eared woodrat	*Neotoma macrotis*	None	—	5	2	25	2	4	12	12	62
Desert gray shrew[b]	*Notiosorex crawfordi*	None	—	—	—	—	—	—	—	—	0

Table 10. Small Mammal Trapping Results

Common Name	Scientific Name	Status[a]	Spring/Summer 2019 (5/13/19–5/17/19 and 5/20/19–5/24/19) Sampling Location								Total
			1	2	3	4	5	6	7	8	
California mouse	*Peromyscus californicus*	None	—	3	3	4	9	5	1	4	29
Cactus mouse[b]	*Peromyscus eremicus*	None	—	—	—	—	—	—	—	—	0
Northern Baja mouse	*Peromyscus fraterculus*	None	—	—	10	8	9	—	—	—	27
Deer mouse	*Peromyscus maniculatus*	None	1	19	—	5	6	12	7	3	53
Mouse sp.	*Peromyscus* sp.	None	—	—	—	—	—	2	—	—	2
Western harvest mouse[b]	*Reithrodontomys megalotis*	None	—	—	—	—	—	—	—	—	0
Total			**4**	**29**	**92**	**47**	**27**	**30**	**28**	**19**	**276**

[a] SSC: CDFW Species of Special Concern.
Group 2: Animals declining but not in immediate threat of extinction or extirpation (County).

[b] Species only noted incidentally during herpetofauna trapping.

Focused Stephens' Kangaroo Rat Trapping Results

Live-trapping at the three grids and three transect lines yielded a total of twenty-six captured individuals, representing four species including: SKR, DKR, Dulzura pocket mouse, and deer mouse (*Peromyscus maniculatus*) (**Table 11**). Of these four species, Dulzura pocket mouse and SKR are special-status species, which are discussed in further detail in Section 4.3.5 and depicted in Figure 11c. The most common species trapped was DKR.

Trapping confirmed the presence of SKR at Grid 2, which was centrally located within the survey area, while DKR were captured throughout the survey area. Based on the visual survey and live-trapping results, the Sierra Verde Addition supports a small patch of suitable grassland for SKR, with more expansive high-quality habitat adjacent to the Addition off-site on Rancho Guejito.

Table 11. Stephens' Kangaroo Rat Live-Trapping Results (11/2/20–11/4/20)

Common Name	Scientific Name	Status[a]	Total
Stephens' kangaroo rat	*Dipodomys stephensi*	FE, ST, MSCP, Group 1	1
Dulzura kangaroo rat	*Dipodomys simulans*	None	17
Unknown kangaroo rat*	*Dipodomys sp.*	None	2
Dulzura pocket mouse	*Chaetodipus californicus femoralis*	SSC, Group 2	4
Deer mouse	*Peromyscus maniculatus*	None	2

Table 11. Stephens' Kangaroo Rat Live-Trapping Results (11/2/20–11/4/20)

Common Name	Scientific Name	Status[a]	Total
Total			**26**

[a] FE: Federally Endangered
ST: State Threatened
MSCP: Covered under the Draft North County MSCP (County of San Diego 2017)
SSC: CDFW Species of Special Concern.
Group 1: Animals of high sensitivity (listed or specific natural history requirements) (County).
Group 2: Animals declining but not in immediate threat of extinction or extirpation (County).
* Kangaroo rat escaped trap prior to identification and is therefore recorded as Unknown kangaroo rat.

4.3.4.2 Bats

Fourteen bat species were detected within the Additions during passive and active acoustic surveys in 2019, including pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), big brown bat (*Eptesicus fuscus*), greater western mastiff bat (*Eumops perotis californicus*), western red bat (*Lasiurus blossevillii*), hoary bat (*Lasiurus cinereus*), western yellow bat (*Lasiurus xanthinus*), California myotis (*Myotis californicus*), western small-footed myotis (*Myotis ciliolabrum*), long-eared myotis (*Myotis evotis*), Yuma myotis (*Myotis yumanensis*), pocketed free-tailed bat (*Nyctinomops femorosaccus*), canyon bat (*Parastrellus hesperus*), and Mexican free-tailed bat (*Tadarida brasiliensis*). Six of these species are CDFW Species of Special Concern: pallid bat, Townsend's big-eared bat, greater western mastiff bat, western red bat, western yellow bat, and pocketed free-tailed bat. Pallid bat and Townsend's big-eared bat are also covered under the Draft North County MSCP (County of San Diego 2017). **Table 12** lists the status, preferred roosting habitat, and detection method for each bat species that was detected during the 2019 spring and summer bat surveys.

Table 12. Summary of Bat Species Detected During 2019 Surveys

Common Name	Scientific Name	Status[a]	Roosting Habitat[b]	Detection Method				
				Addition 1	Addition 2	Addition 3	Chabad	Sierra Verde
Pallid bat	*Antrozous pallidus*	SSC, MSCP, Group 2	Multiple	Acoustic	Not Detected	Acoustic	Not Detected	Acoustic
Townsend's big-eared bat	*Coryncorhinus townsedii*	SSC, MSCP, Group 2	Caves, structures	Not Detected	Not Detected	Not Detected	Not Detected	Acoustic
Big brown bat	*Eptesicus fuscus*	None	Multiple	Acoustic	Acoustic	Acoustic	Acoustic	Acoustic
Greater western mastiff bat	*Eumops perotis californicus*	SSC, Group 2	Cliff	Acoustic	Acoustic	Acoustic	Acoustic	Not Detected
Western red bat	*Lasiurus blossevillii*	SSC, Group 2	Tree	Acoustic	Acoustic	Not Detected	Acoustic	Not Detected
Hoary bat	*Lasiurus cinereus*	None	Tree	Acoustic	Acoustic	Acoustic	Acoustic	Acoustic
Western yellow bat	*Lasiurus xanthinus*	SSC	Tree	Acoustic	Acoustic	Not Detected	Not Detected	Not Detected
California myotis	*Myotis californicus*	None	Multiple	Acoustic	Acoustic	Acoustic	Acoustic	Acoustic
Western small-footed myotis	*Myotis ciliolabrum*	Group 2	Multiple	Acoustic	Acoustic	Acoustic	Acoustic	Not Detected
Long-eared myotis	*Myotis evotis*	Group 2	Multiple	Not Detected	Acoustic	Acoustic	Acoustic	Acoustic
Yuma myotis	*Myotis yumanensis*	Group 2	Multiple	Acoustic	Acoustic	Acoustic	Acoustic	Acoustic
Pocketed free-tailed bat	*Nyctinomops femorosaccus*	SSC, Group 2	Cliff	Acoustic	Acoustic	Acoustic	Acoustic	Acoustic
Canyon bat	*Parastrellus hesperus*	None	Cliff[c]	Acoustic	Acoustic, visual	Acoustic, visual	Acoustic	Acoustic
Mexican free-tailed bat	*Tadarida brasiliensis*	None	Multiple	Acoustic	Acoustic	Acoustic	Acoustic	Acoustic

[a] SSC: CDFW Species of Special Concern.
MSCP: Proposed North County MSCP Covered Species per the 2017 Draft North County MSCP (County of San Diego 2017).
Group 2: Animals declining but not in immediate threat of extinction or extirpation (County).

[b] Source: Western Bat Working Group (WBWG). 2019. Species Matrix. Accessed at http://wbwg.org/matrices/species-matrix/ in September 2019.

[c] Roosts primarily in rock crevices.

Roosting Habitat Assessment

Addition 1

Potential roosting habitat in Addition 1 includes rocky outcrops and mature oaks and sycamores. While the majority of the Addition does not contain suitable roosting habitat, marginal to moderate quality roosting habitat occurs within small portions of the site. The site includes small rocky outcrops that may provide roosting habitat for canyon bats and other common, crevice-roosting species; however, these features are generally low to the ground and lack the vertical drop and predator protection preferred by other cliff and multiple roosting habitat species such as the big free-tailed bat and greater western mastiff bat. Additionally, larger rocky outcrops are locally

abundant, increasing the likelihood that most rock and crevice roosting bat species would prefer to roost in the higher quality habitat off-site.

The site includes a small patch of riparian forest habitat with mature oaks and sycamores, potentially providing roosting habitat for tree and cavity roosting species. Because this habitat area is relatively small in size (<0.5 acres) and is not associated with a perennial creek, it is expected that resident tree-roosting bats would prefer to roost in the larger, contiguous blocks of riparian habitat off-site. However, this small habitat patch could provide temporary roosting habitat for transient tree-roosting bats during migration and dispersals, such as the hoary bat. Other habitat features include an off-site detention pond and aqueduct that provide year-round water sources near the site.

Addition 2

Potential roosting habitat in the Addition 2 includes mature oaks and sycamores. The western portion of the Addition contains high-quality riparian habitat associated with the creek that traverses the Addition for species such as the western red bat and California myotis. Potential roost features in the riparian forest habitat include snags, sloughing bark, and tree foliage. In addition, acorn woodpeckers were frequently observed in the area, providing a source of tree cavities for cavity-roosting bats. While the surrounding areas contain abundant rocky outcrops, there are no large rocky outcrops on the Addition and the Addition is not expected to provide roosting habitat for species that roost in rocky cliffs and crevices.

Other habitat features include an aqueduct that provides a year-round water source approximately 0.17 miles west of the Addition. During the active survey, a bat was observed commuting over the Addition from the rocky outcrops to the east towards the aqueduct to the west shortly after sunset. The creek running through the Addition may also provide a seasonal water source.

Addition 3

Potential roosting habitat in Addition 3 includes small rocky outcrops and mature oaks and sycamores. While the majority of the Addition does not contain suitable roosting habitat, marginal to moderate quality roosting habitat occurs within small portions of the site. The site includes small rocky outcrops that may provide roosting habitat for canyon bats and other common, crevice-roosting species; however, similar to Addition 1, these features are generally low to the ground and lack the vertical drop and predator protection preferred by other cliff and multiple roosting habitat species such as the big free-tailed bat. Additionally, rocky outcrops are locally abundant, increasing the likelihood that most rock and crevice roosting bat species would prefer to roost in the higher quality habitat off-site.

The Addition includes a corridor of riparian woodland habitat with mature oaks and sycamores along the eastern border, potentially providing roosting habitat for tree and multiple habitat roosting species. The Addition is located 1.2 miles east of the nearest large perennial fresh water source at the aqueduct. Additional minor water sources may occur in surrounding areas as livestock tanks.

Chabad

Potential roosting habitat in the Chabad Addition includes large rocky outcrops and mature trees, including oaks, sycamores, and scattered pine trees. The Chabad Addition contains abundant rocky roosting habitat in the form of rocky outcrops with crevices and overhangs. The site is not known to contain any caves, mines, or tall vertical cliffs; however, the majority of the southern and eastern portions of the Addition were inaccessible due to steep, rocky terrain and dense chaparral and could not be thoroughly investigated on foot. The Addition includes the west-facing slope of Rodriguez Mountain. Roost selection data (Rancourt et al. 2007; Maxell 2015) suggests that there may be a roost site selection preference for south, east, and southeast facing slopes; however, it is unknown if these selection preferences are applicable to the regional and local climate of the Chabad Addition. While the Addition still provides a significant amount of potentially suitable rocky habitat for roosting bats, nearby areas of Rodriguez Mountain outside of the Addition, such as the rocky southeast face and steeper cliffs on the north face may generally offer higher roosting habitat value.

The Addition also includes riparian forest habitat with mature oaks and sycamores along the western boundary along a seasonal creek, providing potential roosting habitat for tree and multiple habitat roosting species. The lack of year-round open water habitat within the creek may limit the habitat use by resident riparian bat species such as the western red bat and California myotis that prefer habitat in proximity to a water source. However, these areas would still provide potential roosting habitat for bats during seasonal migration and dispersal. The Addition is located 1.7 miles east of the nearest large perennial fresh water source at the aqueduct, a distance that is easily traveled by fast-flying bats such as the free-tailed bats and the greater western mastiff bat. For species that typically travel shorter distances from their roost sites, additional minor water sources could occur closer to the Addition in association with human development (e.g., livestock tanks). The Addition also includes a potential seasonal water source where seeps flow seasonally over exposed rock faces.

Sierra Verde

Potential roosting habitat in the Sierra Verde Addition includes small rocky outcrops, mature oaks and sycamores, and the dead fronds or “skirts” of palm trees scattered throughout the site. The site

includes small rocky outcrops that may provide roosting habitat for canyon bats and other common, crevice-roosting species; however, these features are generally low to the ground and lack the vertical drop and predator protection preferred by other cliff and multiple roosting habitat species such as the big free-tailed bat. Additionally, rocky outcrops are locally abundant, increasing the likelihood that most rock and crevice roosting bat species would prefer to roost in the higher quality habitat off-site. Species associated with roosting in high cliffs such as the greater western mastiff bat may also use the skirts of tall palm trees as temporary roosts. Species known to establish maternity colonies in palm skirts include the western yellow bat and big brown bat; however, western yellow bats are more typically associated with palms in suburban and riparian area, rather than scattered palms in upland scrub or chaparral habitats. The pond in the Addition provides a seasonal water source and multiple perennial water sources occur nearby in the surrounding rural residential areas as ponds, swimming pools, and stock tanks.

Emergence Surveys and Active Acoustic Monitoring

Three species of bats were detected during active acoustic monitoring within the Additions: canyon bat, California myotis, and Mexican free-tailed bat (**Table 13**). Emergence surveys were focused around rocky outcrops and woodland habitats identified during the roosting habitat assessments, and active acoustic monitoring was focused on a variety of habitats, including ponded areas and creeks. No bats were directly observed emerging from roost sites; however, a canyon bat was observed commuting from an off-site rocky outcrop towards a canal to the northwest.

Table 13. Results of Emergence Surveys and Active Acoustic Monitoring during Spring and Summer 2019

Survey Location	Date	Surveyors	Results
Addition 1	3/19/2019	Julie Stout, Adrienne Lee	No bat activity detected. No bats detected foraging over ponded areas.
	6/4/2019	Julie Stout, Lisa Maier	No bat activity detected. No bats detected foraging over ponded areas.
Addition 2	3/19/2019	Julie Stout, Adrienne Lee	The first species detected was a canyon bat detected visually and acoustically at 7:15 pm. California myotis was also detected acoustically.
	6/4/2019	Julie Stout, Lisa Maier	At 7:55 p.m., a canyon bat was observed commuting from a rocky outcrop off-site toward a canal to the northwest (outside of acoustic detection range). Multiple canyon bats and one California myotis were detected foraging along the road within the riparian area.
Addition 3	4/4/2019	Julie Stout,	No bat activity detected.

Table 13. Results of Emergence Surveys and Active Acoustic Monitoring during Spring and Summer 2019

Survey Location	Date	Surveyors	Results
		Adrienne Lee	
	7/2/2019	Julie Stout, Adrienne Lee	Canyon bats were detected acoustically. No bats were visually observed.
Chabad	4/4/2019	Julie Stout, Adrienne Lee	No bat activity detected.
	7/2/2019	Julie Stout, Adrienne Lee	No bat activity detected.
Sierra Verde	3/26/2019	Julie Stout, Adrienne Lee	Mexican free-tailed bats and canyon bats were detected acoustically. No bats were visually observed. No bats were observed foraging at the ponded area.
	6/11/2019	Julie Stout, Lisa Maier	Canyon bats were detected acoustically. No bats were visually observed. No bats were observed foraging at the ponded area.

Passive Acoustic Surveys

Fourteen bat species were detected during the spring and summer passive acoustic surveys in 2019. **Table 14** presents the relative activity index for each bat species during the spring and summer passive acoustic surveys. The relative activity index provides a basis for relative comparison of activity for each bat species, but does not directly correlate with the abundance of individuals. A higher activity index could be the result of a single bat foraging in the survey area for an extended period of time or multiple bats briefly passing through the survey area.

For migratory species such as the Mexican free-tailed bat (a species that occurs as both a migrant and year-round resident in Southern California), trends of increased activity in the spring at certain parcels, such as Addition 2, as compared to summer, may be the result of migratory activity. For species with increased summer activity, such as the Mexican free-tailed bat in Addition 1 and Sierra Verde, these activity trends may be associated with local seasonal movement patterns and changes in seasonal foraging activity. Increased activity during summer could also indicate that seasonal bachelor or maternal roosts occur in the vicinity. Activity for the majority of bat species detected peaked between approximately 8:00 p.m. and 10:00 p.m., sometimes followed by a second, smaller spike in activity after midnight.

Table 14. Results of Passive Acoustic Bat Surveys during Spring and Summer 2019

Relative Nightly Activity Index[1]	Pallid bat *Antrozous pallidus*	Townsend's big-eared bat *Corynorhinus townsendii*	Big brown bat *Eptesicus fuscus*	Greater western mastiff bat *Eumops perotis californicus*	Western red bat *Lasiurus blossevillii*	Hoary bat *Lasiurus cinereus*	Western yellow bat *Lasiurus xanthinus*	California myotis *Myotis californicus*	Western small-footed myotis *Myotis ciliolabrum*	Long-eared myotis *Myotis evotis*	Yuma myotis *Myotis yumanensis*	Pocketed free-tailed bat *Nyctinomops femorosaccus*	Canyon bat *Parastrellus hesperus*	Mexican free-tailed bat *Tadarida brasiliensis*
Status[2]	SSC, MSCP, Group 2	SSC, MSCP, Group 2	None	SSC, Group 2	SSC, Group 2	None	SSC	None	Group 2	Group 2	Group 2	SSC, Group 2	None	None
Addition 1														
Spring (March)	—	—	—	5.71	10.00	10.00	—	15.71	2.86	—	15.71	60.00	—	130.00
Summer (June)	1.43	—	32.86	1.43	14.29	1.43	1.43	85.71	8.57	—	45.71	181.43	95.71	378.57
Average Activity Index[3]	0.71	—	16.43	3.57	12.14	5.71	0.71	50.71	5.71	—	30.71	120.71	47.86	254.29
Addition 2														
Spring (March)	—	—	—	4.29	1.43	14.29	—	24.29	—	2.86	4.29	145.71	24.29	671.43
Summer (June)	—	—	23.33	—	15.00	5.00	5.00	53.33	26.67	—	43.33	213.33	45.00	90.00
Average Activity Index[3]	—	—	11.67	2.14	8.21	9.64	2.50	38.81	13.33	1.43	23.81	179.52	34.64	380.71
Addition 3														
Spring (April)	1.43	—	4.29	1.43	—	25.71	—	44.29	64.29	—	4.29	45.71	51.43	22.86
Summer (July)	—	—	55.00	—	—	—	—	15.00	25.00	2.50	2.50	275.00	22.50	7.50
Average Activity Index[3]	0.71	—	29.64	0.71	—	12.86	—	29.64	44.64	1.25	3.39	160.36	36.96	15.18
Chabad														
Spring (April)	—	—	1.43	—	—	5.71	—	17.14	32.86	5.71	8.57	22.86	102.86	15.71
Summer (July)	—	—	50.00	8.75	1.25	—	—	32.50	25.00	—	3.75	21.25	32.50	17.50
Average Activity Index[3]	—	—	25.71	4.38	0.63	2.86	—	24.82	28.93	2.86	6.16	22.05	67.68	16.61
Sierra Verde														
Spring (March)	—	2.50	—	—	—	10.00	—	72.50	—	7.50	12.50	87.50	12.50	87.50
Summer (June)	2.00	—	52.00	—	—	—	—	18.00	—	—	26.00	176.00	30.00	280.00
Average Activity Index[3]	1.00	1.25	26.00	—	—	5.00	—	45.25	—	3.75	19.25	131.75	21.25	183.75

[1] Number of bat passes per detector per night multiplied by 10.
[2] SSC: CDFW Species of Special Concern.
Group 2: Animals declining but not in immediate threat of extinction or extirpation (County).
[3] Average of seasonal measures of relative activity for each bat species detected.

One species with notable activity trends was the pocketed free-tailed bat. A spike in pocketed free-tailed bat activity in the early evening (around 9:00 p.m.) at Addition 3 in summer could indicate there is a day-roosting site in the vicinity of this parcel. One hypothesis is that the activity spike at Addition 3 could be associated with the potential roosting habitat on the sheer cliffs Rodriguez Mountain's north face (visible in aerial imagery) and the location of the aqueduct northeast of Addition 3 and Chabad Addition. From this location, the nearest access to open, unobstructed water for drinking "on the wing" is the aqueduct and bats would pass through Addition 3 en route. This could explain the higher activity in Addition 3, as compared with Chabad Addition, even though these parcels contain similar habitats. Additionally, the vast majority of pocketed free-tailed bat calls detected were commuting calls; however, a limited number of foraging calls were also detected.

Also notable were the seasonal trends of the Mexican free-tailed bat. This species had a notable shift in activity from Addition 2 in the spring to Addition 1 and Sierra Verde in the summer. The reason for these shifts in activity patterns is unknown, but could be due to seasonal changes in roost locations or insect prey.

4.3.4.3 Medium and Large Mammals

Wildlife Cameras

Several mammal and bird species were detected at the six wildlife camera locations. Species detected at the wildlife cameras in approximate order of abundance based on the total number of instances a camera was triggered by each species were various bird species (e.g., California scrub jay [*Aphelocoma californica*], oak titmouse [*Baeolophus inornatus*], great horned owl [*Bubo virginianus*], red-tailed hawk [*Buteo jamaicensis*], California quail [*Callipepla californica*], American crow [*Corvus brachyrhynchos*], common raven [*Corvus corax*], greater roadrunner [*Geococcyx californianus*], acorn woodpecker [*Melanerpes formicivorus*], wild turkey [*Meleagris gallopavo*], common poorwill [*Phalaenoptilus nuttallii*], spotted towhee [*Pipilo maculatus*], California thrasher [*Toxostoma redivivum*], hummingbird species [Trochilidae Family], American robin [*Turdus migratorius*], barn owl [*Tyto alba*], mourning dove [*Zenaida macroura*], sage thrasher [*Oreoscoptes montanus*]), Audubon's cottontail (*Sylvilagus audubonii*), southern mule deer (*Odocoileus hemionus fuliginatus*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), mountain lion (*Puma concolor*), bobcat (*Lynx rufus*), striped skunk (*Mephitis mephitis*), mouse species (*Muridae* Family), northern raccoon (*Procyon lotor*), chipmunk species (*Sciuridae* Family), spotted skunk (*Spilogale gracilis*), Virginia opossum (*Didelphis virginiana*), and squirrel species (*Sciuridae* Family). Two detected species are special-status species covered under County Group 2: mountain lion and southern mule deer. Representative photographs of the wildlife cameras, their views, and wildlife species detected during surveys are located in Appendix E.

Table 15 details the number of instances a wildlife species triggered a wildlife camera per species. It is important to note that, while the number of instances triggered per species per camera is useful to show the locations where various wildlife species were detected, the number of instances are not meant to provide an index or estimate of relative abundance. For example, species such as the Audubon's cottontail are very active and if they are foraging in front of a wildlife camera, the camera will continue to take photos of the same cottontail, until the cottontail exits the camera's field of view. It is likely that, for several of the species, the cameras detected many of the same individuals moving around the Additions.

Table 15. Wildlife Species Detected at Wildlife Camera Stations

Wildlife Camera Station ID	Number of Instances a Camera Was Triggered			
	Winter (3/5/19–4/12/19)	Spring (5/14/19–6/16/19)	Summer (7/23/19–8/23/19)	Fall (8/24/19–9/24/19)
Audubon's Cottontail				
Addition 1	—	68	74	39
Addition 2	—	—	13	—
Addition 3	3	6	—	—
Chabad	—	12	—	—
Sierra Verde 1	—	—	—	—
Sierra Verde 2	—	—	—	—
Total	**3**	**86**	**87**	**39**
Bird Species				
Addition 1	196	3	12	2
Addition 2	26	241	56	2
Addition 3	3	8	13	—
Chabad	—	4	—	—
Sierra Verde 1	1	1	—	—
Sierra Verde 2	—	—	2	—
Total	**226**	**257**	**83**	**4**
Bobcat				
Addition 1	—	—	—	—
Addition 2	—	1	—	—
Addition 3	7	1	—	3
Chabad	—	—	—	—
Sierra Verde 1	—	—	—	—
Sierra Verde 2	—	—	1	—
Total	**7**	**2**	**1**	**3**

Table 15. Wildlife Species Detected at Wildlife Camera Stations

Wildlife Camera Station ID	Number of Instances a Camera Was Triggered			
	Winter (3/5/19–4/12/19)	Spring (5/14/19–6/16/19)	Summer (7/23/19–8/23/19)	Fall (8/24/19–9/24/19)
Chipmunk				
Addition 1	—	—	—	—
Addition 2	—	—	—	—
Addition 3	—	—	—	—
Chabad	—	2	—	—
Sierra Verde 1	—	—	—	—
Sierra Verde 2	—	—	—	—
Total	**0**	**2**	**0**	**0**
Coyote				
Addition 1	—	4	1	1
Addition 2	—	—	—	—
Addition 3	—	—	—	—
Chabad	—	—	—	—
Sierra Verde 1	8	—	—	—
Sierra Verde 2	2	—	2	—
Total	**10**	**4**	**1**	**1**
Gray Fox				
Addition 1	—	2	1	2
Addition 2	—	—	—	—
Addition 3	1	7	—	3
Chabad	—	—	—	—
Sierra Verde 1	—	—	—	—
Sierra Verde 2	—	—	—	—
Total	**1**	**9**	**1**	**5**
Mountain Lion				
Addition 1	—	—	—	—
Addition 2	—	—	—	1
Addition 3	1	1	—	—
Chabad	—	—	—	—
Sierra Verde 1	3	2	—	—
Sierra Verde 2	—	—	3	4
Total	**4**	**3**	**3**	**5**
Mouse				
Addition 1	—	—	—	—

Table 15. Wildlife Species Detected at Wildlife Camera Stations

Wildlife Camera Station ID	Number of Instances a Camera Was Triggered			
	Winter (3/5/19–4/12/19)	Spring (5/14/19–6/16/19)	Summer (7/23/19–8/23/19)	Fall (8/24/19–9/24/19)
Addition 2	—	—	1	—
Addition 3	—	—	—	—
Chabad	—	3	—	—
Sierra Verde 1	—	—	—	—
Sierra Verde 2	—	—	—	—
Total	**0**	**3**	**1**	**0**
Northern Raccoon				
Addition 1	—	1	—	—
Addition 2	1	—	1	—
Addition 3	—	—	—	—
Chabad	—	—	—	—
Sierra Verde 1	—	—	—	—
Sierra Verde 2	—	—	—	—
Total	**1**	**1**	**1**	**0**
Virginia Opossum				
Addition 1	—	—	—	—
Addition 2	—	—	—	—
Addition 3	—	—	1	—
Chabad	—	—	—	—
Sierra Verde 1	—	—	—	—
Sierra Verde 2	—	—	—	—
Total	**0**	**0**	**1**	**0**
Spotted Skunk				
Addition 1	—	—	—	—
Addition 2	—	—	—	2
Addition 3	—	—	—	—
Chabad	—	—	—	—
Sierra Verde 1	—	—	—	—
Sierra Verde 2	—	—	—	—
Total	**0**	**0**	**0**	**2**
Squirrel				
Addition 1	—	—	—	—
Addition 2	—	—	—	—
Addition 3	—	—	1	—

Table 15. Wildlife Species Detected at Wildlife Camera Stations

Wildlife Camera Station ID	Number of Instances a Camera Was Triggered			
	Winter (3/5/19–4/12/19)	Spring (5/14/19–6/16/19)	Summer (7/23/19–8/23/19)	Fall (8/24/19–9/24/19)
Chabad	—	—	—	—
Sierra Verde 1	—	—	—	—
Sierra Verde 2	—	—	—	—
Total	**0**	**0**	**1**	**0**
Striped Skunk				
Addition 1	—	—	—	—
Addition 2	1	—	3	7
Addition 3	—	2	—	—
Chabad	—	—	—	—
Sierra Verde 1	—	—	—	—
Sierra Verde 2	—	—	—	—
Total	**1**	**2**	**3**	**7**
Southern Mule Deer				
Addition 1	—	31	36	15
Addition 2	8	1	6	2
Addition 3	1	5	10	6
Chabad	—	1	—	—
Sierra Verde 1	4	—	—	1
Sierra Verde 2	2	3	—	1
Total	**15**	**41**	**52**	**25**
Total Photos (All Species)	**268**	**419**	**235**	**91**

4.3.5 Special-Status Wildlife Observed

Twenty-seven special-status wildlife species were observed or detected within the Additions during surveys in 2019–2020 (Figures 11a through 11c). Of these species, four species are covered under the Draft North County MSCP. No special-status invertebrate species, including butterflies, were detected. Special-status wildlife species detected included one amphibian species, three reptile species, nine bird species, and 14 mammal species. Life history, range description, and occurrence of these species within the Additions are discussed in further detail in the following sections.

4.3.5.1 Invertebrates

No special-status invertebrate species were observed during any surveys on the Additions.

4.3.5.2 Herpetofauna

Western Spadefoot Toad (*Spea hammondii*)
CDFW Species of Special Concern, County Group 2, MSCP Covered Species

Western spadefoot is distributed throughout the Central Valley and foothill regions. It is found in the Coast Ranges from Santa Barbara County to the Mexican border (Zeiner et al. 1988). This species occurs in grasslands but can also occur in valley-foothill hardwood woodlands. Breeding and egg-laying occur almost exclusively in shallow, temporary pools, such as vernal pools, formed by winter rain. The first rains of the fall and winter season initiate breeding activity of the western spadefoot, and breeding activity is normally completed by the end of March. After breeding, much of the year is spent in underground burrows, which the adults construct (Zeiner et al. 1988).

Western spadefoot toad was observed in Addition 1 and Sierra Verde in multiples stage of life. An adult was incidentally captured in Array 2 in the northwest portion of Addition 1, tadpoles were observed within a pond in the north central portion of Addition 1, and several neonatal juveniles were observed in burrows and deep mule deer tracks in the pond margin. Within Sierra Verde, hundreds of tadpoles were observed within the pond system along the eastern property boundary, dozens of juvenile toadlets were observed along the pond margins, and five individual juveniles were buried in wet sandy soils of the lower pond's upper riverine margin. A total of eight incidental captures also occurred within Arrays 8 and 9, also along the eastern property boundary. This species appears to be prevalent near ponds and pond margins in the Sierra Verde Addition.

Coastal Western Whiptail (*Aspidoscelis tigris stejnegeri*)
CDFW Species of Special Concern, County Group 2

Coastal western whiptail is a slim-bodied lizard with a long slender tail. The back and sides are grey, tan, or brown, marked with sharply defined dark spots or mottling. This subspecies is found in coastal Southern California, predominantly west of the Peninsular Ranges and south of the Transverse Ranges, and north into Ventura County, extending south into Baja California, Mexico. It inhabits a variety of ecosystems such as chaparral, woodland, and riparian areas, primarily hot and dry open areas with sparse foliage. This species is considered special-status primarily due to habitat fragmentation and destruction (Zeiner et al. 1988).

Coastal western whiptail was detected in the open scrub habitat on-site during surveys in 2019. There were a total of two captures of coastal western whiptail, with one capture each at Arrays 5 and 6, along the western property boundary of the Chabad Addition. This species was also noted twice incidentally between the Addition 3 and the Chabad Addition arrays, and likely inhabits open chaparral and scrub habitat within the Additions.

Belding's Orange-Throated Whiptail (*Aspidoscelis hyperythra beldingi*)
CDFW Watch List, County Group 2

Belding's orange-throated whiptail is a slim-bodied lizard with a long, slender tail. The back is unspotted with dark brown, black, and whiteish yellow stripes and the throat is orange, turning brighter orange during breeding season. In California, Belding's orange-throated whiptail ranges from the Santa Ana River in Orange County, and near Colton in San Bernardino County, west of the Peninsular Ranges, into the Baja Peninsula (Zeiner et al. 1988). This subspecies inhabits semi-arid brushy areas typically with loose soil and rocks, including washes, streamsides, rocky hillsides, and coastal chaparral (Zeiner et al. 1988). Their diet consists of a variety of small invertebrates, especially spiders, scorpions, centipedes, and termites. This species is considered special-status primarily due to loss of suitable coastal sage scrub habitat. Development of floodplains and stream terraces has also greatly contributed to this species' decline, as well as habitat fragmentation.

Belding's orange-throated whiptail was detected in the open chaparral and scrub habitat on-site during surveys in 2019. This species was trapped on two instances in Array 5 along the western boundary of the Chabad Addition, and was incidentally noted once each on trails in the center of Addition 1 and along the western boundary of Addition 3. This species likely inhabits the open chaparral and scrub habitat within the Additions.

Coronado Skink (*Plestiodon skiltonianus interparietalis*)
CDFW Watch List, County Group 2

The Coronado skink can be found in a variety of habitats, including open oak woodland and sage scrub but typically avoids heavy brush or densely forested areas. It usually prefers moist micro-habitats and forages within leaf litter and dense vegetation for a variety of insects, including beetles, sow bugs, grasshoppers, crickets, ants, spiders, and centipedes. This subspecies ranges from Riverside County south to Baja California, Mexico (Zeiner et al. 1988).

This species was incidentally observed during an avian survey under a wooden plank along the creek draining into the stock pond in the east central portion of the Sierra Verde Addition.

4.3.5.3 Birds

Barn Owl (*Tyto alba*)
County Group 1

Barn owls reside in much of the continental United States, including California. They are found in many open habitats, including grassland, chaparral, riparian, and developed or urban habitats. This species will roost in barns, caves, dense trees, or other structures, and hunt for small mammals on the wing or from a perch. Prey species include mice, voles, gophers, and squirrels, as well as other small birds. Barn owls in California retain their home range throughout the year and are not migratory (Zeiner et al. 1990a). Barn owls are threatened by the conversion of agricultural land to urban and suburban development, and the loss of suitable nesting sites such as large, hollow trees and old buildings. They can also be impacted by rodenticides, as rodents make up the majority of their diet.

At least six barn owls were detected during the winter, summer, and fall nocturnal avian survey (Figures 11a through 11c). At least one individual was observed and heard in the northeast portion of Addition 3 during both the winter and summer nocturnal avian surveys. Another individual was heard during the summer nocturnal avian survey near the center of Addition 2. One individual was heard during the summer and fall nocturnal avian survey near the center of the Sierra Verde Addition. Additionally, one individual barn owl was incidentally observed twice at Addition 2's wildlife camera in the south central portion of the Addition during spring wildlife camera trapping. There is suitable foraging, roosting, and nesting habitat within the oak woodlands found within the Additions; therefore, it is highly likely this species is found year-round on the Additions.

Bell's Sage Sparrow (*Artemisiospiza belli belli*)
CDFW Watch List, County Group 1

The Bell's sage sparrow can be found from the coastal ranges of California and across the Sacramento Valley to the west slope of the Sierra Nevadas, where it inhabits large, unfragmented blocks of coastal sage scrub, southern mixed chaparral habitats. Within San Diego County, this species occupies chaparral and sage scrub habitats. This species is generally non-migratory, but San Joaquin Valley and northern Mohave Desert populations do migrate, and some populations move up-slope and down-slope with season changes (Johnson and Marten 1992). Bell's sage sparrows forage primarily on insects, spiders, and seeds (Zeiner et al. 1990a).

Two individual Bell's sage sparrows were observed in the southwest portion of Addition 1 during the winter diurnal survey and one individual Bell's sage sparrow was observed during the spring diurnal survey in the central portion of Addition 3 (Figures 11a and 11b). Given the disturbed

habitat on Addition 1 and the sensitivity of this species to habitat fragmentation (Unitt 2004), it is likely the two individuals observed on Addition 1 were only foraging. However, given the large, unfragmented, suitable breeding habitat on the remaining Additions and the presence of an individual in Addition 3, it is likely this species is a year-round resident on the Additions.

Merlin *(Falco columbarius)*
County Group 2

Merlins are small, quick-flying, falcons that are winter visitors to San Diego County. There are three North American subspecies, the most common in San Diego County is the medium-dark morph *F. c. columbarius*. Merlins are typically seen within San Diego County between October and March but can migrate through the county in September and April. This species is most abundant in the coastal lowlands within San Diego County where they prey upon small passerine species (Unitt 2004). They also forage on small mammals and insects (Zeiner et al. 1990a).

One merlin was observed flying through the center of Addition 2 during the fall diurnal avian survey (Figure 11a). This species does not breed in California and is likely a migrant or wintering individual. Suitable foraging habitat for this species is present on the Additions.

Red-Shouldered Hawk (*Buteo lineatus*)
County Group 1

Red-shouldered hawks in California originally inhabited lowland riparian woodland and oak woodland habitat, but during the 20th century they began occupying eucalyptus and other ornamental woodland habitats. It is widespread across San Diego County, especially along the coastal slope, but is absent in areas like Otay Mountain, which is devoid of tall trees. Red-shouldered hawks in California are a year-round resident and non-migratory species that mainly prey upon reptiles and amphibians (Unitt 2004). Red-shouldered hawks are threatened by the conversion of oak and riparian woodland habitats into urban or suburban developments. Although they have adapted well to urbanized environments, it has also led to more exposure to rodenticides.

One individual red-shouldered was detected during the summer diurnal avian survey along the southeast property boundary of the Sierra Verde Addition (Figure 11c). The Additions with oak woodland habitat provides suitable foraging, roosting, and nesting habitat for this species; therefore, it is highly likely this species is found year-round on the Additions.

Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*)
CDFW Watch List, County Group 1

Southern California rufous-crowned sparrow is a resident species in San Diego County and primarily inhabits coastal sage scrub or mixed chaparral habitats, preferably along steep grassy or rocky hillsides. This species is secretive and frequently hides in shrub patches or near rocky outcrops where it can forage on the ground for insects, spiders, seeds, and other vegetation. Southern California rufous-crowned sparrow is not a migratory species as it maintains year-round territories, but territory size may increase during the post-breeding season. Like many other species that inhabit coastal scrub habitats, this species is threatened primarily by habitat loss and fragmentation of coastal scrub habitats. Brown-headed cowbird (*Molothrus ater*) parasitism has also been recorded for this sparrow (Zeiner et al. 1990a).

Southern California rufous-crowned sparrows were detected throughout all the Additions except for Addition 2, and were detected during all diurnal surveys (Figures 11a through 11c). Only one rufous-crowned sparrow was observed in the northeast east portion of Addition 1, so it is unlikely this species is breeding within this Addition because of the lack of detections. However, given the suitable habitat and multiple observations of this species throughout Addition 3, in the western portion of the Chabad Addition, and throughout the Sierra Verde Addition, it is highly likely this species is found year-round on the Additions.

Turkey Vulture (*Cathartes aura*)
County Group 1

Turkey vultures are a highly migratory species and San Diego County lies within the overlap zone of the species' winter and summer ranges. Thus, turkey vultures are present in the county year-round. They are a wide-ranging species that forage on the wing, searching for carrion in a variety of habitats. They nest in secluded rocky outcrops, usually away from human activity. Many areas in San Diego County have suitable nesting habitats, but are not utilized for nesting due to frequent human disturbances. They are threatened by human disturbance to nest sites, habitat loss from urbanization, and pesticides (Unitt 2004).

One turkey vulture was observed flying over the northern portion of the Chabad Addition during the summer diurnal avian survey (Figure 11b). This species was also incidentally observed flying over the west central portion of the Sierra Verde Addition during another focused survey (Figure 11c). There are multiple rocky outcrops present throughout the Chabad Addition which would provide suitable nesting and roosting habitat for this species. The rocky outcrops on this Addition are also very isolated making it ideal for this species to breed without human disturbance. Therefore, the Chabad Addition would provide suitable roosting and nesting habitat for this

species. The remaining Additions lack roosting and/or nesting; hence, this species is expected to only fly over the remaining Additions.\

Western Bluebird (*Sialia mexicana*)
County Group 1

Western bluebirds are a year-round resident throughout California, excluding the high mountains and eastern deserts. They forage on berries and insects within open oak, riparian, and conifer woodlands during the breeding season and forage in flocks during the winter months. Despite being a cavity nester and competing with other species for scarce holes in trees, the western bluebird has colonized urban areas with mature trees and wide lawns. They are secondary cavity nesters that are opportunistic and have been documented nesting under houses' roof tiles, in nest boxes, and power distribution poles (Unitt 2004). Threats to the western bluebird population in San Diego County include habitat degradation from logging activities, natural-fire suppression, grazing, industrialization, and urbanization. Additional conversion of mistletoe-laden oak woodlands to vineyards have disrupted winter food supplies (Dickinson and McGowan 2005).

Western bluebirds were only observed on the Sierra Verde Addition during the winter, summer, and fall diurnal avian survey, but were observed throughout the Addition (Figure 11c). Oak woodland habitats on the Additions provide suitable nesting and foraging habitat for this species. Additionally, the power distribution line that spans the length of the Sierra Verde Addition between oak woodland and chaparral habitat provide suitable foraging habitat.

White-Faced Ibis (*Plegadis chihi*)
CDFW Watch List, County Group 1

White-faced ibis inhabit wetlands, marshes, and flooded grasslands, including stands of tamarisk (*Tamarix* spp.). Outside of California they can also be found in ponds, mudflats, and swamps (Ryder and Manry 1994). They forage for insects, crustaceans, earthworms, small fish, and amphibians in shallow waters, such as wet grass and irrigated or flooded pastures and croplands in San Diego County. They are known to breed within multiple waterways in San Diego County and winter primarily in the San Pasqual Valley (Unitt 2004). This species depends on dense freshwater marshes for nesting, where they nest in large colonies ranging in size from 30 to 50 nests (Trost 1989). They are threatened by habitat loss of agricultural fields, pastures, croplands, wetlands, and marshes (Unitt 2004).

Two individuals were observed in the east central portion of the Sierra Verde Addition during the fall diurnal avian survey—one individual was observed flying over the Addition, while another individual was observed flying into the stock pond (Figure 11c). As long as this stock pond remains

filled within water, this species could use this pond for foraging. However, the stock pond lacks any dense freshwater marsh vegetation, which this species requires for nesting. Hence, the Addition provides suitable foraging habitat for this species but lacks nesting habitat.

Yellow Warbler *(Setophaga petechia)*
CDFW Species of Special Concern, County Group 2

Yellow warblers are indicative of mature riparian woodland. Though this species is recognized as a CDFW Species of Special Concern, the population in San Diego County has increased due to brown-headed cowbird (*Molothrus ater*) trapping efforts in the region. This species breeds within riparian corridors on the coastal slopes (Unitt 2004). It is a known brown-headed cowbird host and is famous for flooring over parasitized nests to build a new nest on top of the old one. This species forages on gleaning insects and spiders in upper deciduous tree canopies but can occasional hawk insects from air or forage on berries (Zeiner et al. 1990a).

One individual was observed within the oak woodland habitat in the west central portion of the Chabad Addition (Figure 11b). Since this individual was observed during the spring diurnal avian survey, it is likely this individual was a migrant. Due to the lack of mature riparian woodland on the Additions, it is unlikely this species would breed on site; hence, this species is expected to only occur as a migrant on the Additions.

4.3.5.4 Mammals

Dulzura Pocket Mouse (*Chaetodipus californicus femoralis*)
CDFW Species of Special Concern, County Group 2

The Dulzura pocket mouse is found in a variety of vegetation communities within San Diego County, including coastal sage scrub, sagebrush, grassland, and various chaparral communities. It is found in a variety of habitats year-round, including coastal scrub, chamise-redshank and montane chaparral, sagebrush, annual grassland, valley foothill hardwood, valley foothill hardwood-conifer, and montane hardwood habitats at elevations from sea level to 7,900 feet (Brylski 2005). The species occurs in brushy areas but probably is attracted to grass-chaparral edge (Brylski 2005).

This species was detected within the coast live oak – poison oak – grass association in the southwest portion of Addition 1 (Figure 11a). It was captured twice in small mammal trapping location 1. This species was also detected within the Mediterranean California naturalized annual and perennial grassland semi-natural stands and California buckwheat association within the

northeast corner of the Sierra Verde Addition (Figure 11c). It was captured four times during focused SKR live-trapping.

Stephens' Kangaroo Rat (*Dipodomys stephensi*)
Federally Endangered, State Threatened, MSCP Covered Species, County Group 1

SKR occurs primarily in annual and perennial grassland habitats, but may occur in coastal sage scrub or sagebrush with sparse canopy cover, or in disturbed areas. Preferred vegetation include buckwheat, chamise, brome grass (*Bromus* spp.), and filaree (*Erodium* spp.), as this species is known to eat filaree and brome grass, and other annual grasses and forbs (Thomas 1975). SKR burrows may be excavated in firm soil that is "neither extremely hard nor sandy" (Lackey 1967), but can also occupy abandoned pocket gopher burrows (Thomas 1975).

This species was detected within the Mediterranean California naturalized annual and perennial grassland semi-natural stands and California buckwheat association within the northeast corner of the Sierra Verde Addition (Figure 11c). Only one individual was captured during focused SKR live-trapping. Based on the visual survey and live-trapping results, the Sierra Verde Addition supports a small patch of suitable grassland for SKR, with more expansive high-quality habitat adjacent to the Addition off-site on Rancho Guejito.

Pallid Bat (*Antrozous pallidus*)
CDFW Species of Special Concern, MSCP Covered Species, County Group 2

The pallid bat is locally common in low elevations in California, occurring throughout California except for the high Sierra Nevadas from Shasta County to Kern County, and the northwestern corner of the state from Del Norte and western Siskiyou Counties to northern Mendocino County (Harris 2000a). This species occupies a variety of habitats, including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests and are often in open, dry habitats with rocky areas for roosting. Day roosts can include caves, crevices, mines, and occasionally hollow trees and buildings, but all day roosts must protect bats from high temperatures. They are year-long residents in most of their range. Pallid bats forage on a wide variety of insects and arachnids, including beetles, orthopterans, homopterans, moths, spiders, scorpions, solpugids, and Jerusalem crickets (Harris 2000a).

Pallid bat was detected during passive acoustic surveys in the northwest corner of Addition 1, the central portion of Addition 3, and the east central portion of the Sierra Verde Addition (Figures 11a through 11c). Three pallid bat passes were detected, including one during spring surveys and two during summer surveys. Potential roosting habitat may occur along the rocky slopes within the Chabad Addition.

Townsend's Big-Eared Bat (*Corynorhinus townsendii*)
CDFW Species of Special Concern, MSCP Covered Species, County Group 2

Townsend's big-eared bat is found throughout California; however, details of its distribution are not well known. This species is found in all but subalpine and alpine habitats, and may be found at any season throughout its range (Harris 2000b). It is most commonly found in mesic habitats; however, Townsend's big-eared bat is considered uncommon in California now. Roosts can include caves, mines, tunnels, buildings, or other human-made structures for roosting. Townsend's big-eared bats forage primarily on small moths, but have been known to eat beetles and a variety of soft-bodied insects as well. They are a relatively sedentary species that make short movements to hibernation sites (Harris 2000b).

Townsend's big-eared bat was detected during passive acoustic surveys in the east central portion of the Sierra Verde Addition based on a single bat pass detected during spring surveys (Figure 11c). No suitable roosting habitat for this species is known to occur within the Additions, however, it is unknown if any cave-like habitats are present within the rocky and inaccessible portions of the Chabad Addition.

Greater Western Mastiff Bat (*Eumops perotis californicus*)
CDFW Species of Special Concern, County Group 2

The greater western mastiff bat is an uncommon resident in southeastern San Joaquin Valley and Coastal Ranges from Monterey County southward through Southern California, from the coast eastward to the Colorado Desert (Ahlborn 2000). This species occupies many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban environments. Roosts can include crevices in cliff faces, high buildings, trees, and tunnels (Howell 1920; Dalquest 1946; Barbour and Davis 1969). They are non-migratory, only moving between alternate daytime roosts (Howell 1920; Krutzsch 1955). Greater western mastiff bats forage on a wide variety of insects in flight, primarily on night-flying hymenopterous insects (Ahlborn 2000).

Greater western mastiff bat was detected during passive acoustic surveys in the northwest portion of Addition 1, the south central portion of Addition 2, the central portion of Addition 3, and the western property boundary of the Chabad Addition (Figures 11a and 11b), based on 8 passes detected during spring surveys and 8 passes detected during summer surveys. All but one of the passes detected in summer were at the Chabad Addition. Rocky cliffs and overhangs within the Chabad Addition provide potential roosting habitat for this species; however, higher suitability habitat is also available in adjacent areas off-site.

Western Red Bat (*Lasiurus blossevillii*)
CDFW Species of Special Concern, County Group 2

The western red bat is locally common in some areas of California, occurring from Shasta County to the Mexican border, west of the Sierra Nevada/Cascade crest and deserts (Zeiner et al. 1990b). The winter range includes western lowlands and coastal regions south of San Francisco Bay. They are not found in desert areas. This species roosts primarily in forests and woodlands from sea level up through mixed conifer forests and are often in edge habitats adjacent to streams, fields, or urban areas (Zeiner et al. 1990b). Western red bats forage over a wide variety of habitats, including grasslands, shrublands, open woodlands, and croplands where they feed on a variety of insects (Zeiner et al. 1990b). Most individuals likely make relatively short migrations between summer and winter ranges in California (Zeiner et al. 1990b).

The western red bat was detected during passive acoustic surveys in the northwest portion of Addition 1, the south central portion of Addition 2, and the western property boundary of the Chabad Addition (Figures 11a and 11b), based on 28 bat passes recorded during both spring and summer surveys. The majority of detections were at Additions 1 and 2 with only one detection at the Chabad Addition, presumed to be a transient bat passing through the site. Addition 1 and the Chabad Addition include limited and fragmented patches of riparian forest habitat; therefore, it is assumed that the detections at these parcels are either bats passing through the site or, in the case of Addition 1, these could be bats traveling from nearby riparian areas to drink from the large open pond near Addition 1. Addition 2 contains well developed riparian habitat and mature trees, including sycamores, which could be used by this species for both foraging and roosting.

Western Yellow Bat (*Lasiurus xanthinus*)
CDFW Species of Special Concern

The western yellow bat is uncommon in California, known only in Los Angeles and San Bernardino Counties south to the Mexican border, where it occurs year-round. It inhabits valley foothill riparian, desert riparian, desert washes, and palm oasis habitats below 2,000 feet in elevation (Harris 2008). This species roosts primarily in trees, including under palm trees, and forages for insects over water and among trees.

The western yellow bat was detected during summer passive acoustic surveys in the northwest portion of Addition 1 and the south central portion of Addition 2 (Figure 11a), based on four passes that were recorded. In coastal Southern California, this species is typically associated with palm trees and occasionally ornamental vegetation and riparian forests. Due to the low number of detections, it is expected that this species is present only as a transient. The Sierra Verde Addition

includes numerous scattered palm trees; however, the lack of western yellow bat detections at this site may indicate it prefers more densely clustered palms associated with riparian habitats.

Western Small-Footed Myotis (*Myotis ciliolabrum*)
County Group 2

The western small-footed myotis is a common bat of arid uplands in California, occurring in coastal California from Contra Costa County south to the Mexican border, and on the west and east sides of the Sierra Nevada, and in Great Basin and desert habitats from Modoc to Kern and San Bernardino Counties (Harris 2000c). This species occupies a variety of habitats, primarily in relatively arid wooded and brushy uplands near water. Roosts can include caves, buildings, mines, crevices, and occasionally under bridges and under bark (Harris 2000c). Western small-footed myotis forage on a variety of small flying insects, including moths, flies, beetles, and bugs (Harris 2000c).

The western small-footed myotis was detected during spring and summer passive acoustic surveys in the northwest portion of Addition 1, the south central portion of Addition 2, the central portion of Addition 3, and the western property boundary of the Chabad Addition (Figures 11a and 11b), based on 122 passes recorded. This species has the potential to utilize the rocky crevice roosting habitat within these parcels.

Long-Eared Myotis (*Myotis evotis*)
County Group 2

The long-eared myotis is widespread in California, but generally believed to be uncommon in most of its range (Harris 2000d). It occurs along the entire coast and in the Sierra Nevada, Cascades, and Great Basin from the Oregon border south through the Tehachapi Mountains to the Coast Ranges, but it avoids the arid Central Valley and hot deserts. This species can be found within all brush, woodland, and forest habitats, from sea level to at least 9,000 feet, but coniferous woodlands and forests seem to be preferred (Harris 2000d). Roosts can include buildings, crevices, spaces under bark, and snags. Long-eared myotis forage on a variety of arthropods including beetles, moths, flies, and spiders.

The long-eared myotis was detected during passive acoustic surveys in the south central portion of Addition 2, the central portion of Addition 3, the western property boundary of the Chabad Addition, and the east central portion of the Sierra Verde Addition (Figures 11a through 11c). The majority (nine) of the passes were recorded during spring surveys with only one pass recorded during summer. In San Diego County, this species is more typically associated with oak woodlands and pine forests at higher elevations. The low number of detections, mostly in spring, suggest that

this species likely only occurs within the Additions on a transient basis. This species has the potential to roost in rock crevices on the Additions.

Yuma Myotis (*Myotis yumanensis*)
County Group 2

The Yuma myotis is common and widespread throughout California in many habitat types, particularly open forests and woodlands with sources of water to forage over (Zeiner et al. 1990b). It ranges from sea level to 11,000 feet in elevation, but is generally found below 8,000 feet. This species roosts in buildings, mines, caves, or crevices, but has also been seen roosting in abandoned swallow nests and under bridges (Zeiner et al. 1990b). Yuma myotis forages over water sources such as ponds, streams, and stock tanks, where they feed on a variety of small flying insects. It probably makes local or short migrations to suitable hibernacula, where it hibernates during the winter (Zeiner et al. 1990b).

The Yuma myotis was detected during passive acoustic surveys within all of the Additions in both spring and summer. Specifically, this species was detected in the northwest portion of Addition 1, the south central portion of Addition 2, the central portion of Addition 3, the western property boundary of the Chabad Addition, and the east central portion of the Sierra Verde Addition (Figures 11a through 11c). The Additions provide potential foraging and roosting habitat for this species. While the Yuma myotis often prefers to forage over water, this species can also utilize upland habitats and is a ubiquitous species in Western San Diego County. This species can also utilize a variety of roosting habitats, including rock crevice habit within the Additions; however, the species is more likely to roost off-site in nearby bridges, culverts, and buildings.

Pocketed Free-Tailed Bat (*Nyctinomops femorosaccus*)
CDFW Species of Special Concern, County Group 2

The pocketed free-tailed bat, while it can be found in Riverside, San Diego, and Imperial Counties, is rare in California and more common in Mexico (Harris 2000e). This species inhabits pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oasis (Harris 2000e). The pocketed free-tailed bat prefers rock crevices in cliffs as roosting sites and rocky desert areas with high cliffs or rock outcrops (Harris 2000e). The status of this species in California is poorly known, but it appears rare (Harris 2000e).

A high level of pocketed free-tailed bat activity was detected during passive acoustic surveys within all of the Additions based on 697 passes recorded. Specifically, this species was detected in the northwest portion of Addition 1, the south central portion of Addition 2, the central portion of Addition 3, the western property boundary of the Chabad Addition, and the east central portion

of the Sierra Verde Addition (Figures 11a through 11c). This species was detected during both spring and summer surveys. Rocky cliffs and overhangs within the Chabad Addition provide potential roosting habitat for this species; however, higher suitability habitat is also available in adjacent areas off-site.

San Diego Black-Tailed Jackrabbit (*Lepus californicus bennettii*)
CDFW Species of Special Concern, County Group 2

The San Diego black-tailed jackrabbit ranges from Los Padres National Forest southward and west of the Peninsular Ranges into northwestern Baja California, Mexico. This species inhabits open grasslands, agricultural fields, and sparse coastal scrub where they occur primarily in arid regions with short grass. In Southern California, black-tailed jackrabbits are known to breed throughout the year, but number of leverets (young rabbits) produced varies depending on environmental conditions. They are strictly herbivorous, primarily feeding on a wide variety of grasses, but they will also feed on forbs and shrubs during fall and winter.

One San Diego black-tailed jackrabbit individual was observed in the west central portion of the Sierra Verde Addition (Figure 11c).

Mountain Lion (*Puma concolor*)
County Group 2

Mountain lions are widespread, uncommon permanent residents of California, ranging from sea level to alpine meadows. They can be found in nearly all habitats, except xeric regions of the Mojave and Colorado deserts that do not support mule deer populations and croplands in the Central Valley (Ahlborn 2006). However, they are most abundant in riparian areas and brushy stages of most habitats. Seasonal movement patterns are typically in response to prey movement patterns within a fixed range. They take cover in caves and other natural cavities, and thickets in brush and timber. Mule deer make up 60–80 percent of their diet throughout the year (Currier 1983), but mountain lions have been known to eat rabbits and hares, rodents, porcupines, skunks, coyotes, and occasionally domestic stock (Ahlborn 2006) as well. Hunting tactics include stalking prey on the ground, often locating by scent, and leaping onto prey and biting at the base of the skull.

Mountain lion was observed on wildlife cameras located in the southwest portion of Addition 2, the southeast corner of Addition 3, and the south and east central portions of the Sierra Verde Addition (Figures 11a through 11c). It is also known to occur within the adjacent Preserve (County of San Diego 2009).

Southern Mule Deer (*Odocoileus hemionus fuliginatus*)
County Group 2

Southern mule deer range from Los Angeles County to Baja California, Mexico where they occur in a variety of habitats, including woodlands, shrublands, meadows, grasslands, and riparian areas. Home ranges for southern mule deer in San Diego County are generally small and average 49 hectares. Access to dependable water sources, and shrub and woodland habitats interspersed with meadows or grasslands are important for foraging as well as protection from predators. They are mobile and move through areas with high vegetative cover, but are non-migratory. Southern mule deer forage on high-quality digestible forage, such as bark, buds, and acorns.

Southern mule deer were detected at all six wildlife camera locations within the Additions. Specifically, this species was detected in the south central portion of Addition 1, the southwest portion of Addition 2, the southeast corner of Addition 3, the western property boundary of the Chabad Addition, and the south and east central portions of the Sierra Verde Addition (Figures 11a through 11c). It is also known to occur within the adjacent Preserve (County of San Diego 2009).

4.3.6 Special-Status Wildlife with High Potential to Occur

In addition to the special-status wildlife species documented during the field surveys, 12 special-status wildlife species have a high potential to occur on the Additions. The evaluation of their potential for occurrence was based on the elevation, soils, and vegetation communities present on the Additions; known occurrences within the adjacent Preserve; and the range and distribution of species within the vicinity of the Additions. The sensitivity status, life history, habitat preferences, and rationale for occurrence potential of each species are detailed below. A table of all special-status wildlife species evaluated for a potential to occur on the Additions is included in **Appendix D**.

Cooper's Hawk (*Accipiter cooperii*)
CDFW Watch List, County Group 1

Cooper's hawks inhabit live oak, riparian deciduous, or other forest habitats near water. This species is a year-round resident of much of western and eastern United States and is migratory in its range throughout the central United States south to Mexico. This species is a resident of California, and most of its breeding occurs in the southern Sierra Nevada foothills, the New York Mountains, Owens Valley, and throughout Southern California. This species nests and forages near open water or in riparian vegetation. Cooper's hawks primarily hunt small birds, although they will consume small mammals, reptiles, and amphibians (Zeiner et al. 1990a). This species has been impacted by continued use of pesticides, but population numbers have rebounded in recent

years. Loss of suitable riparian habitat may also be impacting this species, but they are known to occupy more urbanized habitats as well (NatureServe 2019).

This species has a high potential to occur within the Additions. The oak woodland habitats within the Chabad and Sierra Verde Additions and the oak riparian forest habitat within Addition 2 provide high-quality suitable nesting and foraging habitat for this species.

Golden Eagle (*Aquila chrysaetos*)
State Fully Protected and Watch List, County Group 1, MSCP Covered Species

Golden eagles typically rotate among nest sites on cliff ledges or trees on steep slopes (Unitt 2004). Foraging habitats include grasslands, sage scrub, or broken-in grasslands and open shrublands, where cottontails (*Sylvilagus* spp.), jackrabbits (*Lepus* spp.), ground squirrels (*Spermophilus* spp.), and other small mammals (Unitt 2004) are abundant. Territories are known to range from 19 to 48 square miles, with an average of 36 square miles (Unitt 2004). A known nest location was active prior to 2001 on Rodriguez Mountain (TAIC 2008).

This species has a high potential to occur within the Additions. The Chabad Addition provides high-quality suitable nesting habitat and Addition 1 and Sierra Verde provide suitable foraging habitat, though lack an abundance of prey (e.g., jackrabbits) which are generally associated with high-quality foraging habitat. High-quality foraging habitat is also present immediately adjacent to the Sierra Verde Addition on Rancho Guejito.

Burrowing Owl (*Athene cunicularia*)
CDFW Species of Special Concern, County Group 1, MSCP Covered Species

The burrowing owl is a small, ground-dwelling bird species, adapted to open, relatively flat expanses. In California, preferred habitat is generally short, sparse vegetation with few shrubs, gentle topography and well-drained soils. This species uses natural vegetation communities such as grasslands, shrub lands, and desert, as well as ruderal land cover types such as disturbed habitat and agricultural areas. The burrowing owl requires underground burrows or other cavities for nesting and roosting year round. Burrows used by the owls are usually dug by other species, such as ground squirrels. Burrowing owl diet includes arthropods, small rodents, birds, amphibians, reptiles, and carrion (CDFW 2012).

This species has a high potential to occur on the Additions due to the presence of suitable burrows on Addition 1, the Sierra Verde Addition, and the Chabad Addition, as well as grassland and disturbed habitat with this species' preferred vegetation structure. This species was previously documented within the other parcels of the Hellhole Canyon Preserve (TAIC 2008).

Harbison's Dun Skipper (*Euphyes vestris harbisoni*)
County Group 1, MSCP Covered Species

Harbison's dun skipper (skipper) has a high potential to occur within oak woodland-dominated riparian channels and surrounding chaparral habitats within the Additions. San Diego sedge (*Carex spissa*), the sole larval host plant of Harbison's dun skipper, was documented in several locations within and adjacent to various Additions (Figures 9a and 9b). The presence of adult nectar sources such as California buckwheat, black sage, and short-pod and black mustard, among other species, are prevalent throughout the Additions. Historic occurrences of skipper were documented within Hellhole Canyon Preserve during focused surveys in 2013, 2014, and 2016 (Marschalek and Deutschman 2016). The 2013 and 2014 occurrences were located in Hell Creek, approximately 0.7 miles southeast of Addition 2; the 2016 occurrence was located approximately 0.5 miles east of Addition 2 in a drainage connecting to Hell Creek (**Figures 12a** and **12b**).

All three 2019 surveys performed over the various Additions were conducted during the adult skipper flight season on May 14, 24, and 28. Skippers were not observed during these surveys, but have a high likelihood to occur in appropriate oak woodland-dominated riparian channels and surrounding chaparral habitats near San Diego sedge larval host plants.

Coast Horned Lizard (*Phrynosoma blainvillei*)
CDFW Species of Special Concern, County Group 2, MSCP Covered Species

The coast horned lizard is a flat-bodied lizard with a wide oval-shaped body and a large crown of horns or spines on its head. They are historically found in California along the Pacific coast, from the San Francisco Bay Area down to Baja California, Mexico, west of the deserts and the Sierra Nevada, and inland as far north as Shasta Reservoir. Currently, the range has been severely fragmented due to land alteration, and populations seem to be restricted to localized areas that support loose soils and have a high sand content (Jennings and Hayes 1994). This species relies on open areas of sandy soil and low vegetation and can inhabit a variety of habitats, including grasslands, coniferous forests, woodlands, and chaparral (Stebbins 2003). They are commonly found in lowlands along sandy washes with scattered shrubs, along dirt roads, and near native ant hills.

One coast horned lizard was detected off-site incidentally on the hiking trail between the Addition 3 and the Chabad Addition arrays. This species likely inhabits the open chaparral and scrub habitats where they coincide with sandy or friable soils and their food source, harvester ants, within the Additions.

Southern California Legless Lizard (*Anniella stebbinsi*)
CDFW Species of Special Concern, County Group 2

The Southern California legless lizard occurs in a variety of habitats and are locally abundant. Suitable habitat includes coastal dunes, chaparral, and coastal scrub. Slightly moist habitat, especially in the soil, appears to be an essential habitat requirement. They forage at base of shrubs or other vegetation and below the vegetation within leaf litter or sandy soil. They eat insect larvae, small adult insects, and spiders. Due to their low thermal preference, they are not seen sun basking and can be active on cool days (Zeiner et al. 1988).

This species has a high potential to occur within the Additions as suitable habitat for this species is present, specifically within the oak woodland habitats of the Additions and wherever leaf litter accumulates.

Rosy Boa (*Lichanura orcutti*)
County Group 2

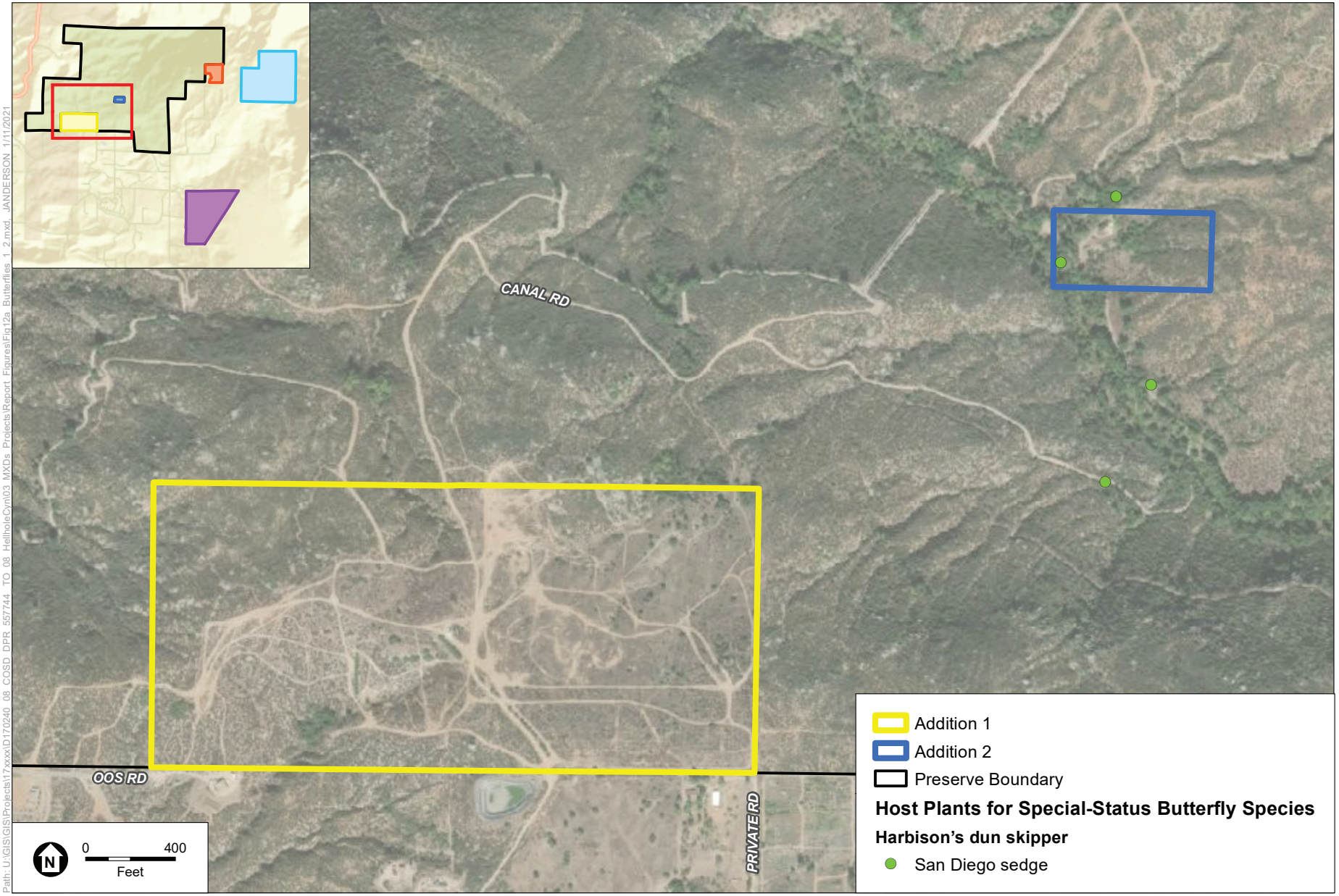
This heavy-bodied snake is found in inland habitats in Southern California, specifically in desert and chaparral habitat. It is found as far north as Los Angeles and as far east as the Salton Sea. This species is rarely observed but is most frequently seen during the late spring and early summer. It is known to eat small rodents and birds but could also take lizards. They prefer moderate to dense vegetated habitats with rocky cover. They are usually found under rocks, in boulder piles, and along rock outcrops (Zeiner et al. 1988).

This species has a high potential to occur within the Additions as suitable habitat for this species, such as chaparral, is found throughout the Additions.

Coast Patch-Nosed Snake (*Salvadora hexalepis virgultea*)
CDFW Species of Special Concern, County Group 2

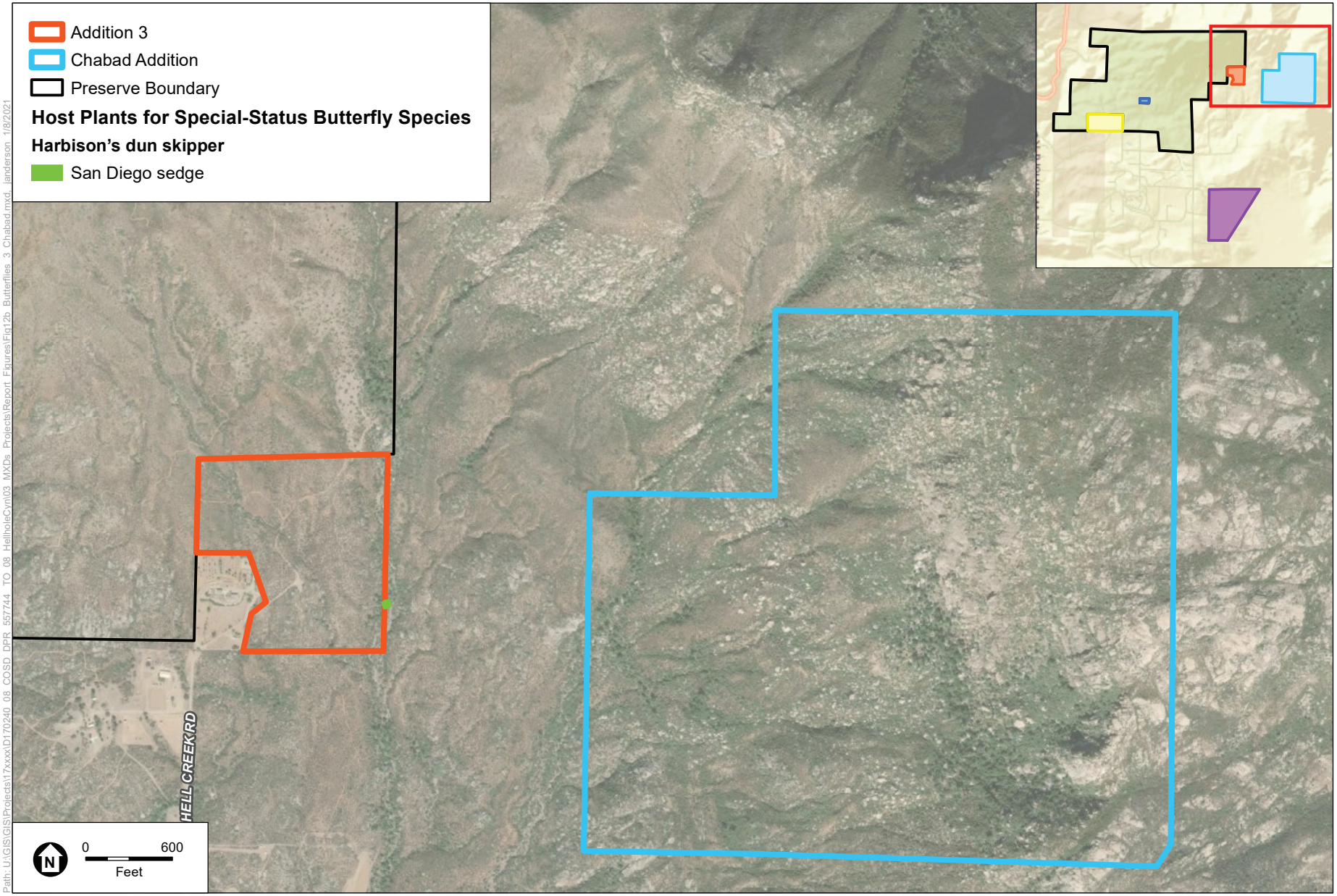
The coast patch-nosed snake is found from the Carrizo Plains in San Luis Obispo County south through Baja California. It occupies a variety of habitats, including coastal chaparral, desert scrub, washes, sandy flats, and rocky areas. It eats anything it can overpower but it is known to prey upon small mammals (*Dipodomys*), lizards, and the eggs of lizards and snakes. This species is diurnal and makes use of whatever cover is available in the habitat it is occupying. Little is known about its reproduction and it appears to have no water requirements (Zeiner et al. 1988).

This species has a high potential to occur within the Additions as suitable habitat for this species, such as chaparral, is found throughout the Additions.



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

Figure 12a
Host Plants for Special-Status Butterfly Species
Addition 1 and Addition 2



SOURCE: ESRI, 2019; SanGIS, 2019; ESA, 2019.

Figure 12b
Host Plants for Special-Status Butterfly Species
Addition 3 and Chabad Addition

Two-Striped Garter Snake (*Thamnophis hammondii*)
CDFW Species of Special Concern, County Group 1

The two-striped garter snake can be found from the Salinas Valley south to the Mexico border. This highly aquatic species is found only along permanent or semi-permanent streams inhabited by fish or amphibians. While fish and amphibians are its main prey source, it can also feed on invertebrates (leeches and worms) and small mammals. This diurnal snake seeks refuge in holes, specifically small mammal burrows, and crevices at night and can be found basking on streamside rocks or vegetated stream banks (Zeiner et al. 1988).

This species has a high potential to occur within the Additions as suitable habitat for this species occurs on the Additions, specifically along the creeks.

Red Diamond Rattlesnake (*Crotalus ruber*)
CDFW Species of Special Concern, County Group 2

The red diamond rattlesnake is found in southwestern California from the Morongo Valley west to the coast and south along the peninsular ranges to mid Baja California, Mexico. This heavy bodied species inhabits arid scrub, coastal chaparral, oak and pine woodlands, rocky grasslands, and cultivated areas (Zeiner et al. 1988). It can also be found on the desert slopes of the mountains east toward Anza Borrego Desert. This species preys predominantly on small mammals, including ground squirrels, wood rats, mice, and rabbits, but has been known to eat lizards and birds as well.

This species has a high potential to occur within the Additions as suitable habitat for this species occurs throughout the Additions, especially in the rocky areas with thick vegetative cover.

San Diego Pocket Mouse (*Chaetodipus fallax fallax*)
CDFW Species of Special Concern, County Group 2

The northwestern San Diego pocket mouse occurs from the eastern San Gabriel Mountains in the interior to near San Onofre on the coast (Lackey 1996), and south into Baja California. It is found in coastal scrub, chamise-redshank chaparral, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper, and annual grassland habitats (Brylski 2005). The availability of shelter provided by rocky slopes or habitats may increase species abundance (Lackey 1996). The northwestern San Diego pocket mouse generally exhibits a strong microhabitat affinity for moderately gravelly and rocky substrates (Bleich 1973; Price and Waser 1984).

This species has a high potential to occur within the Additions as suitable habitat occurs throughout the chaparral and coastal scrub habitats.

American Badger (*Taxidea taxus*)
CDFW Species of Special Concern, County Group 2

American badgers are wide-ranging, mid-sized predators that are known to inhabit San Diego County in low densities. They can also be found in many other parts of North America spanning Mexico, the United States, and Canada. American badgers prefer open scrub or grassy areas with sandy loamy soils. This species has large home ranges, and is known to move up to 6 miles (10 km) a day in search of prey (USGS 2019).

Though the Additions lack the large, unfragmented expanses of grassland this species is often associated with, the Additions support suitable shrubland and herbaceous habitats that have the potential to support this species. The Additions are part of a regional wildlife movement corridor and have connectivity to large expanses of off-site areas of open space with suitable habitat, including the adjacent Rancho Guejito which provides abundant suitable grassland. Therefore, this species has a high potential to occur within the Additions.

4.3.7 Invasive Non-Native Wildlife Species

No invasive non-native invertebrates, herpetofauna, or mammal wildlife species were detected on the Additions. However, two non-native bird species were observed within the Additions, including brown-headed cowbird (*Molothrus ater*) and wild turkey (*Meleagris gallopavo*). Brown-headed cowbird, a parasitic species, was incidentally observed within the Chabad Addition, but the species' population is presumed to be low due to only three individuals being observed during surveys. Additionally, wild turkey was incidentally observed within Addition 1, but the species' population is also presumed to be low as it was only observed on wildlife cameras during the winter survey period, and not during other survey efforts.

4.4 WILDLIFE MOVEMENT

Hellhole Canyon is an important component of a large regional linkage, specifically of the Santa Ana-Palomar wildlife corridor (South Coast Wildlands 2008). Although it does not fall immediately within the mapped corridor, the Additions are connected to that corridor via a group of connected public lands and largely undeveloped tribal lands. The Additions are crucial in providing linkage between Guejito Ranch and the San Luis Rey River Valley. It is important to note that the Additions provide a funnel for animals moving between Guejito Ranch and the San Luis Rey River. The Additions facilitate animal movement from Guejito Ranch north to Palomar Mountain, northwest toward Pala and Temecula (and ultimately the Santa Rosa Plateau), and east to Lake Henshaw. The Additions border BLM lands that directly link to Guejito Ranch to the southeast. Guejito Ranch provides potential corridors south to San Pasqual Valley (and ultimately

Lake Hodges), Ramona, Boden Canyon, Pamo Valley, and Black Mountain. To the east of the BLM lands lay vast tracts of the Cleveland National Forest that further provides connectivity to this regional mosaic of open space. Many of these lands are part of the Draft North County MSCP preserve area and constitute high-quality core habitats (K. Preston, unpublished data).

The Additions function as part of a regionally significant wildlife movement corridor comprised of a mosaic of conserved lands, tribal lands, and rangeland in the Valley Center area. The Additions occur southwest of Pauma Valley and the San Luis River Rey Valley, which are connected to Lake Wohlford by Paradise Creek, which occurs immediately west of the Additions. To the east, the Additions are bounded by BLM lands on the slopes of Rodriguez Mountain and Rancho Guejito, which consists of undeveloped rangelands intersected by Guejito Creek. The Additions are bordered to the south by San Pasqual tribal lands, Paradise Mountain, and Escondido Creek. The Additions are further surrounded by tribal lands associated with the La Jolla and Rincon Indian Reservations, Palomar Mountain, and Cleveland National Forest. This network of undeveloped open space and conserved lands provides valuable habitat for species home ranges, as well as facilitate movements for long-ranging wildlife species.

Rural residences and roads occur scattered throughout this area and may hinder wildlife movement in some areas. Low-density residential development occurs predominantly along the western and southern boundaries of each Addition. Many of these residences have chain-link, barbed-wire, or 3-strand wire fencing which may hinder wildlife movement, while other areas are open to the Additions. Addition 1, 3, and the Sierra Verde Addition have a mixture of chain-link, barbed wire, and 3-strand wire fencing to prevent unauthorized public access.

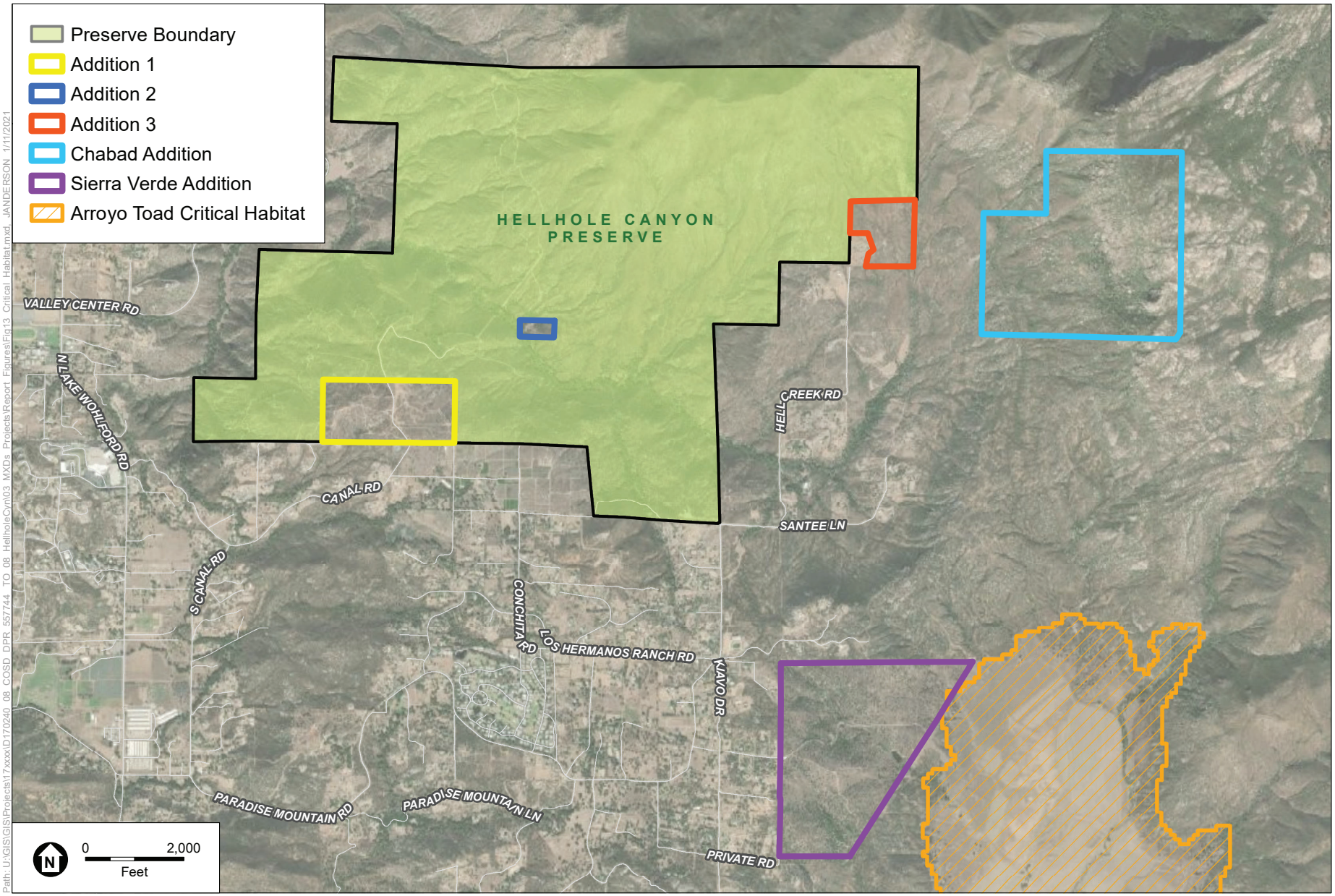
As documented by Addition 3's remote wildlife camera, Hell Creek, running along the eastern boundary of the Addition, is utilized by many wildlife species as a corridor, including large mammal species such as bobcat, gray fox, coyote, southern mule deer, and mountain lion. This suggests that Hell Creek is a vital, easily-traversed linkage for wildlife movement from the Additions to off-site open space lands such as Guejito Creek to the east and the San Luis Rey River Valley to the northwest.

In addition to using the Additions as a throughway to contiguous areas of open space, wildlife species may also use the Additions primarily for local movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover). As indicated by the presence of the species detected during surveys, the Additions are part of the home range for many species, which may use it at different times of the year depending on available resources. The large mammals detected on-site require fresh water and, as confirmed by wildlife camera photographs, the ponded areas in Addition 1 and the Sierra Verde Addition provide a source of water for a variety of wildlife species.

The Additions are also a part of the broader Pacific Flyway, a major north-south migration route for birds that travel between North America and South America. Various avian species pass through the Additions during migration and/or may use the Additions as migratory stopover habitat. While there is riparian and woodland vegetation or topographical configurations within the Additions that would concentrate or funnel avian species during migration, they likely move through on-site habitat in small groups or fly over it at night. Based on the avian surveys conducted during 2019, no major pulses of avian species were detected within the Additions; however, surveys were infrequent and may have missed large pulses of birds.

4.5 CRITICAL HABITAT

USFWS-designated critical habitat for arroyo toad (*Anaxyrus californicus*) occurs on 0.55 acres of the Sierra Verde Addition along the northeastern border and extends to the east (**Figure 13**).



SOURCE: ESRI, 2019; SanGIS, 2019.

Figure 13
Critical Habitat

ESA

5.0 CONCLUSIONS AND MANAGEMENT RECOMMENDATIONS

Surveys conducted in 2019 documented 23 vegetation group level classifications, alliances, associations, or semi-natural stands as described in the VCM (Sproul et al. 2011), as well as three land cover types as described by Oberbauer (2008). Approximately 249 plant species and 161 wildlife species were observed or detected within the Additions during 2019–2020 surveys, including 21 butterflies, 5 amphibians, 11 reptiles, 80 birds, and 39 mammals. Of these species, 6 are special-status plant species and 27 are special-status species wildlife species. Five of these species are also covered under the Draft North County MSCP.

This section provides resource-specific conclusions and management recommendations for the vegetation communities, plants, and wildlife species detected during the 2019 and 2020 field surveys. These recommendations are based on the results of the baseline biological diversity surveys and management and monitoring guidelines associated with the Draft North County MSCP.

5.1 VEGETATION COMMUNITIES/HABITAT

5.1.1 Management

Vegetation on the Additions consists of 22 vegetation alliances, associations, or semi-natural stands, including grassland, scrub, chaparral, riparian, and woodland habitats, as well as three land cover types as described by Oberbauer (2008). The Additions generally consists of Rodriguez Mountain, Hell Creek, and associated drainages with oak woodland habitat, rocky hills, and valleys. The Additions are primarily surrounded by preserved open space areas and Rancho Guejito, as well as scattered rural residential development. A majority of the upland habitats of the Additions, notably chaparral and woodland habitats, are relatively undisturbed, having recovered significantly from past fires, as well as the agricultural, ranching, and grazing activities that likely took place there. Invasive non-native wildlife species, such as goldspotted oak borer (*Agrilus auroguttatus*) and feral pigs) were not detected on the Additions, but would be a primary concern for management if these species were to reach them in the future. Specific management recommendations to ensure compliance with the Draft North County MSCP's Framework Management Plan are discussed below.

5.1.2 MSCP Framework Management Plan

Per the Draft North County MSCP's Framework Management Plan, the primary management goal for vegetation communities is to maintain or enhance natural vegetation communities to benefit

native species and habitats, sustain ecosystem functions, and promote connectivity to other conserved lands (County of San Diego 2018). Management objectives identified by the Framework Management Plan include managing invasive non-native plants, implementing fire management, controlling exotic pests, implementing erosion control best management practices, managing off-trail use, and using signage, public education, and enforcement to reduce edge effects (County of San Diego 2018). Fire has reoccurred on the Additions since 1926, but the Additions appear to be recovering well from the most recent Poomacha Fire of 2007. Invasive non-native plant species treatment recommendations are discussed in Section 5.4, and fire recommendations are discussed in Section 5.6. The following measures are recommended to ensure consistency with the Framework Management Plan:

- Monitoring of invasive non-native shot-hole borers (Section 5.2.2)
- Invasive non-native plant control and/or removal (Section 5.4.1)
- Implementation of fire management practices to reduce the risk of catastrophic fire (Section 5.6)
- Strategic placement of fencing and signage to deter unauthorized access (Section 5.8)

5.2 PLANTS

5.2.1 Management

The baseline biological surveys identified six special-status rare plants: Yucaipa onion, Palmer's grappling hook, Humboldt lily, Fish's milkwort, Engelmann oak, and rush-like bristleweed. Of these, one special-status plant species, Engelmann oak, is covered under the Draft North County MSCP. The general management recommendations in Section 5.1, *Vegetation Communities*, will protect the integrity of native plants within the Additions, including special-status plants. Species-specific recommendations for Engelmann oak are below.

5.2.2 MSCP Framework Management Plan

5.2.2.1 Engelmann Oak (*Quercus engelmanii*)

Engelmann oak was detected within the southeast portion of the Sierra Verde Addition (Figure 9c). Per the Draft North County MSCP's Framework Management Plan, the primary management goal for Engelmann oak is to ensure its persistence by protecting, maintaining, and enhancing existing populations within conserved lands (County of San Diego 2018). Management objectives identified by the Framework Management Plan for this species include maintaining robust populations, removing invasive non-native plant species, augmenting seeding reproduction, and

targeted management of pests such as shot-hole borers (County of San Diego 2018). The following measures are recommended to ensure consistency with the Framework Management Plan:

- Protect the occupied area in the southeast portion of the Sierra Verde Addition through fencing, signage, and enforcement. Conduct inspections, at least quarterly, to assess for the integrity of fencing, and signage and to watch for any new disturbances, including trespass and fire. Fence and sign maintenance should occur as needed to protect Engelmann oaks from disturbance.
- Monitor for shot-hole borer/Fusarium dieback on an annual basis. If this species is detected, remove infected branches to help reduce vector populations and the spread of this pest-disease complex, as appropriate. Pruning would be conducted by a qualified arborist and would follow best management practices, as described in the most recent guidance from scientific institutions such as U.C. Riverside.
- Expand the existing population of Engelmann oak on-site through habitat restoration and enhancement (Section 5.5).

5.3 WILDLIFE

5.3.1 Management

The baseline biological surveys identified twenty-seven special-status wildlife species. Of these, four species are also covered under the Draft North County MSCP: western spadefoot toad, SKR, Townsend's big-eared bat, and pallid bat. Specific management recommendations for MSCP-covered species are provided in Section 5.3.2. General management recommendations for all special-status wildlife species detected and with a high potential to occur within the Additions include:

- Invasive non-native plant control and/or removal.
- Habitat monitoring every 10 years, or following a change in conditions (e.g., fire, drought).
- Management and reduction of human-caused edge effects (such as introduction of invasive/non-native species and domestic pets, increase in trash/pollution, and/or habitat destruction—especially through human-induced fires).
- Provision of habitat for tree-cavity-nesting bird species, such as western bluebird, and tree-cavity-roosting bat species, such as the pallid bat; dead snags should be left in place when these trees do not pose a safety concern.

- Vegetation maintenance activities that involve tree trimming, removal of exotic trees, and vegetation thinning/clearance should implement avian and/or bat mitigation measures to avoid potential impacts to nesting birds and roosting bats, as needed. Whenever possible, exotic trees such as palms that are scheduled for removal should be allowed to die in place.
- Signage, fencing, and strategic placement of barriers to deter unauthorized access to special-status species and sensitive habitats.

5.3.2 MSCP Framework Management Plan

5.3.2.1 Western Spadefoot Toad (*Spea hammondii*)

Western spadefoot toad was observed in Addition 1 and Sierra Verde in multiples stage of life. Per the Draft North County MSCP's Framework Management Plan, the primary management goal for western spadefoot toad is to ensure the persistence of western spadefoot toad within conserved lands by maintaining and enhancing breeding habitat and foraging habitat, as well as retaining natural geomorphological conditions, such as upstream portions of occupied drainages to support this species (County of San Diego 2018). Management objectives identified by the Framework Management Plan for this species include protecting breeding ponds from disturbance, managing aestivation habitat, controlling invasive non-native wildlife such as bullfrogs (*Rana catesbeiana*), and avoiding mosquito control in breeding habitat. The following measures are recommended to ensure consistency with the Framework Management Plan:

- Though public access is not planned for the Additions, unauthorized access was observed in the Additions, particularly in the Sierra Verde Addition where a breeding pond occurs. Access control measures, such as the installation of fencing and signage to prevent unauthorized access, should be implemented to protect the breeding pond from human disturbance from trampling and vehicles.
- Presence/absence surveys during the breeding season should be conducted every 5 years for this species. Occupied habitat should be inspected concurrently using the threats assessment contained in the San Diego Management & Monitoring Program's (SDMMP's) Inspect & Manage Protocol. Data should be submitted to the Multi-Taxa Database maintained by SDMMP and the US Geological Survey (USGS).
- Concurrent with presence/absence surveys, monitoring of breeding ponds and upland aestivation habitat for non-native plant species and invasive non-native aquatic wildlife species, such as bullfrogs, mosquitofish (*Gambusia affinis*), and crayfish (*Procambarus clarkia*) should be conducted, and implementation of eradication efforts should occur if these species are identified.

- Avoid mosquito control measures in suitable breeding habitat, such as the stock pond in the Sierra Verde Addition.
- If any decrease in distribution of suitable breeding habitat for western spadefoot toad is detected within the conserved land, determine the cause and take corrective actions (e.g., restoration following major wildfires that result in hydrologic modification and/or loss of breeding habitat).

5.3.2.2 Stephens' Kangaroo Rat (*Dipodomys stephensi*)

SKR was detected in the northeast corner of the Sierra Verde Addition. Per the Draft North County MSCP's Framework Management Plan, the primary management goal for SKR is to provide and maintain suitable habitat for SKR and ensure the persistence of the species by maintaining known populations within conserved lands (County of San Diego 2018). Management objectives identified by the Framework Management Plan for this species include removing invasive non-native plant species and vegetation thatch from occupied grassland areas, and if applicable, conduct livestock grazing in a manner that is beneficial to SKR populations (e.g., density of vegetation). The following measures are recommended to ensure consistency with the Framework Management Plan:

- Maintain occupied SKR habitat by implementing invasive non-native plant species and vegetation management. While SKR are associated with open grasslands dominated by invasive non-native grasses, there are other perennial broadleaved invasive non-native plants that can make habitat unsuitable for SKR by creating dense obstructions. If target invasive non-native plant species within occupied SKR habitat exceeds 10% total vegetated cover, or have increased by 25% or more since the previous survey, or if non-native grass cover and California buckwheat scrub is greater than 50% total cover, implement invasive non-native plant species control measures, targeted dethatching/mowing, and/or scraping. Targeted dethatching/mowing can reduce the overall height of the existing vegetation to a desired level and assist with disarticulation of herbaceous weeds. Scraping can be conducted to reduce vegetation density and increase open ground, maximizing the ability of SKR to move across the landscape. No change in management is needed if changes in invasive non-native plant species coverage is declining or below these threshold levels.
- Establish long-term monitoring plots within occupied SKR habitat and conduct burrow/sign search and habitat characterization surveys within occupied SKR habitat every 5 years. Occupied habitat should be inspected concurrently using the threats assessment contained in the San Diego Management & Monitoring Program's (SDMMP's) Inspect &

Manage Protocol. Data should be submitted to the Multi-Taxa Database maintained by SDMMP and USGS.

- Presence/absence surveys in areas with active sign should be conducted every 10 years for this species. Live-trapping will be conducted for a minimum of three consecutive nights in the fall (i.e., September through December), with November through December as the preferred time period. A total of 25 traps will be used in a 5 x 5 array, spaced approximately 10 meters apart at each monitoring plot. Data should be submitted to the Multi-Taxa Database maintained by SDMMP and USGS, and to USFWS.

5.3.2.3 Pallid Bat (*Antrozous pallidus*)

Pallid bat was detected during within Addition 1, Addition 3, and the Sierra Verde Addition, and potential roosting habitat may occur along the rocky slopes within the Chabad Addition. Per the Draft North County MSCP's Framework Management Plan, the primary management goal for pallid bat is to ensure the persistence of this species within conserved lands by protecting and maintaining occupied habitat as well as managing and enhancing unoccupied areas that have potential to support suitable roosting and foraging habitat (County of San Diego 2018). Management objectives identified by the Framework Management Plan for this species include incorporation of artificial water sources and/or roosts, as appropriate. The following measures are recommended to ensure consistency with the Framework Management Plan:

- Protect occupied roosting sites, if present, through fencing, signage, and enforcement to maintain a buffer of 100 feet around roosting habitat.
- Vegetation maintenance activities that involve removal of dead trees and snags, which bats are known to utilize as roosting sites, should be minimized. Vegetation maintenance activities that involve tree trimming or removal of exotic trees should implement bat mitigation measures to avoid potential impacts to nesting birds and roosting bats, as needed. Whenever possible, exotic trees that are scheduled for removal should be allowed to die in place.
- Presence/absence surveys and a habitat evaluation assessment should be conducted every 5 years for this species. A buffer of 100-feet around known roost sites should be inspected concurrently using the threats assessment contained in the SDMMP Inspect & Manage Protocol. Data should be submitted to the Multi-Taxa Database maintained by SDMMP and USGS.
- A San Diego County bat management plan for pallid bat and Townsend's big-eared bat is in preparation by the SDMMP, as of 2020. This management plan will identify areas

prioritized for management actions to enhance roosting and foraging habitat for pallid bats. Creation of artificial roosts and installation of artificial water sources is recommended if the Additions and Hellhole Canyon Preserve are located within areas prioritized for roosting and foraging habitat enhancement.

5.3.2.4 Townsend's Big-Eared Bat (*Corynorhinus townsendii*)

Townsend's big-eared bat was detected within the Sierra Verde Addition, and suitable roosting habitat (e.g., cave-like habitats) may be present within the rocky and inaccessible portions of the Chabad Addition. Per the Draft North County MSCP's Framework Management Plan, the primary management goal for Townsend's big-eared bat is to ensure the persistence of this species within conserved lands (County of San Diego 2018). Management objectives identified by the Framework Management Plan for this species include protection of occupied habitat, installation of gates at roost entrances, and incorporation of artificial water sources and/or roosts, as appropriate. The following measures are recommended to ensure consistency with the Framework Management Plan:

- Protect occupied roosting sites, if present, through bat gates, fencing, signage, and enforcement to maintain a buffer of 100 feet around roosting habitat.
- Presence/absence surveys and a habitat evaluation should be conducted every 5 years for this species. A buffer of 100-feet around known roost sites should be inspected concurrently using the threats assessment contained in the SDMMP Inspect & Manage Protocol. Data should be submitted to the Multi-Taxa Database maintained by SDMMP and USGS.
- A San Diego County bat management plan for pallid bat and Townsend's big-eared bat is in preparation by the SDMMP, as of 2020. This management plan will identify areas prioritized for management actions to enhance roosting and foraging habitat for Townsend's big-eared bats. Creation of artificial roosts (e.g., bat houses) and installation of artificial water sources is recommended if the Additions and Hellhole Canyon Preserve are located within areas prioritized for roosting and foraging habitat enhancement.

5.4 INVASIVE NON-NATIVE SPECIES REMOVAL AND CONTROL

Invasive non-native plant species often have adaptations that allow them to germinate and grow faster than native species, thereby outcompeting native plant species. Removal of invasive non-native plant species is recommended to enhance habitat quality. A detailed Vegetation Management Plan for the Additions and Hellhole Canyon Preserve addresses invasive non-native plant species control. Invasive non-native wildlife species can outcompete native wildlife species for limited resources such as water, food, and space. Brown-headed cowbirds are nest parasites for

multiple bird species within riparian and oak woodland habitats, and three individuals were observed within the Chabad Addition. Wild turkeys are non-native to California, and were incidentally observed on wildlife cameras within Addition 1.

5.4.1 Plants

Sixty-one non-native plant species were observed within the Additions in 2019. Of these 61, 14 species have been targeted for removal (**Table 16**). Species designated as high priority are recommended for immediate removal and moderate species should be removed after high-priority species are under control or when in close proximity to occupied habitat for special-status plant and wildlife species. A Vegetation Management Plan for the Additions and Preserve includes specific information regarding methods for removing each of the 14 targeted species.

Table 16. Priorities for Removal or Management of Invasive Non-Native Plant Species

Common Name	Scientific Name	CBI Management Priority for Invasive Non-Native Plants[2]	Cal-IPC Rating[3]	Removal Priority
Pampas Grass	*Cortaderia selloana*	Management Level 3	High	High
Artichoke Thistle	*Cynara cardunculus*	Management Level 3	Moderate	High
Sweet Fennel	*Foeniculum vulgare*	Management Level 4	High	High
Tamarisk	*Tamarix ramosissima*	NA	High	High
Iceplant	*Carpobrotus edulis*	NA	High	High
Treasure Flower	*Gazania linearis*	NA	Moderate — Alert	High
Fountain Grass	*Pennisetum setaceum*	NA	Moderate	High
Mexican Fan Palm	*Washingtonia robusta*	NA	Moderate	High
Peruvian Pepper Tree	*Schinus molle*	NA	Limited	High
Tree Tobacco	*Nicotiana glauca*	NA	Moderate	Moderate
Eucalyptus (River Red Gum)	*Eucalyptus camaldulensis*	NA	Limited	Moderate
Eucalyptus (Southern Blue Gum)	*Eucalyptus globulus*	NA	Limited	Moderate
Olive Tree	*Olea europea*	NA	Limited	Moderate
Golden Wattle	*Acacia pycnantha*	NA	Watch	Moderate

Invasive, non-native plant species prioritized for removal are those that occur as small, isolated patches and are not yet widespread throughout the Additions. These fourteen species are recommended for removal consistent with Early Detection Rapid Response practices. Early Detection Rapid Response is a management approach recommended by Cal-IPC to effectively eradicate invasive non-native plant populations before they have had a chance to spread and develop a large seed bank. Removal methodologies are recommended in the Vegetation Management Plan, and include manual removal, mechanical removal, herbicides, and cut and daub. However, the appropriate removal methodology will ultimately be determined with consideration of many variables, including time of year, severity of infestation, presence of special-status plant and wildlife species, the degree of intermixing of invasive non-native plant species with sensitive native habitats, access, and proximity to surface water. Continued surveillance is also necessary to ensure that these species or other highly invasive non-native plant species do not spread into other areas of the Additions.

Additionally, an isolated population of giant reed (*Arundo donax*) was observed within the Preserve in a drainage immediately off-site of Addition 2 (Figure 10a). This species has a CBI management priority of 5 and a Cal-IPC rating of High. Therefore, it is considered high priority for removal to prevent spread into the Harbison's dun skipper habitat in Addition 2.

Additional invasive non-native plant species, including brome grasses, short-pod mustard, tocalote, rattail fescue, smilo grass (*Stipa miliacea*), and wild oat, are not prioritized for removal but should be included as species to monitor and control as components of general habitat management. These species are generally widespread throughout the Additions and intensive, targeted management for these species would most likely not be cost-effective or successful.

5.4.2 Wildlife

Three brown-headed cowbirds (*Molothrus ater*) were incidentally observed within the Chabad Addition. Brown-headed cowbirds are nest parasites for multiple species predominantly in riparian and/or oak woodland, but rarely within scrub/shrub habitats. This species is unlikely to be detrimental to special-status breeding bird species within the Additions due to the limited number of individual sightings. It is recommended that brown-headed cowbird monitoring occur every 5 years to determine if the number of individuals within the Additions has increased. If brown-headed cowbirds become prolific in the Additions, then additional management recommendations may be needed.

Additionally, wild turkey (*Meleagris gallopavo*) was incidentally observed on wildlife cameras within Addition 1. Wild turkeys are known to eat acorns which can interfere with Engelmann oak reproduction; however, the wild turkeys within the Additions are not anticipated to be an

immediate threat to the Engelmann oaks on-site as wild turkeys were not noted in the vicinity of Englemann oaks (located in the Sierra Verde Addition) and the turkey population is presumed to be low due to limited observations. However, wild turkey is a known vector of sudden oak death, caused by the *Phytopthera ramorum* pathogen. Sudden oak death is not currently known from southern California; however, should this threat become present within San Diego County or neighboring regions, management actions related to control of wild turkey may be necessary to protect oak populations within the Preserve as a whole.

5.5 RESTORATION OPPORTUNITIES

The Additions are primarily composed of high-quality native vegetation, including chaparral, woodland, and sage scrub variants. Small areas of non-native annual grassland and disturbed habitat occur throughout the Additions. The disturbed habitat is mainly associated with unauthorized trails that occur within the Additions. In addition to reducing unauthorized access, the disturbed areas of unauthorized trails can either have active habitat restoration activities implemented, or these areas can be allowed to passively restore by allowing native plant species adjacent to the unauthorized trails to naturally recruit. This is particularly recommended for Addition 1 and the Sierra Verde Addition where unauthorized trails are most prevalent.

The Sierra Verde Addition also presents opportunities for restoration through control of the invasive non-native plant species targeted for removal as well as restoration of the disturbed open coast live oak woodland habitat. The disturbed open coast live oak woodland habitat currently consists of coast live oak trees mixed with non-native trees such as avocado as this area was formerly an avocado and citrus grove. Restoration opportunities should replace the non-native trees with native Engelmann oak and coast live oak trees. The Engelmann oak population on-site is currently limited to a small area in the southeastern corner of the Sierra Verde Addition, immediately adjacent to the disturbed open coast live oak woodland. Restoration of the disturbed open coast live oak woodland would expand the Engelmann oak population on-site, as well as increase the amount of suitable nesting and roosting habitat for western bluebird, pallid bat, and other species. Additionally, restoration in this area should target high-priority invasive non-native plant species in this area, including treasure flower and artichoke thistle.

5.6 FIRE MANAGEMENT

The Additions are dominated by upland chaparral vegetation communities. Upland areas are susceptible to burns, particularly as the vegetation ages and drought conditions continue. The most recent wildfire burned approximately half of the Additions in 2007, while the entirety of Hellhole Canyon Preserve and the Additions burned in 2003. A Vegetation Management Plan for the Additions and Preserve includes a short-term tactical fire suppression plan and a long-term

strategic plan for vegetation management. These plans consider strategic fire prevention activities, fire suppression with regard to fire effects on habitat, and post-fire monitoring and rehabilitation. Management recommendations that complement fuel reduction practices are identified, including delineating and maintaining fuel modification zones, providing emergency fire access, promoting data sharing, preventing illegal access and trespass, increasing public education to reduce potential for ignition, and suppressing wildfires.

5.7 WILDLIFE LINKAGES AND CORRIDORS

5.7.1 Management

Wildlife are generally expected to move freely within the Additions given the high levels of usage by medium and large mammals, as observed during the wildlife camera surveys, and connectivity to large off-site expanses of undeveloped open space. Most animals seek cover when moving across the landscape and, therefore, often seek out riparian areas as their preferred movement corridors. Hell Creek, which traverses the Chabad Addition and Addition 2, was utilized by many wildlife species, including bobcat, gray fox, coyote, southern mule deer, and mountain lion, as observed through wildlife camera photos. Additionally, dirt access roads within the upland areas were also frequently utilized by wildlife, including large and small mammals. The high levels of usage by small and large mammals observed throughout the Additions suggest that both the uplands and Hell Creek provide vital linkages for wildlife movement to off-site open space lands such as Rancho Guejito to the south and east and the San Luis Rey River Valley to the northwest.

Conservation and management of habitat within the Additions would allow wildlife to continue to use the Additions. Additionally, the recommendations in Sections 5.1 through 5.6 will also ensure that habitat on the Additions is viable for local and regional movement. Specific management recommendations related to wildlife linkages and corridors per the Draft North County MSCP are provided below.

5.7.2 MSCP Framework Management Plan

Per the Draft North County MSCP's Framework Management Plan, the primary management goal for wildlife movement corridors is to manage conserved lands to ensure conditions are suitable for wildlife movement within and through conserved lands (County of San Diego 2018). Management objectives identified by the Framework Management Plan for wildlife movement corridors include protecting key wildlife movement areas, implementing wildlife friendly fencing, and monitoring wildlife movement. The following measures are recommended to ensure consistency with the Framework Management Plan:

- Fencing, signage, and enforcement should be used to protect wildlife corridors and areas of key wildlife movement, particularly in the Sierra Verde Addition. Fencing should consist of three-strand, barbless wire fencing to allow for wildlife movement. Additionally, areas of barbed wire fencing should be replaced with 3-strand barbless wire fencing and remote areas with interior fencing should be removed to encourage wildlife movement, as described in Section 5.8 below.
- Monitoring stations should be established along Hell Creek and near dirt access roads that facilitate movement. At these stations, track identification, scat identification, and video observation methods should be employed to determine use by target mammal species. Wildlife corridor monitoring should occur every 5 years along each major corridor. The scope of monitoring will be sufficient to determine if corridors are being utilized, but not to determine the extent of use (i.e., how many individuals of any given species use a corridor).

5.8 ADDITIONAL MANAGEMENT RECOMMENDATIONS

5.8.1 Public Access

The Additions are currently not open to the public. Recommendations to limit unauthorized public access through access control measures such as fencing, signage, and gates, and enforcement are discussed below. Closure and restoration of unauthorized trails not necessary for management access are also recommended to limit unauthorized access and assist in habitat recovery, as discussed in Section 5.5.

5.8.2 Fencing and Gates

Addition 1 has a gate and barbed wire fencing at the entrance on Canal Road; however, Addition 1 is unprotected by gates or fencing adjacent to Oos Road, Oos Place, and Sunset Vista Lane. The gate is located on Addition 1 to provide vehicle access for management and remains locked to limit unauthorized access. Addition 2 is not surrounded by fencing as it is located in the middle of Hellhole Canyon Preserve, and has an interior gate for canal access only. Roadblocks also occur between Additions 1 and 2 to prevent vehicle access. Addition 3 is fenced and signed along the western, and southern boundaries and does not currently exhibit signs of unauthorized access. The Chabad Addition does not have fencing or signs, but lack of trails and steep rocky terrain limit unauthorized access. Installation of additional fencing and signs at Addition 1 is recommended to prevent access to both Addition 1 and Addition 2. The gate at Canal Road should remain locked and signage should be placed to notify the public that entry is prohibited. Continued maintenance and monitoring of the fencing and gates is recommended as part of ongoing management to prevent unauthorized trespass into sensitive biological areas.

The Sierra Verde Addition is generally surrounded by a combination of chain-link, barbed-wire, or 3-strand wire fencing, with a gate restricting vehicle access from the main point of entry at Sierra Verde Road. However, the Sierra Verde Addition is abutted by rural-residential development to the north and west, with a private road extending along a portion of the western boundary. Several unauthorized trails appear to extend from private residences into the Sierra Verde Addition. Installation of new fencing, signage, and barriers may be necessary to block unwanted access from residences. The gate at Sierra Verde Road should remain locked and signage should be placed to notify the public that entry is prohibited. Monitoring and regular patrols are recommended as ongoing management.

However, because these areas are part of a regional wildlife movement corridor, fencing and gates should be installed in a way that does not prevent wildlife movement. Areas of barbed wire fencing should be replaced with 3-strand barbless wire fencing to better facilitate wildlife movement. It may also be appropriate to remove or modify areas of interior fencing (e.g., removal of bottom row of wire) in remote locations, particularly at Addition 3, to allow for easier movement for wildlife. Signage could be used to delineate the boundary of the Additions in these areas without precluding wildlife movement. However, existing fencing should be maintained in areas adjacent to roads, residences, and Rancho Guejito to prevent unauthorized access and intrusion by cattle into the Additions, and these areas should be monitored frequently to ensure that existing access control measures are adequate to prevent intrusion into the Additions.

5.8.3 Trails and Access Roads

Dirt access roads (Canal Road and Sierra Verde Road) provide maintenance vehicle access to Addition 1 and the Sierra Verde Addition that currently have locked gates to prevent public vehicle access. However, several unauthorized roads provide access from Oos Road, Oos Place, and Sunset Vista Lane to Addition 1 where gates and fencing are not in place. Numerous unauthorized trails are also present at both Additions, although an official trail system is not in place or currently proposed for the Additions. Unauthorized trails should be blocked off with natural elements, such as boulders or plantings, or fenced off with signage to prohibit foot traffic and to allow passive habitat restoration to take place.

5.8.4 Signage and Education

The Additions are not currently open to the public for recreational use and only limited signage (boundary signs) are installed in some areas. “No Trespassing/ Sensitive Habitat Area” signs should be placed along boundaries adjacent to roads and at potential access points throughout the Additions. These signs should also include language regarding county, state, and federal codes

prohibiting trespassing, unauthorized shooting/poaching, littering and dumping, and plant and wildlife collection. At the Sierra Verde Addition, it is recommended that three signs per mile are installed along the entire boundary to ensure enforceability.

5.8.5 Law Enforcement

Multiple instances of poaching were observed on the wildlife cameras within the Sierra Verde Addition. DPR should continue to coordinate with the County Sherriff's Department, CDFW wardens, and BLM rangers for enforcement and patrols on the Sierra Verde Addition. DPR should also encourage residences neighboring the Sierra Verde Addition to report poaching to the County Sherriff's Department.

5.8.6 Emergency and Safety Issues

The main emergency and safety issue concerning the Additions and Preserve is threat of wildfires. Fire management was discussed in detail in Section 5.6. The Vegetation Management Plan will discuss in further detail the recommended emergency and safety measures, including an emergency response plan and emergency contact information.

The Additions are not open to the public; however, nighttime access by the public was observed from wildlife camera photos. This is a potential safety issue and could result in increased trash and littering, as well as fire. Additional safety issues related to unauthorized shooting and poaching were noted within the Sierra Verde Addition. These safety issues should continue to be addressed through access control measures and law enforcement coordination as noted in Section 5.8.5.

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APPENDIX A

PLANT SPECIES DETECTED ON THE ADDITIONS

APPENDIX A: PLANT SPECIES DETECTED ON THE ADDITIONS

LYCOPHYTES

Scientific Name	Common Name	Status (Federal/State/CRPR/Local)
Selaginellaceae	**Spike-Moss Family**	
Selaginella bigelovii	Bigelow's spike moss	None/None/None/None

FERNS

Scientific Name	Common Name	Status (Federal/State/CRPR/Local)
Dennstaedtiaceae		
Pteridium aquilinum var. *pubescens*	hairy brackenfern	None/None/None/None
Polypodiaceae		
Polypodium californicum	California polypody	None/None/None/None
Pteridaceae	**Maidenhair Fern Family**	
Myriopteris clevelandii	Cleveland's lip fern	None/None/None/None
Pellaea andromedifolia	coffee cliffbrake	None/None/None/None
Pellaea mucronata var. *mucronata*	birdfoot cliffbrake	None/None/None/None
Pentagramma triangularis	California goldback fern	None/None/None/None

GYMNOSPERMS

Scientific Name	Common Name	Status (Federal/State/CRPR/Local)
Pinaceae	**Pine Family**	
Pinus attenuata	knobcone pine	None/None/None/None

EUDICOTS

	Scientific Name	Common Name	Status (Federal/State/CRPR/Local)
	Adoxaceae	**Muskroot Family**	
	Sambucus nigra ssp. *caerulea*	blue elderberry	None/None/None/None
	Aizoaceae	**Fig-Marigold Family**	
*	*Carpobrotus edulis*	iceplant	None/None/None/None
	Anacardiaceae	**Sumac Family**	
	Malosma laurina	laurel sumac	None/None/None/None
*	*Pistacia atlantica*	Mt. Atlas mastic tree	None/None/None/None
	Rhus integrifolia	lemonade berry	None/None/None/None
	Rhus ovata	sugar bush	None/None/None/None
*	*Schinus molle*	Peruvian pepper tree	None/None/None/None
	Toxicodendron diversilobum	western poison oak	None/None/None/None
	Apiaceae	**Carrot Family**	
	Daucus pusillus	American wild carrot	None/None/None/None
	Lomatium dasycarpum ssp. *dasycarpum*	woolly-fruited lomatium	None/None/None/None
	Lomatium lucidum	shiny lomatium	None/None/None/None
	Sanicula bipinnatifida	purple sanicle	None/None/None/None
	Sanicula crassicaulis	Pacific sanicle	None/None/None/None
	Tauschia arguta	southern tauschia	None/None/None/None
	Apocynaceae	**Dogbane Family**	
	Asclepias eriocarpa	Kotolo milkweed	None/None/None/None
*	*Nerium oleander*	oleander	None/None/None/None
	Asteraceae	**Aster Family**	
	Ambrosia psilostachya	western ragweed	None/None/None/None
	Artemisia californica	California sage brush	None/None/None/None
	Artemisia douglasiana	California mugwort	None/None/None/None
	Baccharis salicifolia ssp. *salicifolia*	mule fat	None/None/None/None
	Baccharis pilularis	coyote brush	None/None/None/None
	Brickellia californica	California brickellbush	None/None/None/None
*	*Carduus pycnocephalus* ssp. *pycnocephalus*	Italian thistle	None/None/None/None
*	*Centaurea melitensis*	tocalote	None/None/None/None

EUDICOTS

	Scientific Name	Common Name	Status (Federal/State/CRPR/Local)
	Chaenactis artemisiifolia	white pincushion	None/None/None/None
	Chaenactis glabriuscula	yellow pincushion	None/None/None/None
	Chaenactis glabriuscula var. *glabriuscula*	yellow pincushion	None/None/None/None
*	*Cirsium undulatum*	wavy-leaf thistle	None/None/None/None
	Corethrogyne filaginifolia	common sandaster	None/None/None/None
*	*Cotula australis*	Australian waterbuttons	None/None/None/None
*	*Cynara cardunculus*	artichoke thistle	None/None/None/None
	Deinandra fasciculata	fascicled tarplant	None/None/None/None
	Erigeron canadensis	horseweed	None/None/None/None
	Erigeron foliosus	leafy fleabane	None/None/None/None
	Erigeron foliosus var. *foliosus*	leafy fleabane	None/None/None/None
	Eriophyllum confertiflorum	golden-yarrow	None/None/None/None
*	*Gazania linearis*	treasure flower	None/None/None/None
	Gutierrezia californica	California matchweed	None/None/None/None
	Hazardia squarrosa var. *grindelioides*	sawtooth goldenbush	None/None/None/None
	Hedypnois cretica	Cretanweed	None/None/None/None
	Helianthus gracilentus	slender sunflower	None/None/None/None
	Heterotheca grandiflora	telegraphweed	None/None/None/None
*	*Hypochaeris glabra*	smooth cat's ear	None/None/None/None
*	*Lactuca serriola*	prickly lettuce	None/None/None/None
	Logfia filaginoides	California cottonrose	None/None/None/None
*	*Logfia gallica*	narrowleaf cottonrose	None/None/None/None
	Madia gracilis	grassy tarweed	None/None/None/None
	Osmadenia tenella	false rosinweed	None/None/None/None
	Porophyllum gracile	odora	None/None/None/None
	Pseudognaphalium biolettii	two-color rabbit-tobacco	None/None/None/None
	Pseudognaphalium californicum	ladies' tobacco	None/None/None/None
	Pseudognaphalium canescens	Wright's cudweed	None/None/None/None
	Pseudognaphalium microcephalum	Wright's cudweed	None/None/None/None
	Rafinesquia californica	California chicory	None/None/None/None

EUDICOTS

	Scientific Name	Common Name	Status (Federal/State/CRPR/Local)
*	*Senecio vulgaris*	old-man-in-the-spring	None/None/None/None
*	*Sonchus asper* ssp. *asper*	spiny sowthistle	None/None/None/None
*	*Sonchus oleraceus*	common sowthistle	None/None/None/None
	Stylocline gnaphalioides	mountain neststraw	None/None/None/None
	Uropappus lindleyi	silver puffs	None/None/None/None
	Xanthisma junceum	rush-like bristleweed	None/None/4.3/None
	Xanthium strumarium	rough cockleburr	None/None/None/None
	Boraginaceae	**Borage Family**	
	Amsinckia intermedia	common fiddleneck	None/None/None/None
	Amsinckia menziesii	Menzie's fiddleneck	None/None/None/None
	Cryptantha intermedia	common cryptantha	None/None/None/None
	Cryptantha micromeres	minute-flowered cryptantha	None/None/None/None
	Cryptantha muricata	pointed cryptantha	None/None/None/None
	Emmenanthe penduliflora	whispering bells	None/None/None/None
	Eucrypta chrysanthemifolia	common eucrypta	None/None/None/None
	Harpagonella palmeri	Palmer's grapplinghook	None/None/4.2/County List D
	Pectocarya linearis ssp. *ferocula*	sagebrush combseed	None/None/None/None
	Pectocarya penicillata	sleeping combseed	None/None/None/None
	Phacelia cicutaria	caterpillar phacelia	None/None/None/None
	Phacelia cicutaria var. *hispida*	caterpillar phacelia	None/None/None/None
	Phacelia parryi	Parry's phacelia	None/None/None/None
	Plagiobothrys sp.	popcornflower	None/None/None/None
	Brassicaceae	**Mustard Family**	
*	*Brassica nigra*	black mustard	None/None/None/None
*	*Hirschfeldia incana*	short-pod mustard	None/None/None/None
	Nasturtium officinale	watercress	None/None/None/None
*	*Raphanus sativus*	wild radish	None/None/None/None
*	*Sisymbrium orientale*	Indian hedge mustard	None/None/None/None
	Cactaceae	**Cactus Family**	
	Opuntia ficus-indica	Mission cactus	None/None/None/None

EUDICOTS

	Scientific Name	Common Name	Status (Federal/State/CRPR/Local)
	Caprifoliaceae	**Honeysuckle Family**	
	Lonicera subspicata var. *denudata*	Johnston's honeysuckle	None/None/None/None
	Caryophyllaceae	**Pink Family**	
*	*Cerastium glomeratum*	mouse-ear chickweed	None/None/None/None
	Loeflingia squarrosa	spreading loeflingia	None/None/None/None
	Polycarpon depressum	California allseed	None/None/None/None
*	*Silene gallica*	common catchfly	None/None/None/None
*	*Spergularia bocconi*	Boccone's sand spurry	None/None/None/None
	Chenopodiaceae	**Goosefoot Family**	
*	*Chenopodium album*	lamb's quarter	None/None/None/None
	Chenopodium californicum	California goosefoot	None/None/None/None
	Cistaceae	**Rock Rose Family**	
	Crocanthemum aldersonii	Aldersons' rush-rose	None/None/None/None
	Convolvulaceae	**Morning-Glory Family**	
	Calystegia macrostegia ssp. *tenuifolia*	San Diego morning glory	None/None/None/None
	Cuscuta californica	California dodder	None/None/None/None
	Crassulaceae	**Stonecrop Family**	
	Crassula connata	sand pygmyweed	None/None/None/None
	Cucurbitaceae	**Gourd Family**	
	Marah macrocarpa	wild cucumber	None/None/None/None
	Ericaceae	**Heath Family**	
	Arctostaphylos glandulosa ssp. *glandulosa*	Eastwood's manzanita	None/None/None/None
	Arctostaphylos glauca	bigberry manzanita	None/None/None/None
	Xylococcus bicolor	mission manzanita	None/None/None/None
	Euphorbiaceae	**Spurge Family**	
	Croton setiger	doveweed	None/None/None/None
*	*Euphorbia maculata*	spotted spurge	None/None/None/None
	Fabaceae	**Legume Family**	
*	*Acacia pycnantha*	golden wattle	None/None/None/None
	Acmispon americanus var. *americanus*	Spanish lotus	None/None/None/None
	Acmispon glaber	coastal deerweed	None/None/None/None

EUDICOTS

	Scientific Name	Common Name	Status (Federal/State/CRPR/Local)
	Acmispon heermannii var. *alefeldii*	Heermann's lotus	None/None/None/None
	Lathyrus vestitus var. *alefeldii*	San Diego sweet pea	None/None/None/None
	Lathyrus vestitus var. *vestitus*	common pacific pea	None/None/None/None
	Lupinus bicolor	bicolored lupine	None/None/None/None
	Lupinus hirsutissimus	stinging lupine	None/None/None/None
	Lupinus succulentus	Arroyo lupine	None/None/None/None
	Lupinus truncatus	blunt-leaved lupine	None/None/None/None
*	*Medicago polymorpha*	bur clover	None/None/None/None
*	*Melilotus indicus*	sourclover	None/None/None/None
*	*Vicia villosa* ssp. *villosa*	hairy vetch	None/None/None/None
	Fagaceae	**Oak Family**	
	Quercus x acutidens	Torrey's scrub oak	None/None/None/None
	Quercus agrifolia	coast live oak	None/None/None/None
	Quercus berberidifolia	inland scrub oak	None/None/None/None
	Quercus engelmannii	Engelmann's oak	None/None/4.2/MSCP; County List D
	Gentianaceae	**Gentian Family**	
	Zeltnera venusta	charming centaury	None/None/None/None
	Geraniaceae	**Geranium Family**	
*	*Erodium botrys*	longbeak stork's bill	None/None/None/None
*	*Erodium cicutarium*	redstem stork's bill	None/None/None/None
*	*Pelargonium xhortorum*	garden pelargonium	None/None/None/None
	Grossulariaceae	**Gooseberry Family**	
	Ribes malvaceum	chaparral currant	None/None/None/None
	Lamiaceae	**Mint Family**	
*	*Marrubium vulgare*	horehound	None/None/None/None
	Salvia apiana	white sage	None/None/None/None
	Salvia columbariae	chia sage	None/None/None/None
	Salvia mellifera	black sage	None/None/None/None
	Lauraceae	**Laurel Family**	
*	*Persea americana*	avocado	None/None/None/None

EUDICOTS

Scientific Name	Common Name	Status (Federal/State/CRPR/Local)
Malvaceae	**Mallow Family**	
Malacothamnus densiflorus	many-flowered bushmallow	None/None/None/None
Myrsinaceae	**Myrsine Family**	
* *Lysimachia arvensis*	scarlet pimpernel	None/None/None/None
Myrtaceae	**Myrtle Family**	
* *Eucalyptus camaldulensis*	river red gum	None/None/None/None
* *Eucalyptus globulus*	southern blue gum	None/None/None/None
Oleaceae	**Olive Family**	
Fraxinus velutina	velvet ash	None/None/None/None
* *Olea europaea*	olive tree	None/None/None/None
Onagraceae	**Evening Primrose Family**	
Camissoniopsis bistorta	California suncup	None/None/None/None
Camissoniopsis hirtella	hairy suncup	None/None/None/None
Clarkia purpurea var. *quadrivulnera*	four-spot clarkia	None/None/None/None
Clarkia similis	Ramona clarkia	None/None/None/None
Epilobium canum ssp. *canum*	California fuchsia	None/None/None/None
Eulobus californicus	California primrose	None/None/None/None
Orobanchaceae	**Broom-rape Family**	
Castilleja exserta	purple owl's-clover	None/None/None/None
Castilleja exserta var. *exserta*	purple owl's-clover	None/None/None/None
Cordylanthus rigidus ssp. *setiger*	bristly bird's beak	None/None/None/None
Paeoniaceae	**Peony Family**	
Paeonia californica	California peony	None/None/None/None
Phrymaceae	**Lopseed Family**	
Diplacus aurantiacus	sticky monkeyflower	None/None/None/None
Diplacus brevipes	wide throated yellow monkeyflower	None/None/None/None
Erythranthe floribunda	many flowered monkeyflower	None/None/None/None
Erythranthe guttata	yellow monkeyflower	None/None/None/None
Mimetanthe pilosa	snouted monkeyflower	None/None/None/None
Plantaginaceae	**Plantain Family**	
Antirrhinum coulterianum	Coulter's snapdragon	None/None/None/None

EUDICOTS

	Scientific Name	Common Name	Status (Federal/State/CRPR/Local)
	Antirrhinum nuttallianum ssp. *nuttallianum*	Nuttall's snapdragon	None/None/None/None
	Keckiella antirrhinoides	chaparral beard tongue	None/None/None/None
	Keckiella antirrhinoides var. *antirrhinoides*	chaparral beard tongue	None/None/None/None
	Keckiella cordifolia	climbing penstemon	None/None/None/None
	Nuttallanthus texanus	blue toadflax	None/None/None/None
	Penstemon spectabilis var. *spectabilis*	showy penstemon	None/None/None/None
	Plantago erecta	dot-seed plantain	None/None/None/None
*	*Plantago lanceolata*	English plantain	None/None/None/None
	Platanaceae	**Plane-tree Family**	
	Platanus racemosa	western sycamore	None/None/None/None
	Polemoniaceae	**Phlox Family**	
	Eriastrum sapphirinum	sapphire eriastrum	None/None/None/None
	Navarretia hamata ssp. *hamata*	hooked navarretia	None/None/None/None
	Polygalaceae	**Milkwort Family**	
	Polygala cornuta var. *fishiae*	Fish's milkwort	None/None/4.3/County List D
	Polygonaceae	**Buckwheat Family**	
	Chorizanthe fimbriata var. *fimbriata*	fringed spineflower	None/None/None/None
	Chorizanthe procumbens	prostrate spineflower	None/None/None/None
	Chorizanthe staticoides	Turkish rugging	None/None/None/None
	Eriogonum fasciculatum	California buckwheat	None/None/None/None
	Pterostegia drymarioides	California thread-stem	None/None/None/None
*	*Rumex conglomeratus*	clustered dock	None/None/None/None
*	*Rumex crispus*	curly dock	None/None/None/None
	Ranunculaceae	**Buttercup Family**	
	Aquilegia formosa	crimson columbine	None/None/None/None
	Clematis lasiantha	chaparral clematis	None/None/None/None
	Clematis pauciflora	ropevine	None/None/None/None
	Delphinium cardinale	scarlet larkspur	None/None/None/None
	Rhamnaceae	**Buckthorn Family**	
	Ceanothus crassifolius	hoaryleaf ceanothus	None/None/None/None
	Ceanothus leucodermis	chaparral whitethorn	None/None/None/None
	Ceanothus tomentosus	woollyleaf ceanothus	None/None/None/None

EUDICOTS

Scientific Name	Common Name	Status (Federal/State/CRPR/Local)
Rhamnus ilicifolia	hollyleaf redberry	None/None/None/None
Rhamnus pilosa	hairyleaf redberry	None/None/None/None
Rosaceae	**Rose Family**	
Adenostoma fasciculatum	chamise	None/None/None/None
Cercocarpus minutiflorus	smooth mountain mahogany	None/None/None/None
Drymocallis glandulosa	sticky cinquefoil	None/None/None/None
Heteromeles arbutifolia	toyon	None/None/None/None
Prunus ilicifolia ssp. *ilicifolia*	hollyleaf cherry	None/None/None/None
Rubus ursinus	California blackberry	None/None/None/None
Rubiaceae	**Madder Family**	
Galium angustifolium ssp. angustifolium	narrow-leaf bedstraw	None/None/None/None
Galium aparine	goose grass	None/None/None/None
Galium nuttallii ssp. *nuttallii*	climbing bedstraw	None/None/None/None
* *Galium parisiense*	wall bedstraw	None/None/None/None
Galium porrigens var. *porrigens*	graceful bedstraw	None/None/None/None
Rutaceae	**Rue Family**	
* *Citrus limon*	lemon	None/None/None/None
Salicaceae	**Willow Family**	
Populus fremontii ssp. *fremontii*	Fremont cottonwood	None/None/None/None
Salix exigua var. *hindsiana*	sandbar willow	None/None/None/None
Salix gooddingii	Gooding's black willow	None/None/None/None
Salix laevigata	red willow	None/None/None/None
Salix lasiolepis	arroyo willow	None/None/None/None
Saxifragaceae	**Saxifrage Family**	
Jepsonia parryi	Parry's jepsonia	None/None/None/None
Scrophulariaceae	**Figwort Family**	
Scrophularia californica	California figwort	None/None/None/None
Solanaceae	**Nightshade Family**	
Datura wrightii	Jimsonweed	None/None/None/None
* *Nicotiana glauca*	tree tobacco	None/None/None/None
Solanum douglasii	Douglas' nightshade	None/None/None/None
Solanum xanti	chaparral nightshade	None/None/None/None

EUDICOTS

Scientific Name	Common Name	Status (Federal/State/CRPR/Local)
Styracaceae	**Storax Family**	
Styrax redivivus	California snowdrop bush	None/None/None/None
Tamaricaceae	**Tamarisk Family**	
* *Tamarix ramosissima*	tamarisk	None/None/None/None
Vitaceae	**Grape Family**	
Vitis girdiana	desert wild grape	None/None/None/None

MONOCOTYLEDONS

Scientific Name	Common Name	Status (Federal/State/CRPR/Local)
Agavaceae	**Agave Family**	
Chlorogalum parviflorum	small-flowered soap plant	None/None/None/None
Hesperoyucca whipplei	chaparral yucca	None/None/None/None
Yucca schidigera	Mojave yucca	None/None/None/None
Alliaceae	**Onion Family**	
Allium haematochiton	red-skinned onion	None/None/None/None
Allium marvinii	Yucaipa onion	None/None/1B.2/None
Arecaceae	**Palm Family**	
* *Washingtonia robusta*	Mexican fan palm	None/None/None/None
Cyperaceae	**Sedge Family**	
Carex spissa	San Diego sedge	None/None/None/None
Cyperus eragrostis	tall flatsedge	None/None/None/None
Juncaceae	**Rush Family**	
Juncus balticus ssp.*ater*	Baltic rush	None/None/None/None
Juncus bufonius	toad rush	None/None/None/None
Juncus xiphioides	iris-leaved rush	None/None/None/None
Liliaceae	**Lily Family**	
Calochortus splendens	lilac mariposa lily	None/None/None/None
Lilium humboldtii ssp. *ocellatum*	Humbolt lily	None/None/4.2/County List D
Melanthiaceae	**Bunchflower Family**	
Toxicoscordion fremontii	Fremont's death camas	None/None/None/None
Poaceae	**Grass Family**	
* *Arundo donax*	giant reed	None/None/None/None
* *Avena barbata*	slender wild oat	None/None/None/None
* *Avena fatua*	wild oat	None/None/None/None
* *Brachypodium distachyon*	false-brome	None/None/None/None
* *Bromus diandrus*	ripgut brome	None/None/None/None
* *Bromus hordeaceus*	soft chess	None/None/None/None
* *Bromus madritensis ssp. rubens*	red brome	None/None/None/None
* *Cortaderia selloana*	pampas grass	None/None/None/None
* *Cynodon dactylon*	Bermuda grass	None/None/None/None
Elymus condensatus	giant wild rye	None/None/None/None

MONOCOTYLEDONS

	Scientific Name	Common Name	Status (Federal/State/CRPR/Local)
*	*Festuca myuros*	rattail fescue	None/None/None/None
*	*Hordeum murinum* ssp. *glaucum*	smooth barley	None/None/None/None
*	*Lamarckia aurea*	goldentop	None/None/None/None
	Melica imperfecta	coast range melic	None/None/None/None
*	*Pennisetum setaceum*	crimson fountaingrass	None/None/None/None
*	*Schismus barbatus*	Mediterranean schismus	None/None/None/None
	Stipa cernua	Nodding needlegrass	None/None/None/None
	Stipa coronata	crested needlegrass	None/None/None/None
	Stipa lepida	foothill needlegrass	None/None/None/None
*	*Stipa miliacea*	smilo grass	None/None/None/None
	Stipa pulchra	purple needlegrass	None/None/None/None
	Stipa speciosa	desert needlegrass	None/None/None/None
	Themidaceae	**Brodiaea Family**	
	Dichelostemma capitatum	blue dicks	None/None/None/None
	Dichelostemma capitatum subsp. *capitatum*	blue dicks	None/None/None/None
	Muilla maritima	common muilla	None/None/None/None

* = Non-native plant species

CRPR 1B.1 = *Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California.*

CRPR 1B.2 = *Plants rare, threatened, or endangered in California and elsewhere; moderately threatened in California.*

CRPR 2B.1 = *Plants rare, threatened, or endangered in California but more common elsewhere; seriously threatened in California.*

CRPR 2B.2 = *Plants rare, threatened, or endangered in California but more common elsewhere; moderately threatened in California.*

CRPR 4.2 = *Watch List: Plants of limited distribution; moderately threatened in California.*

CRPR 4.3 = *Watch List: Plants of limited distribution; not very threatened in California.*

MSCP = *Proposed North County MSCP Covered Species per the 2017 Draft North County MSCP (County of San Diego 2017).*

County List A = *Plants rare, threatened, or endangered in California and elsewhere.*

County List B = *Plants rare, threatened, or endangered in California, but more common elsewhere.*

County List D = *Plants of limited distribution and are uncommon, but not presently rare or endangered.*

APPENDIX B

SPECIAL-STATUS PLANT SPECIES EVALUATED FOR POTENTIAL TO OCCUR ON THE ADDITIONS

APPENDIX B: SPECIAL-STATUS PLANT SPECIES EVALUATED FOR POTENTIAL TO OCCUR ON THE ADDITIONS

Scientific Name	Common Name	Flowering Period	Federal	State	Local (CRPR/MSCP/ Other)	Preferred Habitat	Distribution	Potential to Occur
ANGIOSPERMS (DICOTYLEDONS)								
Asteraceae	**Sunflower Family**							
Xanthisma junceum	Rush-like bristleweed	May–Jan	None	None	4.3 County List D	Chaparral and coastal scrub. 240–1,000 meters.	San Diego, Arizona, Baja California, and Sonora.	Present This species was detected on southeast-facing slopes within Addition 3 during the 2019 rare plant surveys.
Boraginaceae	**Borage Family**							
Harpagonella palmeri	Palmer's grappinghook	Mar–May	None	None	4.2 County List D	Loamy and clay soils in openings. Chaparral and coastal scrub. 20–955 meters.	Los Angeles, Orange, Riverside, Santa Catalina Island, San Diego, Arizona, Baja California, and Sonora.	Present This species was detected in clay soils in openings of chaparral and sage scrub within the Addition 2, Addition 3, and the Chabad Addition during the 2019 rare plant surveys.
Brassicaceae	**Mustard Family**							
Lepidium virginicum var. *robinsonii*	Robinson's peppergrass	Jan–Jul	None	None	4.3 County List D	Chaparral and coastal scrub. 1–885 meters.	Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, Santa Cruz Island, San Diego, Ventura, and Baja California.	High This species was previously detected adjacent to Addition 2 in other parcels of the Hellhole Canyon Preserve during the 2008 rare plant surveys (TAIC 2008) and has high potential to occur within suitable coastal sage and chaparral habitat within the Additions, particularly Addition 2 and the Chabad Addition.
Fagaceae	**Oak/Beech Family**							
Quercus engelmannii	Engelmann oak	Mar–Jun	None	None	4.2 County List D MSCP	Chaparral, cismontane woodland, riparian woodland, and valley and foothill grasslands. 50–1,300 meters.	Los Angeles, Orange, Riverside, Santa Catalina Island, San Diego, and Baja California.	Present This species was detected within the southeast portion of the Sierra Verde Addition during the 2019 rare plant surveys.

Scientific Name	Common Name	Flowering Period	Federal	State	Local (CRPR/MSCP/ Other)	Preferred Habitat	Distribution	Potential to Occur
Lamiaceae	**Mint Family**							
Monardella hypoleuca ssp. *lanata*	Felt-leaved monardella	Jun–Aug	None	None	1B.2 County List A	Chaparral and cismontane woodland. 300–1,575 meters.	Orange, San Diego, and Baja California.	Low This species was detected during the 2008 rare plant surveys on other parcels within the Hellhole Canyon Preserve (TAIC 2008). However, the metavolcanic rock on the Additions does not include enough clay soils to support this species. This species has been reported within one mile of the Additions (CDFW 2019).
Montiaceae	**Miner's Lettuce Family**							
Calandrinia breweri	Brewer's calandrinia	(Jan) Mar–Jun	None	None	4.2 County List D	Sandy or loamy, disturbed sites and burns. Chaparral and coastal scrub. 10–1,220 meters.	Contra Costa, Los Angeles, Mendocino, Monterey, Mariposa, Marin, Napa, Orange, Riverside, Santa Barbara, San Bernardino, Santa Clara, Santa Cruz, Santa Crus Island, San Diego, Shasta, San Luis Obispo, San Mateo, Sonoma, Santa Rosa Island, Ventura, and Baja California.	Moderate This species was detected in the southwestern portion of the other Hellhole Canyon Preserve parcels during the 2008 rare plant surveys (TAIC 2008). No recent burned areas exist within the Additions, but the highly disturbed areas on Addition 1 provide moderately suitable habitat.
Phrymaceae	**Lopseed Family**							
Diplacus clevelandii	Cleveland's bush monkeyflower	Apr–Jul	None	None	4.2 County List D	Often in disturbed areas, openings, rocky. Chaparral, cismontane woodland, and lower montane coniferous forest. 450–2,000 meters.	Orange, Riverside, San Diego, and Baja California.	Low Plant is very easily identified any time of the year and would likely have been observed if present. This species has been previously documented within other parcels of the Hellhole Canyon Preserve and has been reported within one mile of the Additions (TAIC 2008, CDFW 2019).

Scientific Name	Common Name	Flowering Period	Federal	State	Local (CRPR/MSCP/ Other)	Preferred Habitat	Distribution	Potential to Occur
Polygalaceae	**Milkwort Family**							
Polygala cornuta var. *fishiae*	Fish's milkwort	May–Aug	None	None	4.3 County List D	Chaparral, cismontane woodland, riparian woodland. 100–1,000 meters.	Los Angeles, Orange, Riverside, Santa Barbara, San Diego, Ventura, and Baja California.	Present This species was detected within canyon bottoms within the Chabad Addition during 2019 rare plant surveys.
Rosaceae	**Rose Family**							
Horkelia truncata	Ramona horkelia	May–Jun	None	None	1B.3 County List A	Clay, gabbroic. Chaparral, cismontane woodland. 400–1,300 meters.	San Diego and Baja California.	Not Expected Plant is very easily identified any time of the year and would likely have been observed if present. Species has been reported within one mile of the Additions (CDFW 2019).
ANGIOSPERMS (MONOCOTYLEDONS)								
Alliaceae	**Onion Family**							
Allium marvinii	Yucaipa onion	Apr–May	None	None	1B.2	Chaparral (clay, openings). 760–1,065 meters.	Riverside and San Bernardino.	Present This species was detected within clay soils in chaparral openings within Addition 2, Addition 3, and the Chabad Addition during 2019 rare plant surveys (ESA 2019).
Liliaceae	**Lily Family**							
Lilium humboldtii ssp. *ocellatum*	Humboldt lily	Mar–Jul (Aug)	None	None	4.2 County List D	Openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland. 30–1,800 meters.	Anacapa Island, Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, Santa Cruz Island, San Diego, Santa Rosa Island, Ventura.	Present This species was detected within canyon bottoms within the Chabad Addition during 2019 rare plant surveys (ESA 2019).

Scientific Name	Common Name	Flowering Period	Federal	State	Local (CRPR/MSCP/ Other)	Preferred Habitat	Distribution	Potential to Occur
Ruscaceae	**Butcher's-Broom Family**							
Nolina cismontane	Chaparral nolina	(Mar) May–Jul	None	None	1B.2 County List A	Sandstone or gabbro. Chaparral and coastal scrub. 140–1,275 meters.	Los Angeles, Orange, Riverside, San Diego, Ventura	Low Plant is very easily identified any time of the year and would likely have been observed if present. Species has been reported within one mile of the Additions (CDFW 2019).
Themidaceae	**Brodiaeae Family**							
Brodiaea orcuttii	Orcutt's brodiaea	May–Jul	None	None	1B.1 County List A	Mesic areas in closed-cone coniferous forest, chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and vernal pools. 30–1,692 meters.	Riverside and San Diego.	Low Although the plant was not observed during 2019 rare plants surveys, marginal suitable chaparral, woodland, and grassland habitat exists within the Additions, though generally lacks the mesic areas this species is associated with. Species has been reported within one mile of the Additions (CDFW 2019).

Key to Species Listing Status Codes

FE	*Federally Endangered*	SE	*State Listed as Endangered*
FT	*Federally Threatened*	ST	*State Listed as Threatened*

California Rare Plant Rank (CRPR)

CRPR 1B.1	*Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California.*
CRPR 1B.2	*Plants rare, threatened, or endangered in California and elsewhere; moderately threatened in California.*
CRPR 2B.1	*Plants rare, threatened, or endangered in California but more common elsewhere; seriously threatened in California.*
CRPR 2B.2	*Plants rare, threatened, or endangered in California but more common elsewhere; moderately threatened in California.*
MSCP	*Proposed Draft North County MSCP Covered Species*
NE	*MSCP Narrow Endemic Species: Rare, narrow endemic animal species known from San Diego County within the MSCP Subarea*
County List A	*Plants rare, threatened, or endangered in California and elsewhere.*
County List B	*Plants rare, threatened, or endangered in California, but more common elsewhere.*
County List D	*Plants of limited distribution and are uncommon, but not presently rare or endangered.*

Occurrence Potential Definitions

High Potential: The project area and/or immediate vicinity provide high quality or ideal habitat (i.e., soils, vegetation assemblage, and topography) for a particular species and/or there are known occurrences in the general vicinity of the project area.

Moderate Potential: The project area and/or immediate vicinity provides moderately suitable habitat for a particular species. For example, proper soils may be present, but the desired vegetation assemblage or density is less than ideal; or soils and vegetation are suitable, but the site is outside of the known elevation range of the species.

Low Potential: The project area and/or immediate vicinity provides low quality habitat for a particular species, such as improper soils, disturbed or otherwise degraded habitat, improper assemblage of desired vegetation, and/or the site is outside of the known elevation range of the species.

Not Expected: The project area and/or immediate vicinity does not provide suitable habitat necessary to support the species and/or the site is located outside of the known geographic range of the species. Within suitable habitat, focused protocol surveys and/or botanical surveys conducted during optimal timing (e.g. flowering period) and climatic conditions (e.g. average to above-average hydrologic year) would preclude the presence of the species.

APPENDIX C

WILDLIFE SPECIES DETECTED ON THE ADDITIONS

APPENDIX C: WILDIFE SPECIES DETECTED ON THE ADDITIONS

INVERTEBRATES

Scientific Name	Common Name
Insecta (Order Lepidoptera)	**Butterflies and Moths**
Anthocharis cethura	desert orangetip butterfly
Anthocharis sara	pacific orangetip butterfly
Apodemia virgulti	Behr's metalmark butterfly
Atlides halesus	great purple hairstreak
Colias eurytheme	orange sulphur
Colias philodice	clouded sulphur butterfly
Erynnis funeralis	funereal duskywing butterfly
Euproserpinus sp.	sphinx moth
Glaucopsyche lygdamus	silvery blue
Icaricia acmon	Acmon blue
Leptotes marina	marine blue butterfly
Limenitis lorquini	Lorquin's admiral
Nathalis iole	dainty sulphur
Nymphalis antiopa	mourning cloak
Papilio eurymedon	pale swallowtail
Papilio rutulus	western tiger swallowtail
Pieris rapae	cabbage white butterfly
Pontia protodice	California checkered white butterfly
Pontia sisymbrii	spring white butterfly
Junonia coenia	common buckeye
Vanessa cardui	painted lady butterfly
Zerene eurydice	California dogface butterfly
Insecta (Order Coleoptera)	**Beetles**
Eleodes sp.	darkling beetle
Insecta (Order Hymenoptera)	**Ants, Bees, and Wasps**
Apis mellifera	European honey bee
Arachnida	**Spiders and Relatives**
Family Araneidae	orb-weaver spider
Dermacentor occidentalis	Pacific coast tick

AMPHIBIANS

Scientific Name	Common Name
Bufonidae	**True Toads**
Anaxyrus boreas	western toad
Anaxyrus boreas halophilus	California toad
Hylidae	**Treefrogs**
Pseudacris cadaverina	California treefrog
Pseudacris hypochondriaca hypochondriaca	northern Baja California treefrog
Scaphiopodidae	**North American Spadefoots**
Spea hammondii	western spadefoot

REPTILES

Scientific Name	Common Name
LACERTILIA	**LIZARDS**
Anguidae	**Alligator Lizards**
Elgaria multicarinatus	southern alligator lizard
Phrynosomatidae	**Zebratail, Earless, Horned, Spiny, Fringe-Toed Lizards**
Sceloporus occidentalis	western fence lizard
Sceloporus orcutti	granite spiny lizard
Uta stansburiana elegans	western side-blotched lizard
Scincidae	**Skinks**
Plestiodon skiltonianus interparietalis	Coronado skink
Teiidae	**Whiptail Lizards**
Aspidoscelis hyperythra beldingi	Belding's orange-throated whiptail
Aspidoscelis tigris stejnegeri	coastal western whiptail
SERPENTES	**SNAKES**
Colubridae	**Colubrid Snakes**
Coluber lateralis lateralis	California striped racer
Lampropeltis californiae	California kingsnake
Pituophis catenifer	gopher snake
Viperidae	**Vipers**
Crotalus oreganus helleri	southern Pacific rattlesnake

BIRDS

Scientific Name	Common Name
ANSERIFORMES	
Anatidae	**Waterfowl**
Anas platyrhynchos	mallard
Bucephala albeola	bufflehead
GALLIFORMES	
Phasianidae	**Peasant and Turkeys**
* *Meleagris gallopavo*	wild turkey
Odontophoridae	**Quails**
Callipepla californica	California quail
PELECANIFORMES	
Threskiornithidae	**Ibises**
Plegadis chihi	white-faced ibis
ACCIPITRIFORMES	
Cathartidae	**New World Vultures**
Cathartes aura	turkey vulture
Accipitridae	**Hawks**
Buteo jamaicensis	red-tailed hawk
Buteo lineatus	red-shouldered hawk
FALCONIFORMES	
Falconidae	**Falcons**
Falco columbarius	merlin
CHARADRIIFORMES	
Charadriidae	**Plovers**
Charadrius vociferus	killdeer
COLUMBIFORMES	
Columbidae	**Pigeons and Doves**
Columbina passerina	common ground-dove
Patagioenas fasciata	band-tailed pigeon
Zenaida macroura	mourning dove
CUCULIFORMES	
Cuculidae	**Cuckoos and Roadrunners**
Geococcyx californianus	greater roadrunner
STRIGIFORMES	
Tytonidae	**Barn Owls**
Tyto alba	barn owl

BIRDS

Scientific Name	Common Name
Strigidae	**True Owls**
Bubo virginianus	great horned owl
Megascops kennicottii	western screech-owl
CAPRIMULGIFORMES	
Caprimulgidae	**Goatsuckers**
Chordeiles acutipennis	lesser nighthawk
Phalaenoptilus nuttallii	common poorwill
APODIFORMES	
Apodidae	**Swifts**
Aeronautes saxatalis	white-throated swift
Trochilidae	**Hummingbirds**
Calypte anna	Anna's hummingbird
Calypte costae	Costa's hummingbird
Selasphorus sasin	Allen's hummingbird
PICIFORMES	
Picidae	**Woodpeckers**
Colaptes auratus	northern flicker
Dryobates nuttallii	Nuttall's woodpecker
Melanerpes formicivorus	acorn woodpecker
PASSERIFORMES	
Tyrannidae	**Tyrant Flycatchers**
Empidonax difficilis	Pacific-slope flycatcher
Myiarchus cinerascens	ash-throated flycatcher
Sayornis nigricans	black phoebe
Sayornis saya	Say's phoebe
Tyrannus vociferans	Cassin's kingbird
Corvidae	**Jays and Crows**
Aphelocoma californica	California scrub-jay
Corvus brachyrhynchos	American crow
Corvus corax	common raven
Hirundinidae	**Swallows**
Petrochelidon pyrrhonota	cliff swallow
Stelgidopteryx serripennis	northern rough-winged swallow
Tachycineta bicolor	tree swallow
Paridae	**Titmice**
Baeolophus inornatus	oak titmouse

BIRDS

Scientific Name	Common Name
Aegithalidae	**Bushtits**
Psaltriparus minimus	bushtit
Troglodytidae	**Wrens**
Catherpes mexicanus	canyon wren
Salpinctes obsoletus	rock wren
Thryomanes bewickii	Bewick's wren
Troglodytes aedon	house wren
Polioptilidae	**Gnatcatchers**
Polioptila caerulea	blue-gray gnatcatcher
Regulidae	**Kinglets**
Regulus calendula	ruby-crowned kinglet
Sylviidae	**Wrentits**
Chamaea fasciata	wrentit
Turdidae	**Thrushes**
Catharus guttatus	hermit thrush
Sialia mexicana	western bluebird
Turdus migratorius	American robin
Mimidae	**Thrashers**
Mimus polyglottos	northern mockingbird
Oreoscoptes montanus	sage thrasher
Toxostoma redivivum	California thrasher
Bombycillidae	**Waxwings**
Bombycilla cedrorum	cedar waxing
Ptilogonatidae	**Silky-flycatchers**
Phainopepla nitens	phainopepla
Parulidae	**Wood Warblers**
Cardellina pusilla	Wilson’s warbler
Oreothlypis celata	orange-crowned warbler
Setophaga coronata	yellow-rumped warbler
Setophaga nigrescens	black-throated gray warbler
Setophaga petechia	yellow warbler
Passerellidae	**Sparrows and Allies**
Aimophila ruficeps canescens	southern California rufous-crowned sparrow
Artemisiospiza belli	Bell’s sage sparrow
Chondestes grammacus	lark sparrow
Melospiza melodia	song sparrow
Melozone crissalis	California towhee
Passerella iliaca	fox sparrow
Passerculus sandwichensis	savannah sparrow

BIRDS

Scientific Name	Common Name
Pipilo maculatus	spotted towhee
Spizella atrogularis	black-chinned sparrow
Zonotrichia atricoplilla	golden-crowned sparrow
Zonotrichia leucophrys	white-crowned sparrow
Cardinalidae	**Buntings, Grosbeaks, and Tanagers**
Passerina amoena	Lazuli bunting
Passerina caerulea	blue grosbeak
Pheucticus melanocephalus	black-headed grosbeak
Icteridae	**Blackbirds**
Agelaius phoeniceus	red-winged blackbird
Euphagus cyanocephalus	Brewer's blackbird
Icterus cucullatus	hooded oriole
Molothrus ater	brown-headed cowbird
Sturnella neglecta	western meadowlark
Fringillidae	**Finches**
Haemorhous mexicanus	house finch
Spinus psaltria	lesser goldfinch

MAMMALS

Scientific Name	Common Name
Cervidae	**Deer**
Odocoileus hemionus fuliginatus	southerrn mule deer
Canidae	**Canines**
Canis latrans	coyote
Urocyon cinereoargenteus	gray fox
Didelphidae	**Opossums**
Didelphis virginiana	Virginia opossum
Felidae	**Cats**
Lynx rufus	bobcat
Puma concolor	mountain lion
Heteromyidae	**Pocket Mice and Kangaroo Rats**
Chaetodipus californicus femoralis	Dulzura pocket mouse
Dipodomys simulans	Dulzura kangaroo rat
Dipodomys sp.	kangaroo rat
Dipodomys stephensi	Stephens' kangaroo rat
Leporidae	**Hares and Rabbits**
Sylvilagus audubonii sanctidiegi	Audubon's cottontail
Mephitidae	**Skunks**
Mephitis mephitis	striped skunk
Spilogale gracilis	spotted skunk
Molossidae	**Free-Tailed Bats**
Eumops perotis californicus	greater western mastiff bat
Nyctinomops femorosaccus	pocketed free-tailed bat
Tadarida brasiliensis	Mexican free-tailed bat
Muridae	**Mice, Rats, and Voles**
Microtus californicus	California vole
Neotoma macrotis	big-eared woodrat
Peromyscus californicus	California mouse
Peromyscus eremicus	cactus mouse
Peromyscus fraterculus	northern Baja mouse
Peromyscus maniculatus	deer mouse
Peromyscus sp.	mouse
Reithrodontomys megalotis	western harvest mouse
Procyonidae	**Ringtails and Raccoons**
Procyon lotor	northern raccoon
Sciuridae	**Squirrels and Chipmunks**
Otospermophilus beecheyi	California ground squirrel
Tamias merriami	Merriam's chipmunk

MAMMALS

Scientific Name	Common Name
Soricidae	**Shrews**
Notiosorex crawfordi	desert gray shrew
Vespertilionidae	**Evening Bats**
Antrozous pallidus	pallid bat
Corynorhinus townsendii townsendii	Townsend's big-eared bat
Eptesicus fuscus	big brown bat
Lasiurus blossevillii	western red bat
Lasiurus cinereus	hoary bat
Lasiurus xanthinus	western yellow bat
Myotis californicus	California myotis
Myotis ciliolabrum	western small-footed myotis
Myotis evotis	long-eared myotis
Myotis yumanensis	Yuma myotis
Parastrellus hesperus	canyon bat

APPENDIX D

SPECIAL-STATUS WILDLIFE SPECIES EVALUATED FOR POTENTIAL TO OCCUR ON THE ADDITIONS

APPENDIX D: SPECIAL-STATUS WILDLIFE SPECIES EVALUATED FOR POTENTIAL TO OCCUR ON THE ADDITIONS

Scientific Name	Common Name	Federal	State	Local	Preferred Habitat	Potential for Occurrence in the Study Area
INVERTEBRATES						
Insecta/Hymenoptera	**Butterflies and Moths**					
Euphydryas editha quino	Quino checkerspot butterfly	FE	None	MSCP County Group 1	Chaparral and coastal scrub with sunny clearings. Require high densities of larval host plants, such as *Plantago erecta*, *Cordylanthus rigidus*, *Antirrhinum coulterianum,* and *Castilleja exserta*.	Moderate The Additions contain suitable foraging habitat and host plants. However, the Additions are approximately three miles from the USFWS's recommended Quino survey area and there are no known occurrences documented within one mile of the Additions.
Euphyes vestris harbisoni	Harbison's dun skipper	None	None	MSCP County Group 1	Occurs in open oak woodland, chaparral, or riparian areas along narrow canyons or drainages where seeps or areas of shade allow its host plant San Diego sedge (*Carex spissa*) to occur.	High The Additions contain suitable foraging habitat and this species' host plant, San Diego sedge, was noted near Additions 2 and 3 during the 2019 butterfly surveys. This species has been documented within other parcels of the Hellhole Canyon Preserve in 2013, 2014, and 2016 (Marschalek and Deutschman 2016).
Lycaena hermes	Hermes cooper butterfly	FCE	None	MSCP County Group 1	Occurs in chaparral and coastal sage shrub where its host plant, spiny redberry (*Rhamnus crocea*), is located. Adults forage in flat-top buckwheat (*Eriogonum fasciculatum*) habitat.	Not Expected The Additions contains suitable foraging habitat but lacks the host plant, spiny redberry, necessary for this species to reproduce on site. No known occurrences are documented within one mile of the Additions.
FISH						
Cyprinidae	**Minnows and Carp Family**					
Gila orcuttii	Arroyo chub	None	SSC	County Group 1	Occurs in slow-moving water with mud or sand substrate but are most abundant in low gradient pools and flat-water habitats with gravel and sand substrates.	Not Expected This species is not expected to occur on the Additions due to lack of a perennial water source, which this species requires. This species has been reported within one mile of the Additions (CNDDB 2019).

Scientific Name	Common Name	Federal	State	Local	Preferred Habitat	Potential for Occurrence in the Study Area
AMPHIBIANS						
Bufonidae	**True Toad Family**					
Anaxyrus californicus	Arroyo toad	**FE**	SSC	MSCP County Group 1	Gravelly or sandy washes, stream and river banks, and arroyos. Also found within upland habitats near washes and streams such as sage scrub, mixed chaparral, Joshua tree woodland, and sagebrush habitat.	Moderate to Low The creeks and streams within the Additions lack suitable gravel or sandy banks for breeding. However, the Sierra Verde Addition is located on the edge of Critical Habitat for this species, approximately 0.8 mile from Guejito Creek which is known to support breeding. Though arroyo toads are capable of moving up to 1.3 miles from breeding streams into adjacent habitats, average maximum dispersal distances have been documented to be between 0.18 mi to 0.31 mi, with an average distance of 52 feet (USFWS 1999, Griffin 1999, Ramirez 2002a, 2002b, 2002c, 2003, Holland 2001). Surveys for this species within the other parcels of Hellhole Canyon Preserve were also negative. Due to lack of suitable breeding habitat and lack of immediate proximity to suitable breeding habitat, this species is considered to have a moderate to low potential to occur as dispersing individuals only. This species has been reported within one mile of the Additions (CNDDB 2019).

Scientific Name	Common Name	Federal	State	Local	Preferred Habitat	Potential for Occurrence in the Study Area
Emydidae	**Pond Turtle family**					
Clemmys marmorata pallida	southwestern pond turtle	None	SSC	MSCP County Group 1	Ponds, lakes, rivers, streams, marshes and irrigation ditches with abundant vegetation and either rocky or muddy bottoms. In woodland, forest, or grassland habitats. In creeks that pool to shallower areas and with logs, rocks, cattail mats, and/or exposed banks for basking are required. Could enter brackish or even seawater.	Low This species has a low potential to occur within the Additions. Though several water sources are present within the Additions (Hell Creek, stock ponds, and two un-named streams), these features lack water year-round which this species requires. No known occurrences are documented within one mile of the Additions.
Scaphiopodidae	**American Spadefoot Family**					
Spea hammondii	western spadefoot	None	SSC	MSCP County Group 2	Low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats. Prefers washes and other sandy areas with patches of brush and rocks. Perennial plants necessary for its major food-termites.	Present This species was detected on Addition 1 and the Sierra Verde Addition during the 2019 aquatic and general herpetofauna surveys. This species has been reported within one mile of the Additions (SanBIOS 2019).
REPTILES						
Anniellidae	**Legless Lizard Family**					
Anniella stebbinsi [=*Anniella pulchra*]	southern California legless lizard	None	SSC	County Group 2	Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks.	High This species has a high potential to occur within the Additions because of high-quality suitable chaparral and woodland habitat and streams on site.

Scientific Name	Common Name	Federal	State	Local	Preferred Habitat	Potential for Occurrence in the Study Area
Phrynosomatidae	**Iguanid Lizard Family**					
Phrynosoma blainvillii	coast horned lizard	None	SSC	MSCP County Group 2	Prefers sandy riparian and sage scrub habitats but also occurs in valley-foothill hardwood, conifer, pine-cypress, juniper and annual grassland habitats below 6,000 feet, open country, especially sandy areas, washes, flood plains, and windblown deposits.	High Though not observed within the Additions, this species was detected incidentally during 2019 avian surveys and herpetofauna surveys in loose sandy soil along a dirt trail between the Addition 3 and the Chabad Addition arrays. The Additions support suitable scrub and sandy soils for this species. This species has been reported within one mile of the Additions (SanBIOS 2019).
Scincidae	**Skink Family**					
Plestiodon skiltonianus interparietalis	Coronado skink	None	SSC	County Group 2	Occurs in woodland and scrub habitats with leaf litter and sandy substrates.	Present This species was incidentally observed during diurnal avian surveys within the Sierra Verde Addition. This species has been reported within one mile of the Additions (SanBIOS 2019).
Teiidae	**Whiptail Family**					
Aspidoscelis hyperythra beldingi	Belding's orange-throated whiptail	None	WL	County Group 2	Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks.	Present This species was detected during 2019 herpetofauna surveys in chaparral habitats within the Additions 1 and 3, and the Chabad Addition. This species has been reported within one mile of the Additions (SanBIOS 2019).
Aspidoscelis tigris stejnegeri	coastal western whiptail	None	SSC	County Group 2	Occurs in sparsely vegetated areas of chaparral, woodland, and riparian areas.	Present This species was detected during 2019 herpetofauna surveys in open chaparral habitats within the Additions. This species has been reported within one mile of the Additions (SanBIOS 2019).

Scientific Name	Common Name	Federal	State	Local	Preferred Habitat	Potential for Occurrence in the Study Area
Boidae	**Boa Family**					
Lichanura trivirgata	rosy boa	None	None	County Group 2	Inhabits arid scrublands, semi-arid shrublands, rocky shrublands, rocky deserts, canyons, and other rocky areas. Appears to be common in riparian areas, but does not require permanent water.	High This species has a high potential to occur within the Additions because of suitable shrubland (e.g., chaparral) habitat and rocky canyons on site.
Colubridae	**Egg-laying Snakes**					
Diadophis punctatus similis	San Diego ringneck snake	None	None	County Group 2	Most common in open, relatively rocky areas within valley-foothill, mixed chaparral, and annual grass habitats.	Moderate This species has a moderate potential to occur within the Additions because suitable mixed chaparral habitat is present and abundant prey base (e.g., tadpoles, frogs, insects) are prevalent. This species has been reported within one mile of the Additions (SanBIOS 2019).
Salvadora hexalepis virgultea	coast patch-nosed snake	None	SSC	County Group 2	Grasslands, shrublands, and woodlands with sandy soils and leaf litter.	High This species has a high potential to occur within the Additions because of high-quality suitable shrublands (e.g., chaparral) and woodland habitat on site. This species has also been previously documented within other parcels of the Hellhole Canyon Preserve (TAIC 2008). This species has been reported within one mile of the Additions (SanBIOS 2019).
Natricidae	**Live-bearing Snakes**					
Thamnophis hammondii	two-striped garter snake	None	SSC	County Group 1	Coastal California near water sources (e.g., pools, creeks, cattle tanks) with permanent fresh water, and near streams with rocky beds and riparian growth. Associated vegetation includes oak woodland, willow, coastal sage scrub, scrub oak, sparse pine, chaparral, and brushland.	High This species has a high potential to occur within the Additions. While the Additions lacks permanent water sources, Hell Creek provides suitable stream and riparian habitat particularly during the wet season. This species has been reported within one mile of the Additions (CNDDB 2019, SanBIOS 2019).

Scientific Name	Common Name	Federal	State	Local	Preferred Habitat	Potential for Occurrence in the Study Area
Viperidae	**Vipers**					
Crotalus ruber	red diamond rattlesnake	None	SSC	County Group 2	Chaparral, woodland, grassland, sage scrub, and desert. In rocky areas and dense vegetation.	High This species has a high potential to occur within the Additions due to the presence of suitable chaparral, woodland, and sage scrub habitat.
BIRDS						
Scolopacidae	**Sandpipers and relatives**					
Numenius americanus	long-billed curlew	None	WL	County Group 2	Inhabits coastal estuaries, open grasslands, and croplands during the winter season.	Low This species has a low potential to occur within the Additions due to the lack of suitable wintering habitat. However, this species may fly over the Additions to the Guejito Valley, which contains suitable wintering habitat (e.g., grasslands) adjacent to the Sierra Verde Addition. This species has been reported within one mile of the Additions (SanBIOS, 2019).
Threskiornithidae	**Ibises and Spoonbills**					
Plegadis chihi	white-faced ibis	None	WL	County Group 1	Wading bird that seeks open, shallow, aquatic bodies such as lagoons, wetlands, ephemeral ponds, and stock ponds to forage. Nests in marsh growth (cattails) or low shrubs and trees above water.	Present This species was detected flying over the Sierra Verde Addition during 2019 diurnal avian surveys.
Cathartidae	**Vultures and Condors**					
Cathartes aura	turkey vulture	None	None	County Group 1	Highly migratory species that forages over a wide ranges of habitats as long as carrion is present. Nests in secluded rocky outcrops away from human activity.	Present This species was detected flying over the Chabad and Sierra Verde Additions during 2019 diurnal avian surveys. Suitable nesting habitat is also present in rocky outcrops present throughout the Additions.

Scientific Name	Common Name	Federal	State	Local	Preferred Habitat	Potential for Occurrence in the Study Area
Accipitridae	**Hawks and Eagles**					
Accipiter cooperii	Cooper's hawk	None	WL	MSCP County Group 1	Inhabits live oak, riparian deciduous, or other forest habitats near water. Nests and forages near open water or in riparian vegetation.	High This species has a high potential to occur within the Additions due to the presence of suitable oak woodland and riparian woodland habitat within the Chabad, Sierra Verde, and Addition 2 properties. Suitable nesting habitat is also present.
Aquila chrysaetos	golden eagle	BGEPA	FP, WL	MSCP County Group 1	Inhabits grassland, sage scrub, and open chaparral for foraging and nests on cliffs or in trees on steep slopes.	High This species has a high potential to occur within the Additions. The Chabad Addition provides high quality suitable nesting habitat and Addition 1 and Sierra Verde provide suitable foraging habitat, though lack an abundance of prey (e.g., jackrabbits) which are generally associated with high-quality foraging habitat. A known nest location was active prior to 2001 on Rodriguez Mountain (TAIC 2008). High-quality foraging habitat is also present on Rancho Guejito immediately adjacent to the Additions.
Buteo lineatus	red-shouldered hawk	None	None	County Group 1	Inhabits oak, riparian, and eucalyptus woodland. Nests in a variety of trees including oaks, eucalyptus, palms, and peppertrees.	Present This species was detected within the Sierra Verde Addition during 2019 diurnal avian surveys. Suitable nesting habitat is also present.
Buteo swainsoni	Swainson's hawk	None	ST	County Group 1	Inhabits open desert, grassland, or cropland containing scattered, large trees, or small groves.	Low This species has been extirpated from San Diego County and the closest breeding population is located in the Antelope Valley of Los Angeles County. This species could be detected during migration but it is unlikely they would forage due to the lack of open grasslands on the Additions. This species has been reported within one mile of the Additions (CDFW 2019).

Scientific Name	Common Name	Federal	State	Local	Preferred Habitat	Potential for Occurrence in the Study Area
Strigidae	**Owls**					
Athene cunicularia	burrowing owl	None	SSC	MSCP County Group 1	Inhabits annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation	High This species has a high potential to occur on the Additions. This species was previously documented within the other parcels of the Hellhole Canyon Preserve (TAIC 2008). Suitable burrows were noted on Addition 1, the Sierra Verde Addition, and the Chabad Addition. These additions also support suitable grassland and disturbed habitat, though high vegetation in the Chabad and Sierra Verde Additions may preclude occupancy. This species has been reported within one mile of the Additions (SanBIOS 2019).
Tytonidae	**Barn Owls**					
Tyto alba	barn owl	None	None	County Group 2	Can be found in open habitats across most of the United States, including grasslands, deserts, marshes, agricultural fields, etc. They nest in tree cavities, caves, and in buildings.	Present This species was detected within the Addition 2, Addition 3, and the Sierra Verde Addition during the 2019 nocturnal avian surveys. Suitable nesting habitat is also present.
Falconidae	**Falcons**					
Falco columbarius	merlin	None	None	County Group 2	Inhabits coastal lowlands within San Diego County	Present This species was detected within the Addition 2 during the 2019 diurnal avian surveys. Species does not nest in California.
Polioptilidae	**Gnatcatchers**					
Polioptila californica californica	coastal California gnatcatcher	FT	SSC	MSCP County Group 1	Found year-round in coastal sage scrub habitats dominated by California sagebrush and flat-topped buckwheat, mainly on cismontane slopes below 1,500 feet in elevation.	Moderate

Scientific Name	Common Name	Federal	State	Local	Preferred Habitat	Potential for Occurrence in the Study Area
						This species has a moderate potential to occur within the Additions. Though the Additions contain coastal sage scrub with California sagebrush, the habitat is disturbed and fragmented. Additionally, though this species was previously documented within the Hellhole Canyon Preserve but was not a breeding individual (TAIC 2008). This species has been reported within one mile of the Additions (CDFW 2019).
Turdidae	**Thrushes**					
Sialia mexicana	western bluebird	None	None	County Group 1	Inhabits oak, riparian, and conifer woodlands but can also occupy urbanized areas with mature trees and wide lawns.	Present This species was detected within oak woodland habitat in the Sierra Verde Addition during the 2019 diurnal avian surveys. This species has been reported within one mile of the Additions (SanBIOS 2019).
Passerellidae	**New World Sparrows**					
Ammodramus savannarum	grasshopper sparrow	None	SSC	County Group 1	Inhabits dense grassland habitat, preferably native grassland.	Low This species has a low potential to occur within the Additions. The species has been previously documented within the Hellhole Canyon Preserve (TAIC 2008); however, the non-native grassland within the Additions is small and fragmented, making this species unlikely to occur. This species has been reported within one mile of the Additions (SanBIOS 2019).
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	None	WL	County Group 1	Inhabits coastal sage scrub or mixed chaparral habitats, preferably along steep grassy or rocky hillsides.	Present This species was detected within chaparral habitat on Addition 1, Addition 3, the Sierra Verde Addition, and the Chabad Addition during the 2019 diurnal avian surveys. This species has been reported within one mile of the Additions (SanBIOS, 2019).

Scientific Name	Common Name	Federal	State	Local	Preferred Habitat	Potential for Occurrence in the Study Area
Artemisiospiza belli belli	Bell's sage sparrow	None	WL	County Group 1	Inhabits large, unfragmented blocks of coastal sage scrub, southern mixed chaparral habitats	Present This species was detected within chaparral and non-native grassland habitat on Additions 1 and 3 during the 2019 diurnal avian surveys. This species has been reported within one mile of the Additions (SanBIOS, 2019).
Parulidae	**Wood-Warblers**					
Setophaga petechia	yellow warbler	None	SSC	None	Riparian woodlands, montane chaparral, open ponderosa pine and mixed coniferous habitat with significant brush.	Present This species was detected with oak woodland habitat on the Chabad Addition during the 2019 diurnal avian surveys. This species has been reported within one mile of the Additions (SanBIOS, 2019).
MAMMALS						
Heteromyidae	**Kangaroo Rats, Pocket Mice, and Kangaroo Mice**					
Chaetodipus californicus femorali	Dulzura pocket mouse	None	SSC	County Group 2	Slopes covered with chaparral and live oaks.	Present This species was detected during 2019 small mammal surveys in open chaparral and oak woodland habitats within Addition 2.
Chaetodipus fallax	San Diego pocket mouse	None	SSC	County Group 2	Coastal scrub, sagebrush, chaparral, grasslands, pinyon-juniper, and desert wash and scrub. Found in sandy, herbaceous areas with nearby shrubs for cover. Burrows are typically dug within gravelly or sandy soil.	High This species has a high potential to occur within the Additions as suitable habitat occurs throughout within the chaparral and coastal scrub habitats. This species has been reported within one mile of the Additions (CNDDB 2019, SanBIOS 2019).
Dipodomys stephensi	Stephens' kangaroo rat	FE	ST	MSCP County Group 1	Inhabits annual and perennial grassland habitats, but may occur in coastal scrub or sagebrush with sparse canopy cover, or in disturbed areas.	Present This species was detected during focused Stephens' kangaroo rat visual surveys and live trapping in fall 2020 within the Sierra Verde Addition.

Scientific Name	Common Name	Federal	State	Local	Preferred Habitat	Potential for Occurrence in the Study Area
Muridae	**Mice, Rats, and Vole**					
Neotoma lepida intermedia	San Diego desert woodrat	None	SSC	County Group 2	Coastal scrub and chaparral. Prefer areas with moderate to dense canopy cover. Frequently found in areas with rock outcrops and cliffs.	Low This species has a low potential to occur because the Additions is on the edge of the species range, which is mainly along the coast. However, suitable habitat occurs throughout most of the Additions, particularly in the dense chaparral and around rocky outcrops.
Molossidae	**Free-tailed Bats**					
Eumops perotis californicus	greater western mastiff bat	None	SSC	County Group 2	Inhabits chaparral, oak woodland, and arid, rocky regions. Requires roosting sites to have downward-opening crevices.	Present This species was detected during both spring and summer 2019 passive acoustic bat surveys within Addition 1, Addition 2, Addition 3, and the Chabad Addition.
Nyctinomops femorosaccus	pocketed free-tailed bat	None	SSC	County Group 2	Inhabits pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oasis.	Present This species was detected during both spring and summer 2019 passive acoustic bat surveys within all of the Additions. This species has been reported within one mile of the Additions (SanBIOS 2019).
Vespertilionidae	**Evening Bats**					
Antrozous pallidus	pallid bat	None	SSC	MSCP County Group 2	Deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect species from high temperatures.	Present This species was detected during both spring and summer 2019 passive acoustic bat surveys within Addition 1, Addition 3 and the Sierra Verde Addition.
Corynorhinus townsendi	Townsend's big-eared bat	None	SSC	MSCP County Group 2	Inhabits variety of habitats; most commonly mesic. Roosts can include caves, mines, tunnels, buildings, or other human-made structures.	Present This species was detected during the spring 2019 passive acoustic bat surveys within the Sierra Verde Addition. This species has been reported within one mile of the Additions (SanBIOS 2019).

Scientific Name	Common Name	Federal	State	Local	Preferred Habitat	Potential for Occurrence in the Study Area
Lasiurus blossevillii	western red bat	None	SSC	County Group 2	Roosts primarily in forests and woodlands from sea level up through mixed conifer forests and are often in edge habitats adjacent to streams, fields, or urban areas.	Present This species was detected during both spring and summer 2019 passive acoustic bat surveys within Addition 1, Addition 2, and the Chabad Addition. This species has been reported within one mile of the Additions (SanBIOS 2019).
Lasiurus xanthinus	western yellow bat	None	SSC	None	Roosts primarily in trees, including under palm trees, and forages for insects over water and among trees.	Present This species was detected during the summer 2019 passive acoustic bat surveys within Addition 1 and Addition 2.
Myotis ciliolabrum	western small-footed myotis	None	None	County Group 2	Inhabits deserts, semi-deserts, and desert mountains, and roosts in crevices and cracks in canyon walls, caves, mine tunnels, behind loose tree bark, or in abandoned houses.	Present This species was detected during both spring and summer 2019 passive acoustic bat surveys within Addition 1, Addition 2, Addition 3, and the Chabad Addition. This species has been reported within one mile of the Additions (SanBIOS 2019).
Myotis evotis	long-eared myotis	None	None	County Group 2	Inhabits mostly forested areas with broken rock outcrops. Can also be found in shrublands, meadows near tall timber, wooded streams, and reservoirs. Roosts in buildings, hollowed trees, mines, caves, and fissures.	Present This species was detected during both spring and summer 2019 passive acoustic bat surveys within Addition 2, Addition 3, and the Chabad and Sierra Verde Additions. This species has been reported within one mile of the Additions (SanBIOS 2019).
Myotis yumanensis	Yuma myotis	None	None	County Group 2	Roosts in buildings, mines, caves, or crevices, but has also been seen roosting in abandoned swallow nests and under bridges.	Present This species was detected during both spring and summer 2019 passive acoustic bat surveys within all of the Additions. This species has been reported within one mile of the Additions (SanBIOS 2019).

Scientific Name	Common Name	Federal	State	Local	Preferred Habitat	Potential for Occurrence in the Study Area
Leporidae	**Hares and Rabbits**					
Lepus californicus bennettii	San Diego black-tailed jackrabbit	None	SSC	County Group 2	Inhabits open grasslands, agricultural fields, and sparse coastal scrub where they occur primarily in arid regions with short grass.	Present This species was detected within the Sierra Verde Addition.
Cervidae	**Deer, Elk, and Moose**					
Odocoileus hemionus	southern mule deer	None	None	County Group 2	Occurs in mountain forests, wooded hills, chaparral, and desert scrub habitats.	Present This species was detected during medium to large mammal wildlife camera surveys within all of the Additions. This species has been reported within one mile of the Additions (SanBIOS 2019).
Felidae	**Cats and Relatives**					
Felis concolor	mountain lion			County Group 2	Prefers large, unfragmented habitats such as mountains, forests, and deserts.	Present This species was detected during medium to large mammal wildlife camera survey within Addition 2, Addition 3, and the Sierra Verde Addition. This species has been reported within one mile of the Additions (SanBIOS 2019).
Mustelidae	**Weasels and Relatives**					
Taxidea taxus	American badger	None	SSC	County Group 2	Drier, open stages of shrubland, forest, and herbaceous habitats with friable soils.	High This species has a high potential to occur within the Additions. Though the Additions lack the large, unfragmented expanses of grassland this species is often associated with, the Additions do support suitable shrubland and herbaceous habitats that have the potential to support this species. Additionally, the Additions are part of a regional wildlife movement corridor and have connectivity to large expanses of off-site areas of open space with suitable habitat, including the adjacent Rancho Guejito which provides abundant suitable grassland.

Key to Species Listing Status Codes

FE	*Federally Endangered*	SE	*State Listed as Endangered*
FT	*Federally Threatened*	ST	*State Listed as Threatened*
FCE	*Candidate for Federally Listing*	SCE	*State Candidate for Endangered*
WL	*CDFW Watch List Species*	SSC	*CDFW Species of Special Concern*
MSCP	*Draft North County MSCP Covered Species*	BGEPA	*Bald and Golden Eagle Protection Act*
County Group 1	*Animals of high sensitivity (listed or specific natural history requirements).*		
County Group 2	*Animals declining but not in immediate threat of extinction or extirpation.*		

Occurrence Potential Definitions

High Potential: The project area and/or immediate vicinity provide high quality or ideal habitat (i.e., soils, vegetation assemblage, and topography) for a particular species and/or there are known occurrences in the general vicinity of the project area.

Medium Potential: The project area and/or immediate vicinity provides moderately suitable habitat for a particular species. For example, proper soils may be present, but the desired vegetation assemblage or density is less than ideal; or soils and vegetation are suitable, but the site is outside of the known elevation range of the species.

Low Potential: The project area and/or immediate vicinity provides low quality habitat for a particular species, such as improper soils, disturbed or otherwise degraded habitat, improper assemblage of desired vegetation, and/or the site is outside of the known elevation range of the species.

Not Expected: The project area and/or immediate vicinity does not provide suitable habitat necessary to support the species and/or the site is located outside of the known geographic range of the species. Within suitable habitat, focused protocol surveys and/or botanical surveys conducted during optimal timing (e.g., flowering period) and climatic conditions (e.g., average to above-average hydrologic year) would preclude the presence of the species.

APPENDIX E

REPRESENTATIVE PHOTOGRAPHS FROM SURVEYS

APPENDIX E: REPRESENTATIVE PHOTOGRAPHS FROM SURVEYS

Representative Vegetation Photographs

Blooming Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*).

Butterfly Survey Photographs

San Diego sedge (*Carex spissa*), Harbison's dun skipper (*Euphyes vestris harbisoni*) larval host plant.

Aquatic Survey Representative Photographs

Baja California treefrog (*Pseudacris hypochondriaca hypochondriaca*).

Two Western spadefoot toads (*Spea hammondii*).

Herpetofauna Drift Fence Representative Photographs

Southern Pacific rattlesnake (*Crotalus oreganus helleri*).

San Diego alligator lizard (*Elgaria multicarinata webbii*).

San Diego gophersnake (*Pituophis catenifer annectens*).

California striped racer (*Coluber lateralis lateralis*).

California kingsnake (*Lampropeltis californiae*).

Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*).

Small Mammal Trapping Representative Photographs

Big-eared woodrat (*Neotoma macrotis*).

California mouse (*Peromyscus californicus*).

California vole (*Microtus californicus*).

Dulzura pocket mouse (*Chaetodipus californicus femoralis*).

Focused Stephens' Kangaroo Rat Visual Survey and Live Trapping Representative Photographs

Overview of focused Stephens' kangaroo rat (*Dipodomys stephensi*) survey area (northeast corner of the Sierra Verde Addition).

Dulzura kangaroo rat (*Dipodomys simulans*).

Dulzura pocket mouse (*Chaetodipus californicus femoralis*).

Bat Passive Survey Detector Photographs

Addition 1 bat detector location.

Addition 2 bat detector location.

Addition 3 bat detector location.

Chabad Addition bat detector location.

Sierra Verde Addition bat detector location.

Wildlife Camera Locations and Representative Views

Wildlife Camera 1 location (Addition 1).

Wildlife Camera 1 (Addition 1) representative view.

Wildlife Camera 2 location (Addition 2).

Wildlife Camera 2 (Addition 2) representative view.

Wildlife Camera 3 location (Addition 3).

Wildlife Camera 3 (Addition 3) representative view.

Wildlife Camera 4 location (Chabad Addition).

Wildlife Camera 4 (Chabad Addition) representative view.

Wildlife Camera 5 location (Sierra Verde Addition Camera #1).

Wildlife Camera 5 (Sierra Verde Addition Camera #1) representative view.

Wildlife Camera 6 location (Sierra Verde Addition Camera #2).

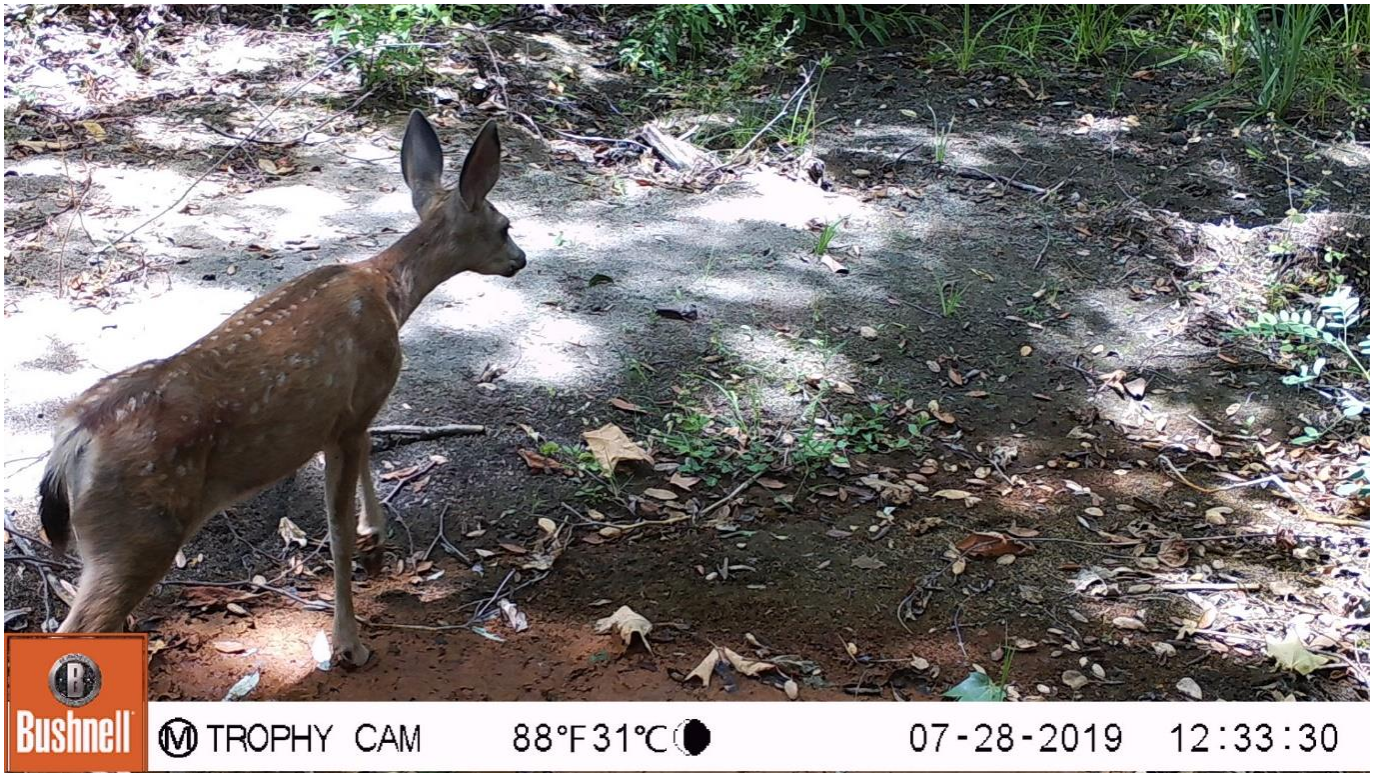
Wildlife Camera 6 (Sierra Verde Camera #2) representative view.

Medium to Large Mammal Wildlife Camera Representative Photographs

Southern mule deer (*Odocoileus hemionus fuliginatus*) detected on 5/17/19 at Wildlife Camera 1 (Addition 1).

Coyote (*Canis latrans*) detected on 5/21/19 at Wildlife Camera 1 (Addition 1).

Gray fox (*Urocyon cinereoargenteus*) detected on 9/11/19 at Wildlife Camera 1 (Addition 1).



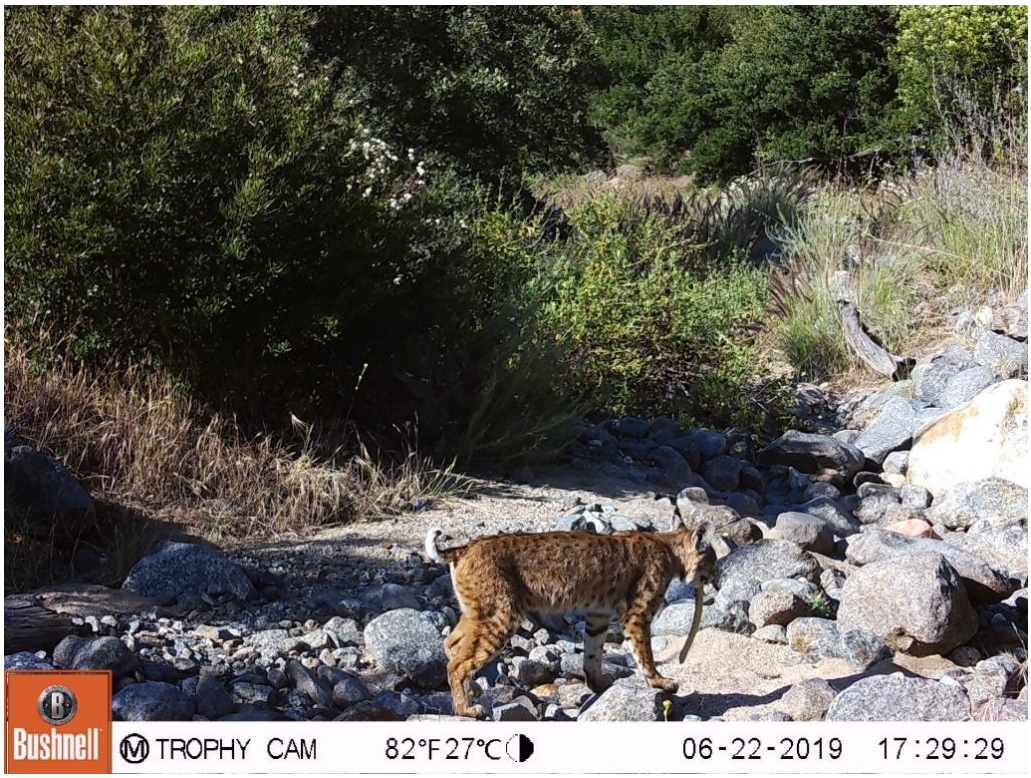
Southern mule deer (*Odocoileus hemionus fuliginatus*) fawn detected on 7/28/19 at Wildlife Camera 2 (Addition 2).

Barn owl (*Tyto alba*) detected on 5/31/19 at Wildlife Camera 2 (Addition 2).

Spotted skunk (*Spilogale gracilis*) detected on 9/25/19 at Wildlife Camera 2 (Addition 2).

Mountain lion (*Puma concolor*) detected on 9/24/19 at Wildlife Camera 2 (Addition 2).

Mountain lion (*Puma concolor*) detected on 5/18/19 at Wildlife Camera 3 (Addition 3).



Bobcat (*Lynx rufus*) with a snake prey detected on 6/22/19 at Wildlife Camera 3 (Addition 3).

Southern mule deer (*Odocoileus hemionus fuliginatus*) detected on 3/15/19 at Wildlife Camera 3 (Addition 3).

Gray fox (*Urocyon cinereoargenteus*) detected on 3/16/19 at Wildlife Camera 3 (Addition 3).

Striped skunk (*Mephitis mephitis*) detected on 5/18/19 at Wildlife Camera 3 (Addition 3).

Coyote (*Canis latrans*) detected on 3/13/19 at Wildlife Camera 5 (Sierra Verde Addition Camera #1).

Mountain lion (*Puma concolor*) detected on 4/23/19 at Wildlife Camera 5 (Sierra Verde Addition Camera #1).

Southern mule deer (*Odocoileus hemionus fuliginatus*) detected on 6/23/19 at Wildlife Camera 5 (Sierra Verde Addition Camera #1).

Coyote (*Canis latrans*) detected on 3/25/19 at Wildlife Camera 6 (Sierra Verde Addition Camera #2).

Southern mule deer (*Odocoileus hemionus fuliginatus*) detected on 6/15/19 at Wildlife Camera 6 (Sierra Verde Addition Camera #2).