

Vegetation Management Plan for the **Bottle Peak Preserve**

County of San Diego,
Department of Parks and Recreation



Prepared for:
Department of Parks and Recreation
County of San Diego
5500 Overland Avenue, Suite 410
San Diego, CA 92123
Contact: Jennifer Price

Prepared by:
AECOM
401 West A Street, Suite 1200
San Diego, CA 92101
Contact: Barbra Calantas

May 1, 2015

VEGETATION MANAGEMENT PLAN
FOR THE
BOTTLE PEAK PROPERTY
COUNTY OF SAN DIEGO
DEPARTMENT OF PARKS AND RECREATION

Prepared for:

County of San Diego
Department of Parks and Recreation
5500 Overland Avenue, Suite 410
San Diego, California 92123
Contact: Jennifer Price

Prepared by:

AECOM
401 West A Street, Suite 1200
San Diego, California 92101
Contact: Barbra Calantas

May 1, 2015

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
ACRONYMS AND ABBREVIATIONS	v
1.0 INTRODUCTION	1
1.1 Purpose and Need	1
1.2 Property Location and Description	2
1.3 Vegetation Management Goals and Objectives	5
2.0 ENVIRONMENTAL RESOURCES	9
2.1 Soils.....	9
2.2 Biological Resources	10
2.2.1 Vegetation Communities	10
2.2.2 Sensitive Plant Species	16
2.2.3 Sensitive Animal Species.....	16
2.3 Cultural Resources	21
3.0 INVASIVE SPECIES MANAGEMENT	23
3.1 Target Invasive Nonnative Plant Species	33
3.1.1 High Priority For Removal	37
3.2 Removal Methods	39
3.2.1 Manual Removal.....	40
3.2.2 Mechanical Removal	40
3.2.3 Herbicides	40
4.0 HABITAT RESTORATION	43
4.1 Proposed Restoration Areas	43
4.1.1 Trails	44
4.2 Restoration Methods	47
5.0 FIRE MANAGEMENT	51
5.1 Current Fire Management Practices.....	51
5.2 Fire Environment	51
5.2.1 Climate.....	52
5.2.2 Topography.....	53
5.2.3 Watershed Description.....	54
5.2.4 Fire History	54
5.2.5 Vegetation Dynamics and Fuel Loads	58

5.3	Fuel Management Methods.....	63
5.3.1	Grazing.....	63
5.3.2	Mowing.....	63
5.3.3	Herbicides	64
5.3.4	Prescribed Fire	64
5.3.5	Hand Tool or Mechanical Equipment Thinning.....	64
5.3.6	Fuel Breaks	67
5.4	Fire Response Plan.....	67
5.4.1	Fire Hazard and Current Fire Management Practices Evaluation	69
5.4.2	Primary Actions and Contacts for Wildfire Emergency.....	71
5.4.3	Roads/Access	71
5.4.4	Fuel Breaks	72
5.4.5	Emergency Staging Areas.....	72
5.4.6	Fire Hydrants	72
5.4.7	Other Water Sources	72
6.0	MANAGEMENT DIRECTIVES	73
6.1	Invasive Species Removal	73
6.2	Restoration	73
6.3	Fire Management	74
7.0	REFERENCES	79

APPENDICES

- A Plants Species Detected
- B Special-Status Plant Species with Potential to Occur
- C Wildlife Species Detected
- D Special-Status Wildlife Species with Potential to Occur
- E Fire Behavior Modeling Results
- F Invasive Species with Moderate and Low or No Priority for Removal

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
1	Regional Map.....	3
2	Vicinity Map.....	4
3a	Vegetation Communities per Vegetation Classification Manual for Western San Diego County.....	11
3b	Vegetation Communities per Holland/Oberbauer Classification	13
4	Special Status Plant Locations	17
5	Special Status Wildlife Locations.....	19
6	Invasive Plant Species Locations.....	35
7	Existing Trails.....	45
8	Revegetation Areas	49
9	Fire History	55
10	Vegetation Management Units	65

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1	Vegetation Communities and Land Cover Types.....	15
2	Sensitive Wildlife Species Detected on the Bottle Peak Preserve Property	21
3	Cultural Resources Identified within the Property.....	22
4	Nonnative Plants Observed On the Property and Invasive Status	23
5	Priorities for Removal or Management of Nonnative Species	33
6	Rainfall Data for Escondido 2, California Weather Station (042863).....	52
7	Quantity of Times Burned for the Bottle Peak Property.....	57
8	Fire Interval Data	57
9	Vegetation Communities and Associated Fuel Models for Bottle Peak Property	58
10	Fuel Management Activities by VMU.....	77

This page intentionally left blank.

ACRONYMS AND ABBREVIATIONS

AA	Air-tactical Aircraft
CAL FIRE	California Department of Forestry and Fire Protection
Cal-IPC	California Invasive Plant Council
CDFW	California Department of Fish and Wildlife
DPR	County of San Diego Department of Parks and Recreation
mph	miles per hour
MSCP	Multiple Species Conservation Program
RMP	Resource Management Plan
VCFPD	Valley Center Fire Protection District
VCM	Vegetation Classification Manual
VMP	Vegetation Management Plan
VMU	Vegetation Management Unit
WUI	Wildland–Urban Interface

This page intentionally left blank.

1.0 INTRODUCTION

1.1 PURPOSE AND NEED

The purpose of this Vegetation Management Plan (VMP) is to provide guidance for the management of the vegetation resources on the Bottle Peak Property (Property) owned and managed by the County of San Diego's Department of Parks and Recreation (DPR). The three main components of vegetation management for the Property include (1) management of invasive species, (2) restoration of impacted or disturbed habitat areas, and (3) addressing the management needs associated with the issue of fire and the vegetation on the Property. This information is needed to make certain that preserved vegetation on the Property is managed to provide habitat for wildlife shelter and breeding, foraging opportunities, and movement corridors.

While this VMP is intended to be a standalone document, the information and recommendations presented will be used by DPR to develop Area Specific Management Directives as part of the Resource Management Plan (RMP) being prepared for the Bottle Peak Property. In addition, the VMP provides fire response personnel with critical Property information for emergency fire response within and immediately adjacent to the Property boundaries and identifies targeted fuel management actions that can be implemented as preventative measures.

The Invasive Species Management section of this VMP lists the nonnative invasive plant species observed on the Property, identifies and prioritizes target species for removal, and outlines standard removal methods. The Habitat Restoration section of this VMP identifies potential restoration opportunities within the Property and outlines standard restoration methods. The Fire Management section of this VMP outlines a framework to address wildfire risk and enables environmental documentation of strategic fuels management that may be needed. The framework includes discussion of fire prevention, suppression, and post-suppression fire control activities within and adjacent to the Property.

The goals and objectives, as well as the recommendations, in this VMP are consistent with the County of San Diego Vegetation Management Report (County of San Diego 2009), which discusses vegetation management factors for wildland and urban areas of unincorporated San Diego County. It is anticipated that this VMP will be revised every 5 years, as needed, in conjunction with anticipated Bottle Peak Property RMP updates. The VMP may be revised on a shorter timescale if circumstances change; for example, acquisition of additional Property land or a wildfire event on the Property.

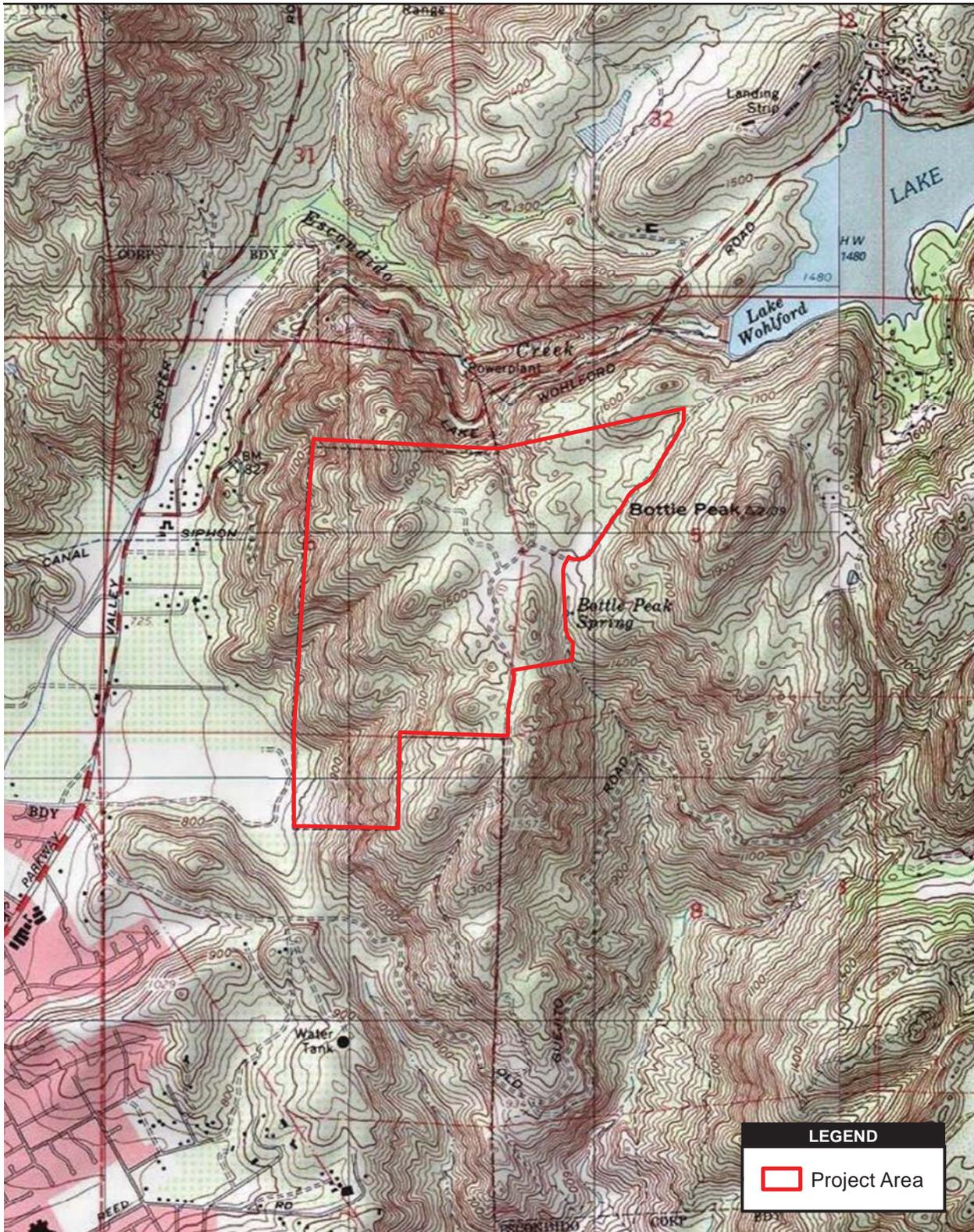
1.2 PROPERTY LOCATION AND DESCRIPTION

The approximately 418.92-acre Bottle Peak Property (Property) is located in the north-central portion of the unincorporated area of San Diego County, approximately 5.5 miles east of Interstate 15 (Figure 1). Furthermore, it is northeast of the City of Escondido adjacent to the city boundary, and less than 0.25 mile southwest of Lake Wohlford. Lake Wohlford Road traverses the slopes to the north of the Property and Valley Center Road travels in a north-south direction west and off-site of the Property (Figure 2). The Property is located in the Valley Center Quadrangle and within Range 1 West and Township 12 South in portions of sections 5, 6, 7, and 8. The Property encompasses the following Assessor's Parcel Numbers: 240-110-03; 240-340-06; 240-350-06, -07; 240-360-01, -02, -03, -04, -05, -06, -07; 240-370-01, -02, -03, -04, -05; and 240-380-01, -02, -03.

The Property is located on the western portion of a block of largely undeveloped land that includes Rancho Guejito, the Black Mountain area of the Cleveland National Forest, and Mesa Grande. The Property is owned by the County of San Diego DPR. The Property is included in the proposed draft North County Plan as an area with high habitat value.

The Property consists of a small, shallow valley adjacent to the west slope of Bottle Peak, which is approximately 0.25 mile to the east of the Property. Agricultural development occurs south of the Property, and residential development at the base of the slopes occurs west of the Property. A large aggregate quarry, excavating material from steeply sloping land, is located next to Lake Wohlford Road to the north of the Property. The Property was previously divided into 19 parcels, and a series of dirt access roads were scraped into the Property prior to the mid-1990s. Approximately 0.5 acre of cleared lands exists in one of the parcels on the Property. Other locations have been cleared in the past, including a fire break on the northeast edge of the Property along a dirt road that defines the Property's boundary. Since the initial clearing of these areas, the vegetation has generally recovered, and the cleared areas are less prominent. A small (1 acre) pond is located in the northeastern part of the Property. The pond is dry for the majority of the year, but has been filled in the past following heavy rainfall seasons.

A portion of the Property is steeply sloping, especially along the western edge. Elevations range from 763 feet on the southwestern edge to 1,000 feet on the northwestern corner and 1,600 feet in the northeast corner. The central portion is roughly 1,500 feet in elevation and the highest point at 1,726 feet is located in the northwest corner rising steeply from the 1,000-foot elevation Property line nearby.



Source: USGS 7.5' Topographic Quadrangle Valley Center, CA 1978, Rodriguez Mountain, CA 1985

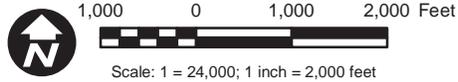


Figure 2
Vicinity Map

Bottle Peak Vegetation Management Report

Document Path: P:\2013\60278233_DPR_2012\06GIS\6.3_Layout\TO_12\Report Figures\VegetationManagementPlan\Fig2_Project_Location.mxd

1.3 VEGETATION MANAGEMENT GOALS AND OBJECTIVES

This VMP aims to develop management strategies consistent with the County of San Diego Vegetation Management Report (County of San Diego 2009), which addresses vegetation management criteria for wildland and urban areas of unincorporated San Diego County. To that end, the vegetation management goals for the Property are focused on environmental resource preservation and enhancement of existing native habitat. Specifically, the goals of this VMP are as follows:

- Ensure the long-term viability and sustainability of natural ecosystem function and processes.
- Manage invasive nonnative plant species to ensure preservation of native vegetation communities and resources.
- Restore and/or enhance the quality of degraded vegetation communities in a manner consistent with overall species or habitat preservation goals.
- Develop fuel-load management methods that are consistent with overall Property management goals.

The following objectives have been formulated to achieve these long-term management goals as well as desired levels of resource protection, and public and firefighter safety on the Property:

1. Maximize quality of native vegetation communities and habitat for target species through management of invasive nonnative plant species:
 - Identify invasive species and their locations.
 - Investigate and report on control techniques.
 - Develop management objectives and priorities.
 - Remove or control nonnative species to the maximum extent appropriate.
2. Provide a framework for the restoration of disturbed areas within the Property:
 - Identify current and long-term restoration needs for specific vegetation and target species on the Property.
 - Identify closed trails, roads, and other areas of potential restoration.

-
- Avoid or minimize adverse impacts from restoration activities to sensitive and high-value habitats.
 - Develop management objectives for the restoration areas.
 - Create a process to monitor restoration success and follow up to ensure target restoration goals are achieved.
3. Provide a fire management strategy that will include planning for wildland fires:
- Provide a description of the fire environment relating to vegetation and land use on the Property and in the surroundings.
 - Investigate and report on current fire management practices.
 - Prepare Property maps depicting relevant fire management data, including Property boundaries, topography, vegetation and fuel types, and access.
 - Establish mapped vegetation management units (VMUs) for the Property to facilitate fire management utilizing vegetation, topography, or other clearly discernible landscape features to delineate the unit boundaries.
 - Identify wildland–urban interface (WUI) areas and associated fuel management goals with a dual role of preventing wildfire from impacting urban areas, as well as protecting Property lands from fire originating in urban areas.
 - Develop management objectives through a fire response plan.
 - Provide a discussion of fire management methods such as mowing, herbicide application, and prescribed fire to reduce available fuel and invasive nonnative plants in a manner consistent with the goals for habitat preservation, enhancement, and restoration, and cultural resource protection.
 - Prepare fire restoration management guidelines for each VMU, including discussion of prevention, suppression, and post-suppression activities.
 - Provide local fire agencies including the CAL FIRE San Diego Unit, the Valley Center Fire Protection District, and the San Pasqual Reservation Fire Department maps of sensitive biological and cultural resources to be avoided to the maximum extent possible.
 - Provide Property information about fire behavior to local fire agencies, for inclusion in wildland pre-response plans.

-
- Provide appropriate contact information to responding fire personnel in the event fire management activities may affect priority resources.
 - Minimize likelihood of Property-wide, catastrophic wildfires by limiting ignition potential, reducing fuel loads in key areas, limiting illegal access, and increasing public awareness.

This page intentionally left blank.

2.0 ENVIRONMENTAL RESOURCES

Baseline biological and cultural resources surveys of the Property were conducted in 2014 (AECOM 2014). Field studies included vegetation communities mapping, rare plant surveys, invasive nonnative plant species mapping, butterfly surveys and habitat assessment for Quino checkerspot (*Euphydryas editha quino*) and Hermes copper (*Lycaena hermes*) butterflies, herpetological pitfall trap surveys, diurnal and nocturnal avian point count surveys, passive bat surveys, small mammal trapping, and large and medium mammal surveys using remote camera stations. Brief descriptions of the existing vegetation communities, sensitive plant and wildlife species, and cultural resources documented in the Property during the baseline surveys are provided in the following sections.

2.1 SOILS

The Property contains three soil types belonging to three soil series. These three soils mapped for the Property are derived from granitic-base rock. In addition to the three soil series described below, it is noteworthy that Las Posas soil, derived from gabbro rock formations, occurs approximately 0.25 mile to the north of the Property. Las Posas soils are known to harbor a series of unusual plants due to the high concentrations of magnesium and iron within them, unlike the granitic rock soils occurring within the Property.

Cieneba Series

Cieneba soils make up the majority of the soils on the Property, with roughly 65% of the Property covered with the Cieneba very rocky coarse sandy loam, 30 to 75% slopes. According to Bowman 1973, this soil is “steep to very steep, has rock outcrops on about 20% of the surface and very large granodioritic boulders on about 30%, and is only 5 to 15 inches deep over hard granodiorite. Runoff is rapid to very rapid, and the erosion hazard is high to very high. The available water holding capacity is 1 inch to 1.5 inches.”

Vista Series

Vista series soils cover roughly 20% of the Property. They consist of well-drained, moderately deep and deep coarse sandy loams derived from granodiorite or quartz diorite. According to Bowman (1973), these soils are on upland and have slopes of 5 to 65%. The elevation ranges from 300 to 2,500 feet. The mean annual precipitation is between 14 and 18 inches, and the mean annual air temperature is between 60 and 62 degrees Fahrenheit (°F). Vista rocky coarse sandy loam, 5 to 15% slopes, is moderately sloping to strongly sloping, and is 20 to 36 inches deep

over weathered rock. Approximately 10% of the Property is covered with exposed bedrock, and approximately 10% is covered with large boulders. The available water-holding capacity is 2 to 4.5 inches. Runoff is medium to rapid, and the erosion hazard moderate to high.

Greenfield Series

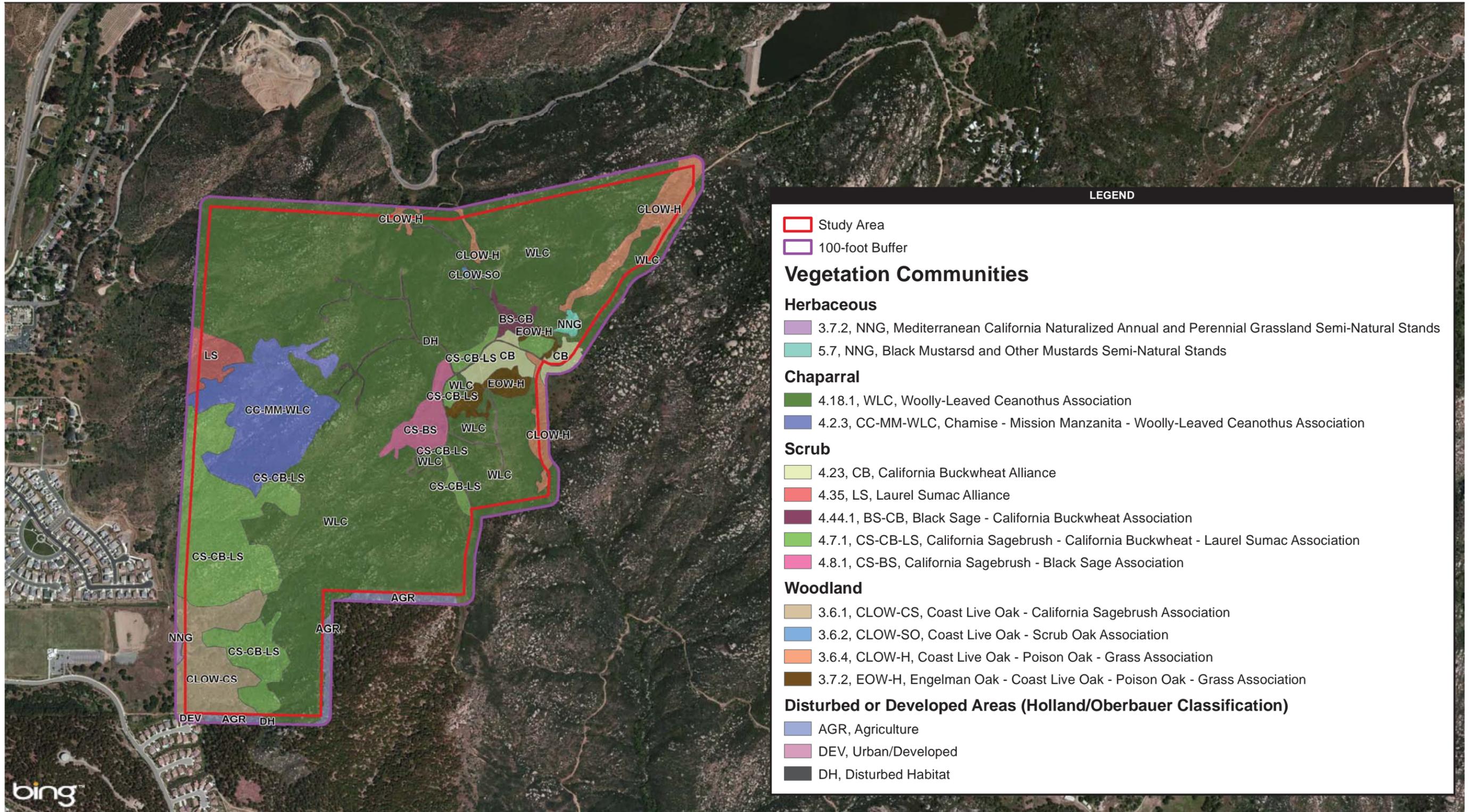
Greenfield series soils cover roughly 15% of the Property. Greenfield soils consist of well-drained, very deep sandy loams derived from granitic alluvium. These soils are on alluvial fans and alluvial plains and have slopes of 0 to 15%. The elevation ranges from 400 to 800 feet for these soils. The mean annual precipitation is between 14 and 18 inches, and the mean annual air temperature is between 60 and 62°F. Greenfield sandy loam, 5 to 9% slopes, is moderately sloping. Runoff is slow to medium, and the erosion hazard is slight to moderate.

2.2 BIOLOGICAL RESOURCES

2.2.1 Vegetation Communities

Vegetation community classification was based on two separate systems: the Vegetation Classification Manual for Western San Diego County (VCM) (Sproul et al., 2011) and the Holland (1986) (as modified by Oberbauer et al. 2008) classification system. The field mapping was conducted in April 2014 according to the VCM and then cross-walked to the Holland/Oberbauer classification system. The predominant vegetation community within the Property is the *Ceanothus tomentosus* Association (Woolly-Leaved Ceanothus Association); however, 11 other plant alliances, associations, or semi-natural stands have been mapped within the Property: *Adenostoma fasciculatum*-*Xylococcus bicolor*-*Ceanothus tomentosus* Association, *Eriogonum fasciculatum* Alliance, *Malosma laurina* Alliance, *Salvia mellifera*-*Eriogonum fasciculatum* Association, *Salvia mellifera*-*Eriogonum fasciculatum* Association, *Artemisia californica*-*Eriogonum fasciculatum*-*Malosma laurina* Association, *Artemisia californica*-*Salvia mellifera* Association, *Quercus agrifolia*-*Artemisia californica* Association, *Quercus agrifolia*/*Quercus (berberidifolia, acutidens)* Association, *Quercus agrifolia*-*Toxicodendron diversilobum* Association, and *Quercus engelmannii*-*Quercus agrifolia*/*Toxicodendron diversilobum*/Grass Association (Table 1; Figure 3a).

Disturbed habitat was also mapped in the Property. Vegetation communities according to the Holland/Oberbauer classification system are included as Figure 3b.



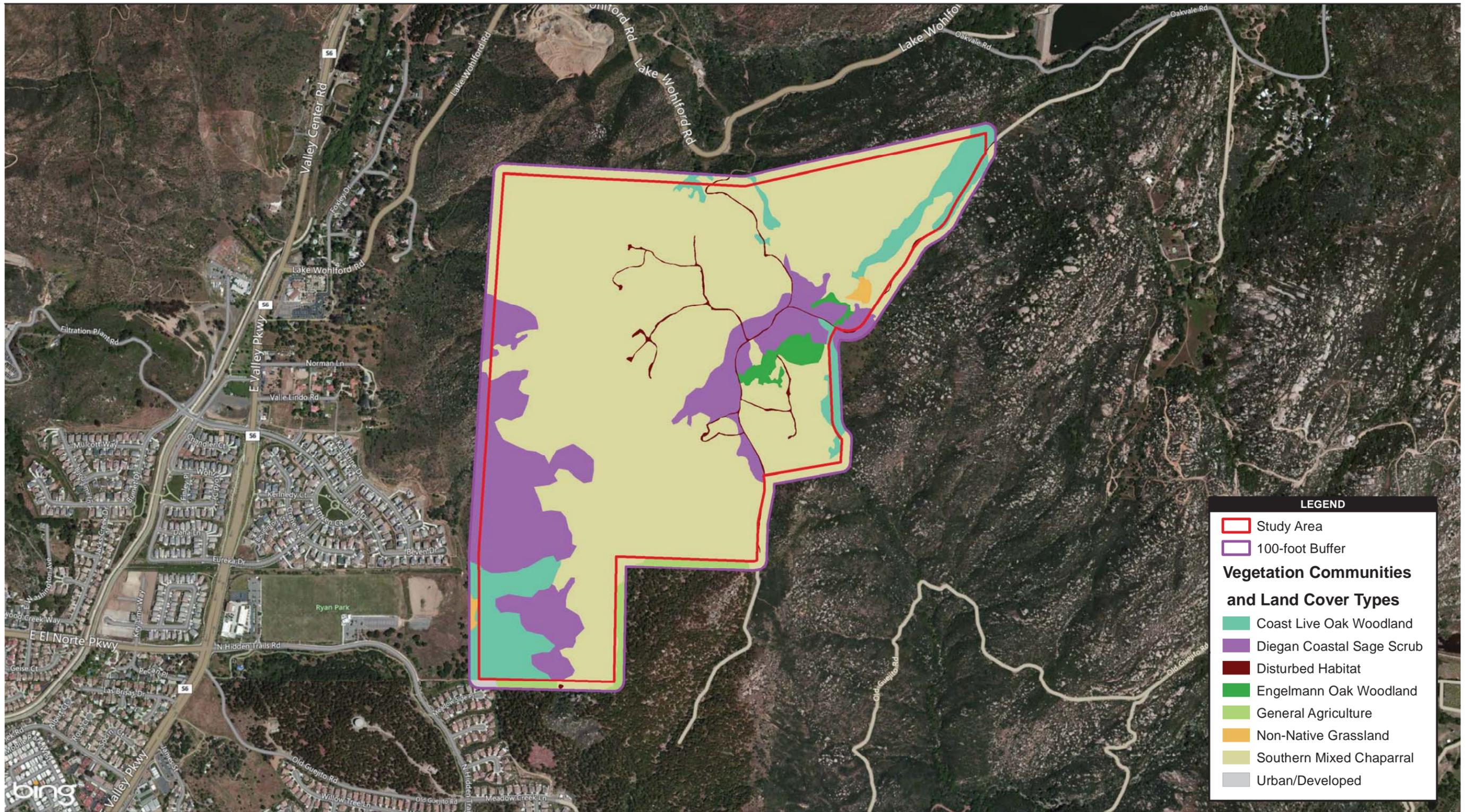
Source: ESRI 2014; BING 2014

1,000 500 0 1,000 Feet

Scale: 1:12,000; 1 inch = 1,000 feet

Figure 3a
Vegetation Communities per Vegetation Classification
Manual for Western San Diego County

This page intentionally left blank.



LEGEND

- Study Area
- 100-foot Buffer

Vegetation Communities and Land Cover Types

- Coast Live Oak Woodland
- Diegan Coastal Sage Scrub
- Disturbed Habitat
- Engelmann Oak Woodland
- General Agriculture
- Non-Native Grassland
- Southern Mixed Chaparral
- Urban/Developed

Source: ESRI 2014; BING 2014

1,000 500 0 1,000 Feet

Scale: 1:12,000; 1 inch = 1,000 feet

Figure 3b
Vegetation Communities per
Holland/Oberbauer Classification

This page intentionally left blank.

Table 1. Vegetation Communities and Land Cover Types

VCM Code	VCM Alliance/Association	VCM Common Name	Holland Code	Holland Classification	Acres on the Property
	<i>Herbaceous</i>			<i>Grassland</i>	0.92
5.7	<i>Brassica (nigra)</i> and Other Mustards Semi-Natural Stands	Black Mustard and Other Mustards Semi-Natural Stands	42210	Nonnative Grassland: Broadleaf Dominated	0.92
	<i>Chaparral</i>			<i>Chaparral</i>	319.25
4.18.1	<i>Ceanothus tomentosus</i> Association	Woolly-Leaved Ceanothus Association	37120	Southern Mixed Chaparral	288.75
4.2.3	<i>Adenostoma fasciculatum</i> / <i>Xylococcus bicolor</i> / <i>Ceanothus tomentosus</i> Association	Chamise/Mission Manzanita/Woolly-Leaved Ceanothus Association	37120	Southern Mixed Chaparral	30.50
	<i>Sage Scrub</i>			<i>Coastal Sage Scrub</i>	62.52
4.23	<i>Eriogonum fasciculatum</i> Alliance	California Buckwheat Alliance	32500	Diegan Coastal Sage Scrub	5.72
4.35	<i>Malosma laurina</i> Alliance	Laurel Sumac Alliance	32000	Diegan Coastal Sage Scrub	3.75
4.44.1	<i>Salvia mellifera</i> / <i>Eriogonum fasciculatum</i> Association	Black Sage/California Buckwheat Association	32500	Diegan Coastal Sage Scrub	2.00
4.7.1	<i>Artemisia californica</i> / <i>Eriogonum fasciculatum</i> / <i>Malosma laurina</i> Association	California Sagebrush/ California Buckwheat/ Laurel Sumac Association	32500	Diegan Coastal Sage Scrub	44.26
4.8.1	<i>Artemisia californica</i> / <i>Salvia mellifera</i> Association	California Sagebrush/ Black Sage Association	32500	Diegan Coastal Sage Scrub	6.79
	<i>Woodland</i>			<i>Woodland</i>	31.89
3.6.1	<i>Quercus agrifolia</i> / <i>Artemisia californica</i> Association	Coast Live Oak/California Sagebrush Association	71160	Coast Live Oak Woodland	15.11
3.6.2	<i>Quercus agrifolia</i> / <i>Quercus (berberidifolia, acutidens)</i> Association	Coast Live Oak/Scrub Oak Association	71160	Coast Live Oak Woodland	0.20
3.6.4	<i>Quercus agrifolia</i> / <i>Toxicodendron diversilobum</i> Association	Coast Live Oak/Poison Oak/Grass Association	71161	Open Coast Live Oak Woodland	11.18
3.7.2	<i>Quercus engelmannii</i> / <i>Quercus agrifolia</i> / <i>Toxicodendron diversilobum</i> /Grass Association	Engelmann Oak/Coast Live Oak/Poison Oak/Grass Association	71180	Engelmann Oak Woodland	5.40
	<i>Other</i>			<i>Other</i>	3.81
	Disturbed Habitat			Disturbed Habitat	3.81
Total					418.39

VCM = Vegetation Classification Manual (citation)

2.2.2 Sensitive Plant Species

The central portion of San Diego County is generally represented with fewer rare and sensitive plants than some other portions of the county, particularly when there are no unusual soil types present such as Gabbro or Metavolcanic Rock. The Property is more important strategically as a wildlife and habitat location that serves as a habitat block that can be connected to lands in the surrounding area than as an area supporting a high number of sensitive species. Rare plant surveys in April of 2014 and March of 2015 did not result in the identification of sensitive plant species except for Engelmann oak (*Quercus engelmannii*; Figure 4). Plant growth during the spring of 2014 was very poor with very low numbers of annual plants, and many shrubs did not flower due to the low amount of precipitation. A survey was also conducted during March of 2015. The precipitation in the 2014-2015 season is considered roughly 50% of normal for much of San Diego County based on examination of the National Weather Service cumulative totals. However, the rain that did fall occurred with enough intensity and duration that it provided for many annual plants to germinate and flower. Therefore, while it was a lower than normal rainfall season, an adequate exhibition of the native annual plants was displayed for an understanding of the location and numbers of any sensitive annual or herbaceous species. The perennial shrubs and trees were also detectable because their visibility is less dependent upon level of seasonal rainfall.

Engelmann oak is present in numbers in the east-central portion of the Property. A comprehensive list of plant species detected within the Property is included in Appendix A. A table of the special-status plant species with potential to occur on the Property is included in Appendix B.

2.2.3 Sensitive Animal Species

Overall, 14 special-status wildlife were observed or detected within the Property (Figure 5). A summary of the special-status wildlife species detected is provided in Table 2. A list of the wildlife species observed on the Property is included in Appendix C. A table of the special-status wildlife species with potential to occur on the Property is included in Appendix D. Special Status wildlife species are also shown in Figure 5.

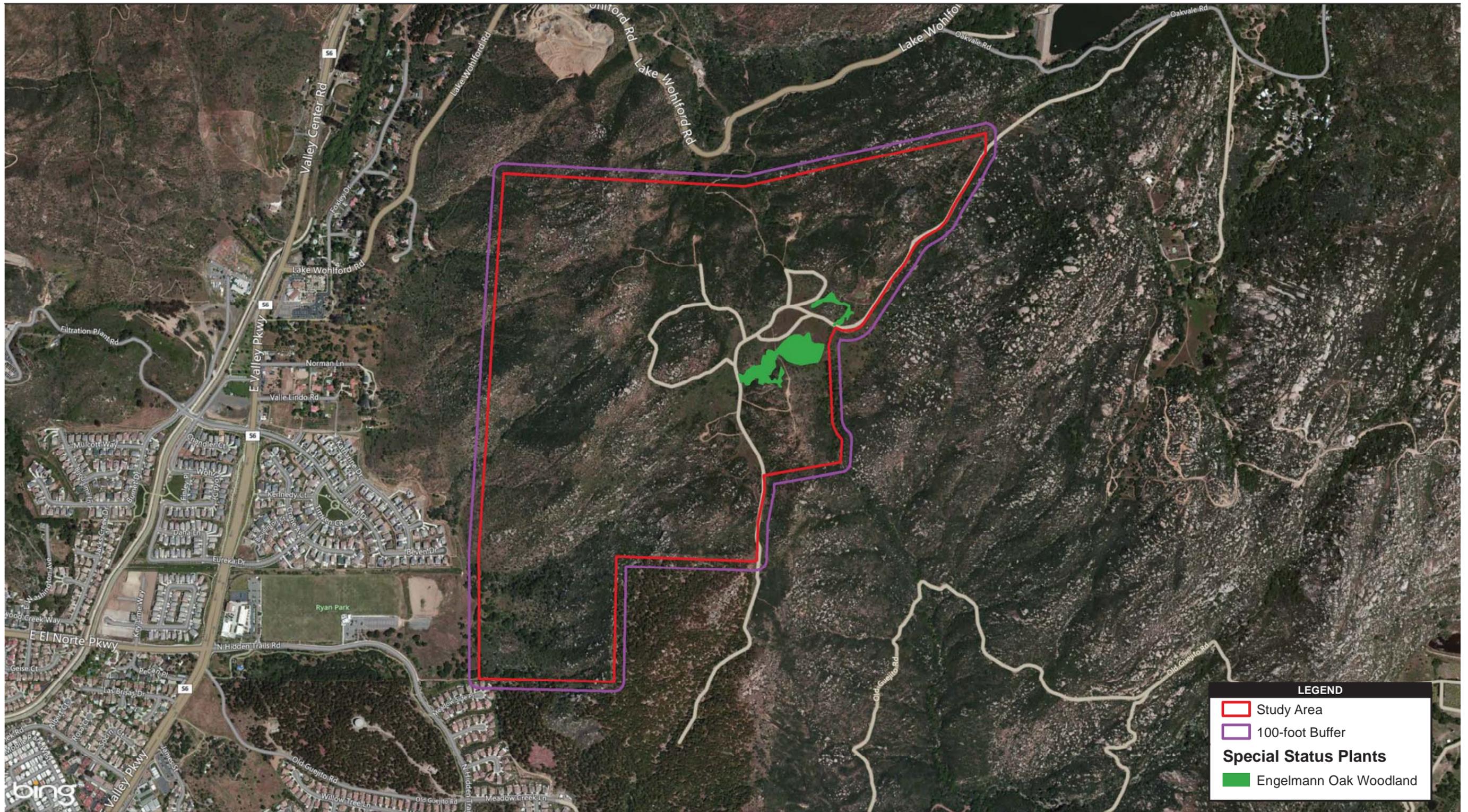
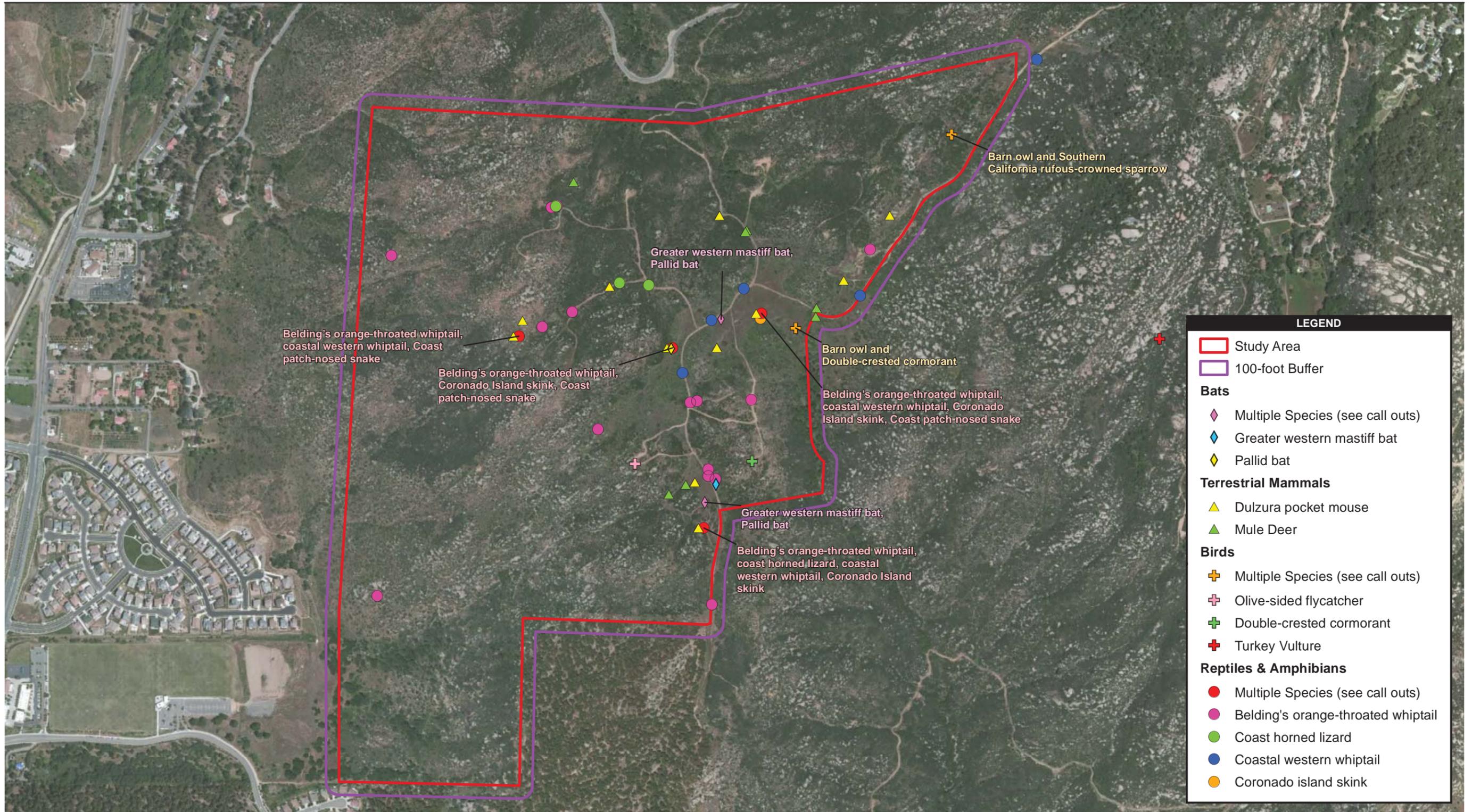


Figure 4
Special Status Plant Locations

This page intentionally left blank.



Source: ESRI 2014; BING 2014

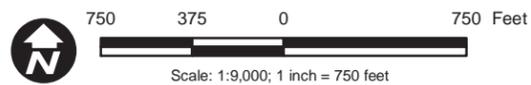


Figure 5
Special Status Wildlife Locations

This page intentionally left blank.

Table 2. Sensitive Wildlife Species Detected on the Bottle Peak Preserve Property

Common Name	Scientific Name	Sensitivity Status ¹
Herpetofauna		
Coronado island skink	<i>Eumeces skiltonianus interparietalis</i>	CDFW CSC, County Group 2
Belding's orange-throated whiptail	<i>Aspidoscelis hyperythra beldingi</i>	CDFW CSC, County Group 2
coastal western whiptail	<i>Aspidoscelis tigris stejnegeri</i>	Count Group 2
coast horned lizard	<i>Phrynosoma coronatum blainvillei</i>	CDFW CSC, County Group 2
coast patch nosed snake	<i>Salvadora hexalepis virgultea</i>	CDFW CSC, County Group 2
Birds		
double-crested cormorant	<i>Phalacrocorax auritus</i>	CDFW WL
turkey vulture	<i>Cathartes aura</i>	County Group 1
barn owl	<i>Tyto alba</i>	County Group 2
olive-sided flycatcher	<i>Contopus cooperi</i>	County Group 2
southern California rufous-crowned sparrow	<i>Aimophila ruficeps canescens</i>	CDFW WL, County Group 1
Mammals		
Dulzura pocket mouse	<i>Chaetodipus californicus femoralis</i>	
pallid bat	<i>Antrozous pallidus</i>	CDFW CSC, County Sensitive (Group 2), and draft North County Plan covered species.
greater western mastiff bat	<i>Eumops perotis californicus</i>	CDFW CSC, County Group 2
mule deer	<i>Odocoileus hemionus</i>	County Group 2

¹Federal Designations:

FT: Federally Threatened

State Designations:

CSC: California Species of Special Concern (CDFW)

FP: State Fully Protected

WL: State Watch List

County Designations:

Group 1: Animals of high sensitivity (listed or specific natural history requirements)

Group 2: Animals declining, but not in immediate

Draft North County Plan Covered Species: Proposed for coverage in the draft North County Plan.

2.3 CULTURAL RESOURCES

The Property is located in a transition area between the territories of the Luiseño/Juaneño and the Northern Diegueno (Ipai Kumeyaay) (Bean and Shipek 1978; Shipek 1995). While it is not clear from records if prehistoric village sites were located on the Property, Kroeber (1925) indicates that villages were known to be present in the general vicinity. A total of 15 sites and four isolates were identified within the Property during the current survey including prehistoric milling sites, shell middens, and rock shelters; historic roads and debris scatter sites; and isolated artifact occurrences. Evidence of modern activity includes dumping locations, neighborhood party spots, camp sites, homeless sites, and marijuana-growing activity. Other information gathered included the early construction of an earthen dam on the Property. The presence of pottery sherds, bedrock mortars, and small projectile points indicates that the prehistoric sites are estimated to be Late Prehistoric Period in age, dating between 1,300 years ago and the time of Spanish contact. Historic sites consist of the earthen dam in the central part of the Property constructed in the

1950s–1960s, a historic trash scatter, a historic glass and can scatter, and two historic roads. Two historic isolates include a flatbed truck from the 1940s, a 50-gallon barrel, and old glass liquor bottle. Two isolates of unknown age include a rock feature and a quartz concentration. A list of cultural resources identified on the Property during surveys is provided in Table 3.

Table 3. Cultural Resources Identified within the Property

Trinomial/Primary Number	Site Type	Time Period
CA-SDI-4971	Milling, lithic, ceramic, FAR*, midden soils	Prehistoric
CA-SDI-4972	Milling site, possible historic rock wall	Prehistoric/Historic
CA-SDI-4975	Shell, midden, FAR*	Prehistoric
CA-SDI-4976**	Rock shelter	Prehistoric
CA-SDI-4978**	Rock shelter	Prehistoric
CA-SDI-8673	Milling site	Prehistoric
CA-SDI-8674	Campsite	Prehistoric
CA-SDI-21249	Milling site, lithics	Prehistoric
CA-SDI-21246	Earthen dam	Historic
CA-SDI-21247	Debris scatter	Historic
CA-SDI-21250	Milling site	Prehistoric
CA-SDI-21251	Milling site	Prehistoric
CA-SDI-21252	Rock shelters	Prehistoric
CA-SDI-21248	Debris scatter	Historic
CA-SDI-21253	Milling site	Prehistoric
P-37-033825	Road	Historic
P-37-033826	Road	Historic
P-37-033827	Isolate	Historic
P-37-033828	Isolate	Unknown
P-37-033829	Isolate	Historic
P-37-033830	Isolate	Unknown

*FAR = fire-affected rock

**Not located during current survey effort

3.0 INVASIVE SPECIES MANAGEMENT

In April of 2014, invasive nonnative plant species were surveyed and mapped within the Property during a cursory survey. Because the rainfall season of 2013–2014 was so dry, the final surveys will occur in early spring of 2015. However, the results presented here represent what was discovered and mapped during the brief survey on April 15, 2014 (Table 4). Invasive nonnative plant species can have significant impacts on native plant associations, ecosystem processes, and biodiversity, special management measures are needed for their removal and control. Invasive nonnative plants are often adapted to disturbance conditions. Annual invasive species often germinate early and outcompete or otherwise harm sensitive species. They can generate flammable thatch material that provides unnatural levels of fuel for fires and can alter natural fire regimes by increasing frequency and intensity of wildfire (Bell 2009).

Table 4. Nonnative Plants Observed On the Property and Invasive Status¹

Species	Cal-IPC Rating ²	Cal-IPC Comments ³	Federal Invasive and Noxious Plant List ⁴	California Noxious Weeds ⁵	Distribution On the Property
silver wattle (<i>Acacia dealbata</i>)	Moderate BBCD Invasiveness 15 B	N/A	N/A	N/A	One small tree found along road side in central portion of Property. Should be removed.
scarlet pimpernel (<i>Anagallis arvensis</i>)	Not rated	On Cal-IPC watch list	N/A	N/A	Annual plants scattered around edges of grassy areas. Probably not a candidate for removal due to widespread distribution.
wild oats (<i>Avena fatua</i>)	Moderate UADC Invasiveness 12 B	Coastal scrub, chaparral, grasslands, woodland, forest. Very widespread, but impacts more severe in desert regions. GV, NW, SN, SW, GB, D	N/A	N/A	Common annual grass in grassy areas. Not a candidate for removal due to widespread distribution.

Species	Cal-IPC Rating ²	Cal-IPC Comments ³	Federal Invasive and Noxious Plant List ⁴	California Noxious Weeds ⁵	Distribution On the Property
black mustard (<i>Brassica nigra</i>)	Moderate CBUB Invasiveness B	Widespread. Primarily a weed of disturbed sites, but can be locally a more significant problem in wildlands. CA-FP	N/A	N/A	Annual plant found mostly along roads on the Property. May be candidate for manageable control at current levels.
ripgut brome (<i>Bromus diandrus</i>)	Moderate BBBD Invasiveness 12 B	Dunes, scrub, grassland, woodland, forest. Very widespread, but monotypic stands uncommon. CA	N/A	N/A	Common annual grass in low areas of site and below oaks. Not a candidate for removal due to widespread distribution.
soft brome (<i>Bromus hordeaceus</i>)	Limited BACU Invasiveness 9 C	Grasslands, sagebrush, serpentine soils, many other habitats. Very widespread, but primarily in converted annual grasslands. CA	N/A	N/A	Annual grass scattered in edges of grassy areas. Not a candidate for removal due to widespread distribution.
red brome (<i>Bromus madritensis</i> ssp. <i>Rubens</i>)	High ABBU Invasiveness 14 B	Scrub, grassland, desert washes, woodlands. Impacts most significant in desert areas. CA	N/A	N/A	Annual grass on dry edges of grassy areas. Not a candidate for removal due to widespread distribution.
Italian thistle (<i>Carduus pycnocephalus</i> subsp. <i>pycnocephalus</i>)	Moderate CABD Invasiveness 12 B	Forest, scrub, grasslands, woodland. Very widespread. Impacts may be variable regionally. NW, SN, CW, SW	C list	N/A	Annual thistle spread through center of site. Recently expanded greatly through entire County. Management may be able to reduce density and breadth of invasion.

Species	Cal-IPC Rating ²	Cal-IPC Comments ³	Federal Invasive and Noxious Plant List ⁴	California Noxious Weeds ⁵	Distribution On the Property
Malta starthistle, tocalote (<i>Centaurea melitensis</i>)	Moderate CBBC Invasiveness 11 B	Grasslands, oak woodland. Sometimes misidentified as <i>C. solstitialis</i> . Impacts vary regionally. CW, SW, D	N/A	Noxious	Prickly annual scattered along edge of grassy areas and openings in shrubs. Management may be able to reduce density and breadth of invasion.
pampas grass (<i>Cortaderia selloana</i>)	High BAAD Invasiveness 17 A	Sandy soils, moist drainages. CA-FP, GB, D	N/A	N/A	Large perennial along the southern edge of the property. It appears that some may occur on the property.
Australian brass buttons (<i>Cotula australis</i>)	Not listed or evaluated	N/A	N/A	N/A	Small annual in heavily disturbed and compacted areas along roads.
broadleaf filaree (<i>Erodium botrys</i>)	Evaluated but not listed; Limited impacts, Low invasiveness, Very widespread distribution	Primarily a weed of disturbed sites, but can be locally a more significant problem in wildlands. CA-FP	N/A	N/A	Annual growing in deeper soils in shaded areas. Not a candidate for removal due to widespread distribution.
redstem filaree (<i>Erodium cicutarium</i>)	Limited DCDD Invasiveness 10 C	Many habitats. Widespread. Impacts minor in wildlands. High-density populations are transient. CA	N/A	N/A	Low annual growing everywhere particularly edges of grassy areas. Not a candidate for removal due to widespread distribution.
red gum, river red gum (<i>Eucalyptus camaldulensis</i>)	Limited CCUD Invasiveness 6 C	Mainly Southern California urban areas. Impacts, invasiveness, and distribution are minor. NW, GV, CW, SW	N/A	N/A	Trees along drainage on southeastern edge of Property. Could be removed but may want to maintain trees for raptor nesting.
petty spurge (<i>Euphorbia peplus</i>)	Not rated	N/A	N/A	N/A	Annual observed in a shaded low area on the eastern edge of the Property. Not considered a high risk species necessary for removal.

Species	Cal-IPC Rating ²	Cal-IPC Comments ³	Federal Invasive and Noxious Plant List ⁴	California Noxious Weeds ⁵	Distribution On the Property
rattail fescue (<i>Festuca myuros</i>)	Moderate BBBC Invasiveness 11 B	Coastal sage scrub, chaparral. Widespread. Rarely forms monotypic stands, but locally problematic. CA-FP, D	N/A	N/A	Annual grass scattered on edge of grassy areas. Not a candidate for removal due to widespread distribution.
fennel (<i>Foeniculum vulgare</i>)	High ABCD Invasiveness 12 B	Grasslands, scrub. CA-FP	N/A	N/A	Large perennial herb growing below dam on the site. Highly invasive and should be considered for removal.
treasure flower (<i>Gazania linearis</i>)	Moderate CBUD Invasiveness 13 B	Reported to invade in San Francisco Bay Area. Need more information. CW, SW	N/A	N/A	Low perennial herb found near road entering the site. Could be removed by hand while numbers are low.
Crete weed (<i>Hedypnois cretica</i>)	Not rated	Cal-IPC Watch List	N/A	N/A	Low annual mostly along disturbed and grassy areas but may occur anywhere on the site. Probably not a candidate for removal due to widespread distribution.
bristly ox tongue (<i>Helminthotheca echioides</i>)	Limited, Limited Impacts, Moderate invasiveness, Moderate distribution,	Coastal prairie, scrub, riparian woodland. Widespread locally. Abiotic impacts unknown. CA-FP	N/A	N/A	Annual or biennial herb that occurs in low areas above and below the dam site. This species could possibly be managed but is not considered a serious threat.
shortpod mustard, summer mustard (<i>Hirschfeldia incana</i>)	Moderate CBUB Invasiveness 12 B	Scrub, grasslands, riparian areas. Impacts not well understood but appear to be greater in Southern California. CW, GV, NW, SN, SW	N/A	N/A	Annual to perennial herb scattered along roads and trails. Not a candidate for removal due to widespread distribution but potential for management to reduce its numbers.

Species	Cal-IPC Rating ²	Cal-IPC Comments ³	Federal Invasive and Noxious Plant List ⁴	California Noxious Weeds ⁵	Distribution On the Property
smooth cat's ear (<i>Hypochaeris glabra</i>)	Limited UCDD Invasiveness 11 B	Scrub and woodlands. Widespread. Impacts appear minor. Some local variability. CA-FP	N/A	N/A	Annual or perennial herb widespread in grassy areas. Not a candidate for removal due to widespread distribution.
prickly lettuce (<i>Lactuca serriola</i>)	Evaluated but not listed Impacts none, Invasiveness limited, moderate distribution	Primarily an agricultural and roadside weed.	N/A	N/A	Annual herb that occurs in low areas above and below the dam site. This species could possibly be managed but is not considered a serious threat.
narrow-leaf cottonrose (<i>Logfia gallica</i>)	Not rated	N/A	N/A	N/A	Small annual herb that is widespread in grassy areas and edges of trails and dirt roads. Not a candidate for removal due to widespread distribution.
white horehound (<i>Marrubium vulgare</i>)	Limited UBCD Invasiveness 10 C	Grasslands scrub, riparian areas. Widespread. Rarely in dense stands. Impacts relatively minor. CA-FP, DMoj	N/A	N/A	Herbaceous perennial growing in low areas. Not widespread and could be managed and reduced.
burclover (<i>Medicago polymorpha</i>)	Limited CCCD Invasiveness 9 C	Predominantly grazed lands. CA	N/A	N/A	Low herbaceous annual growing in disturbed and packed soils in scattered locations, mostly along roads.
Indian sweetclover (<i>Melilotus indicus</i>)	Species nominated but not reviewed	Reported from disturbed sites. Need more information.	N/A	N/A	Tall annual herb growing in low disturbed areas; most prevalent after ample rainfall seasons.

Species	Cal-IPC Rating ²	Cal-IPC Comments ³	Federal Invasive and Noxious Plant List ⁴	California Noxious Weeds ⁵	Distribution On the Property
natalgrass (<i>Melinis repens</i> subsp. <i>repens</i>)	Not listed	N/A	N/A	N/A	Annual or short-lived perennial grass with pink inflorescences. Highly invasive species found on the highest peaks on the site. Widespread in rocks. Would be difficult to remove but should be removed where observed.
tree tobacco (<i>Nicotiana glauca</i>)	Moderate UCBD Invasiveness 13 B	Coastal scrub, grasslands, riparian woodland. Abiotic impacts unknown. Impacts vary locally. Rarely in dense stands. CA-FP, D	N/A	N/A	On the slope near the Mexican fan palm tree. Currently occurs in limited numbers and should be removed.
wavyleaf beeblossom (<i>Oenothera sinuosa</i>)	Not listed	Cal-IPC watch list	B list	Noxious	Herbaceous perennial that is native to Texas and Oklahoma. Invasive in some locations. A few plants were observed along the eastern boundary near a road.
prickly pear, mission fig (<i>Opuntia ficus-indica</i>)	Not listed	N/A	N/A	N/A	Large perennial succulent that is not very invasive outside of planted locations. Small cluster on-site could be removed or may represent a location of cultural value.
buttercup oxalis, bermuda buttercup, yellow oxalis (<i>Oxalis pes-caprae</i>)	Moderate BBDA Invasiveness 14 B	Coastal dunes, scrub, oak woodland. Impacts in coastal areas may prove more severe in time. CW, NW, SW	N/A	N/A	Herbaceous perennial with bulbs growing in a few locations on-site in disturbed low areas. This species may be manageable.

Species	Cal-IPC Rating ²	Cal-IPC Comments ³	Federal Invasive and Noxious Plant List ⁴	California Noxious Weeds ⁵	Distribution On the Property
fountain grass(<i>Pennisetum setaceum</i>)	Moderate BABD Invasiveness 16 B	Responds and spreads following fires. CW, GV, NW, SW, D	N/A	N/A	On northern portion of property along north access road.
buckhorn plantain, English plantain (<i>Plantago lanceolata</i>)	Limited UCUU Invasiveness 9 C	Many habitats. Turf weed primarily. Low density and impacts in wildlands. CA-FP	N/A	N/A	Low-growing perennial herb growing in low areas near road into the site and near the earthen dam. This species may be manageable since it is not widespread on the Property.
rabbitfoot polypogon, rabbitfoot grass (<i>Polypogon monspeliensis</i>)	Limited DCDD Invasiveness 9 C	Margins of ponds and streams, seasonally wet places, edge of coastal dunes. Widespread. Impacts appear minor. CA	N/A	N/A	Fuzzy annual grass growing in low grassy area near pond. This species may be difficult to manage due to spreading propagules.
curly dock (<i>Rumex crispus</i>)	Limited DBCD Invasiveness 10 C	Grasslands, vernal pool, meadows, riparian. Widespread. Impacts appear minor. CA	N/A	N/A	Perennial herb in the area above the dam site. This species generally has low impact issues but could be controlled through active weeding management.
Mediterranean grass (<i>Schismus barbatus</i>)	Limited BBCU Invasiveness 10 C	Scrub, thorn woodland. Widespread in deserts. Impacts can be more important locally. GV, CW, SW, D	N/A	N/A	Small annual grass found in dry openings near center of project site. This species would be difficult to manage due to small size, rapid dispersal, and regeneration.
common catchfly (<i>Silene gallica</i>)	Not rated	N/A	N/A	N/A	Small upright annual that grows along disturbed areas along the edge of the seasonal pond and roads.

Species	Cal-IPC Rating ²	Cal-IPC Comments ³	Federal Invasive and Noxious Plant List ⁴	California Noxious Weeds ⁵	Distribution On the Property
blessed milkthistle (<i>Silybum marianum</i>)	Limited DCDD Invasiveness 10 C	Grasslands, riparian. Widespread, primarily in disturbed areas. Impacts can be higher locally. NW, GV, CW, SW	N/A	N/A	Large annual or biennial herb with hard prickly leaves and stems located in east-central portion of project site. It may be low enough in number to be removed but site may be vulnerable to outside seed source.
London rocket (<i>Sisymbrium irio</i>)	Moderate CBUD Invasiveness 11 B	Scrub, grasslands. Widespread. Primarily in disturbed sites. Impacts vary locally. GV, SW	N/A	N/A	Annual herb scattered along roads and trails. Not a candidate for removal due to widespread distribution but potential exists for management to reduce its numbers.
prickly sow thistle (<i>Sonchus asper</i> subsp. <i>asper</i>)	Evaluated but not listed; Limited impacts, Moderate invasiveness, Moderately widespread Distribution	Primarily an agricultural weed.	N/A	N/A	Annual herb scattered in a few locations on-site mostly in vicinity of dry pond or below the dam.
Johnsongrass (<i>Sorghum halepense</i>)	Cal-IPC Watchlist	N/A	C List	N/A	Perennial herb found on edge of on-site pond area
corn spurry (<i>Spergula arvensis</i>)	Not listed	N/A	N/A	N/A	Annual herb found on edges of grassy areas on sandy soils. May not be candidate for removal due to distribution and small size.
saltcedar, tamarisk (<i>Tamarix ramosissima</i>)	High AAAD Invasiveness 17 A	Desert washes, riparian areas, seeps and springs. SN, GV, CW, SW, D, SNE	N/A	Noxious	Small trees near the dam site and below it and along northeast entrance road. This species could be removed. Upstream source would also need elimination.

Species	Cal-IPC Rating ²	Cal-IPC Comments ³	Federal Invasive and Noxious Plant List ⁴	California Noxious Weeds ⁵	Distribution On the Property
Mexican fan palm (<i>Washingtonia robusta</i>)	Moderate CBBC Invasiveness 14 B	Desert washes. Limited distribution but spreading in Southern California. Impacts can be higher locally. SW	N/A	N/A	One tree on western boundary of the site near the edge of the adjacent avocado grove. Tree could be removed if deemed important to maintain natural conditions in that area.
moundlily yucca (<i>Yucca gloriosa</i>)	Not listed	Edges of woodland next to road.	N/A	N/A	Plant not in flower that appeared to be this species was observed along northeast entrance road.

¹**Source:** Cal-IPC Database, updated April 2012. Overall rating listed for southwest region, factoring impact, invasiveness, distribution, and documentation level.

² **Cal-IPC Rating 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, although 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); they have low to moderate rates of invasiveness and are generally limited, but may be locally persistent and problematic.

Impacts abiotic ecosystem processes, impact on plant community, impact on higher trophic levels and impact on genetic integrity (U Unknown, A High, B Moderate, C Rare, and D None); Invasiveness 0–20 points, Total Invasiveness Score A,B,C,D Impacts, Invasiveness, Distribution, Documentation level

³ California Floristic Provinces listed in Cal-IPC Invasive Plant Inventory as being occupied by the invasive species listed

- CA Invasive in all provinces
- CA-FP California Floristic Province area
- CaR Cascade Range
- CW Central West California
- GV Great Valley
- NW Northwest California
- SN Sierra Nevada
- SW Southwest California
- GB Great Basin Province
- MP Modoc Plateau
- SNE Sierra Nevada East
- D Desert Province in California
- DMoj Mojave Desert
- DSon Sonoran Desert in California

⁴ USDA Natural Resources Conservation Service. 2014

⁵ California Department of Food and Agriculture Plant Health & Pest Prevention Services. 2014

During the mapping efforts in 2014, the intention was to identify the most invasive species and their locations and determine which portions of the Property have the highest potential for concentrations of weedy species. Annual species exhibit large fluctuations in populations resulting from particular seasonal rainfall conditions. Common annual weeds such as the wild oats (*Avena fatua*) and various species of brome grasses (*Bromus* sp.) and plants such as filaree (*Erodium* sp.) that are widespread on the Property were not mapped. However, the larger, woody species such as the silver wattle (*Acacia dealbata*), fennel (*Foeniculum vulgare*) and tamarisk (*Tamarix ramosissima*) are examples of species for which general mapping took place this year. Non-native plants are present throughout the Property. However, the greatest numbers are found along roads and trails and around grassy areas. The nonnative annual species found on the Property generally represent widespread plants that have been established in this region for many years. Nonnative shrubs and trees are less prevalent on the Property. A number of these nonnative species, though they may be invasive and do not represent the natural habitats on the Property, would not be recommended for removal. First, removing nonnatives on the Property without controlling the source populations would represent only a temporary control. Second, a number of the species have been present so long in the California landscape that they have truly become “naturalized.” It would be impossible to remove wild oats, and any of the brome grasses; however, it would be possible to restore portions of the Property that were originally shrublands but which were modified by clearing or other disturbance to become grassy areas dominated by nonnative species. It is likely that, under conditions prior to European contact, the lowland areas would have been inhabited by low shrubs, likely dominated by California buckwheat (*Eriogonum fasciculatum*) and the areas around the Engelmann oaks would have also had an understory of low shrubs, including California buckwheat. During the early 1990s (Google Earth 10/1/1995 imagery), the Property exhibited damage from off-highway vehicle trails that looped around the southeastern portion of the Property as well as clearing around the lowland grassy areas. Since that time, shrubs have reclaimed portions of the nonnative grasslands. It appears that a roughly 50% reduction in area of grass habitat has occurred since 1995. In the absence of specific action to maintain the grassy habitat as open land, shrubs will likely reclaim and fill in the grassy areas eventually leaving only a few small areas of grassy habitat. Therefore, it will not be necessary to remove many of the nonnative grasses because they will be much reduced through the recovery of the shrub vegetation.

However, the area of the dam and the pond that periodically exists will continue to harbor nonnative species. Of the past 10 seasons, this area only held water during the winter of 2004–2005, the third wettest rainfall season in San Diego history. The pond held water in December of 2004 but was nearly dry by October 2005 and it has been dry ever since. The dry lake bed supports annual species and is the location with the greatest level of mustard (*Brassica nigra* and *Hirschfeldia incana*) occurrence and is mapped as such. Complete removal of mustard, a large annual with seeds that may remain beneath the soil for up to 50 years, would be difficult.

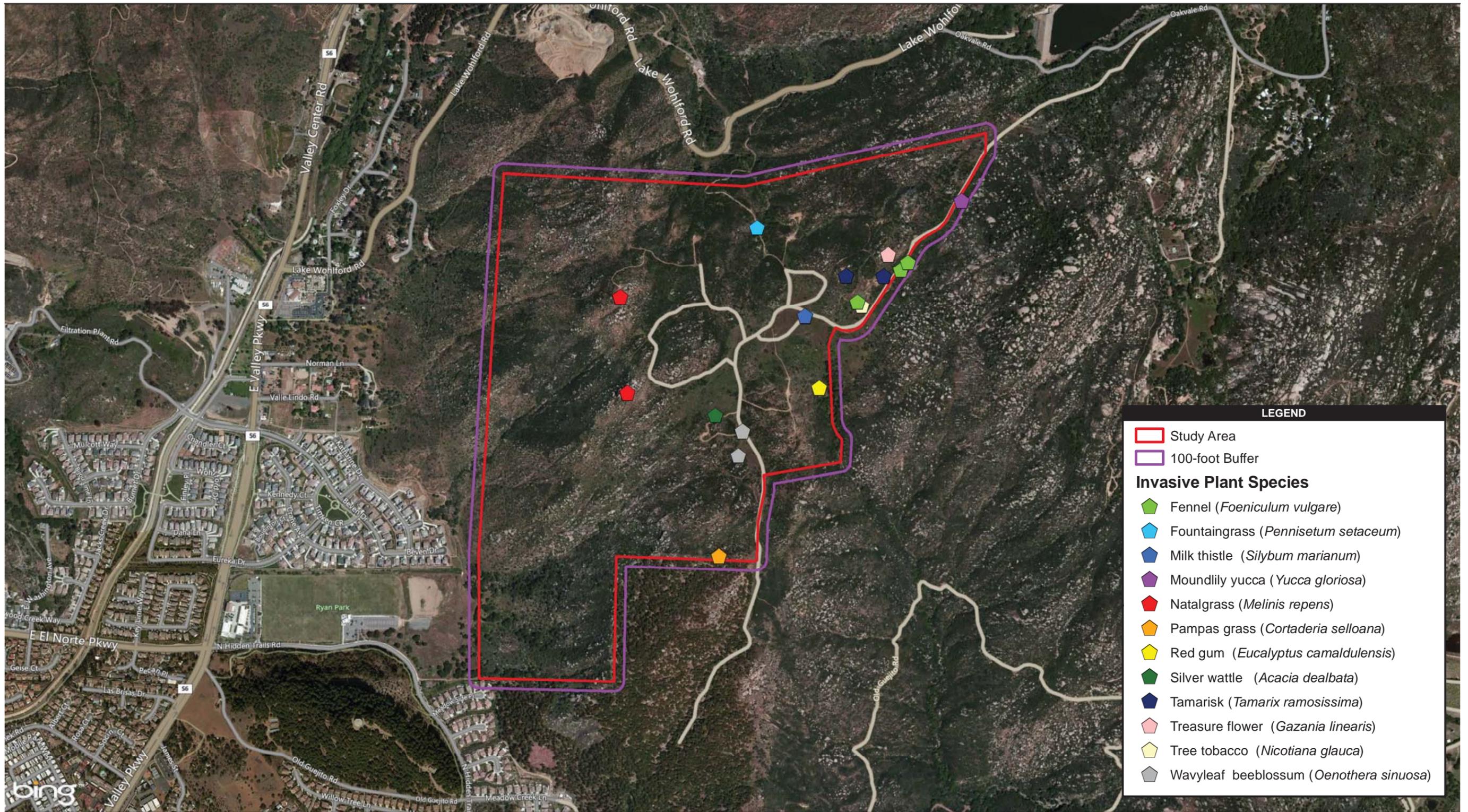
3.1 TARGET INVASIVE NONNATIVE PLANT SPECIES

Target invasive nonnative plant species identified for the property along with their removal/management priority are provided in Table 5 and the target species for removal are shown in Figure 6. Additional discussion for each species is provided in the following text.

Table 5. Priorities for Removal or Management of Nonnative Species

Common Name	Scientific Name	Removal/Management Priority
silver wattle	<i>Acacia dealbata</i>	High
pampas grass	<i>Cortaderia selloana</i>	High
red gum	<i>Eucalyptus camaldulensis</i>	High
fennel	<i>Foeniculum vulgare</i>	High
treasure flower	<i>Gazania linearis</i>	High
natalgrass	<i>Melinis repens ssp. repens</i>	High
tree tobacco	<i>Nicotiana glauca</i>	High
wavyleaf beeblossum	<i>Oenothera sinuosa</i>	High
fountaingrass	<i>Pennisetum setaceum</i>	High
milkthistle	<i>Silybum marianum</i>	High
tamarisk	<i>Tamarix ramosissima</i>	High
moundlily yucca	<i>Yucca gloriosa</i>	High
black mustard	<i>Brassica nigra</i>	Moderate
Italian thistle	<i>Carduus pycnocephalus</i>	Moderate
shortpod mustard	<i>Hirschfeldia incana</i>	Moderate
white horehound	<i>Marrubium vulgare</i>	Moderate
buttercup oxalis	<i>Oxalis pres-caprae</i>	Moderate
curly dock	<i>Rumex crispus</i>	Moderate
London rocket	<i>Sisymbrium irio</i>	Moderate
Johnson grass	<i>Sorghum halapense</i>	Moderate
Mexican fan palm	<i>Washingtonia robusta</i>	Moderate
tocalote	<i>Centaurea melitensis</i>	Low
petty spurge	<i>Euphorbia peplus</i>	Low
bristly ox tongue	<i>Helminthotheca echioides</i>	Low
prickly lettuce	<i>Lactuca serriola</i>	Low
mission fig	<i>Opuntia ficus-indica</i>	Low
buckhorn plantain	<i>Plantago lanceolata</i>	Low
prickly sow thistle	<i>Sonchus asper ssp. asper</i>	Low
corn spurry	<i>Spergula arvensis</i>	Low
scarlet pimpernel	<i>Anagallis arvensis</i>	None
wild oats	<i>Avena fatua</i>	None
ripgut brome	<i>Bromus diandrus</i>	None
soft brome	<i>Bromus hordeaceus</i>	None
red brome	<i>Bromus madritensis ssp. rubens</i>	None
Australian brass buttons	<i>Cotula australis</i>	None
broadleaf filaree	<i>Erodium botrys</i>	None
redstem filaree	<i>Erodium cicutarium</i>	None
rattail fescue	<i>Festuca myuros</i>	None
Crete weed	<i>Hedypnois cretica</i>	None

Common Name	Scientific Name	Removal/Management Priority
smooth cat's ear	<i>Hypochaeris glabra</i>	None
narrow-leaf cottonrose	<i>Logfia gallica</i>	None
burclover	<i>Medicago polymorpha</i>	None
Indian sweetclover	<i>Melilotus indicus</i>	None
rabbitfoot grass	<i>Polypogon monspeliensis</i>	None
Mediterranean grass	<i>Schismus barbatus</i>	None
Common catchfly	<i>Silene gallica</i>	None



Source: ESRI 2014; BING 2014

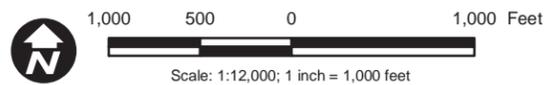


Figure 6
Invasive Plant Species Locations

This page intentionally left blank.

3.1.1 High Priority For Removal

Silver Wattle

One individual of this tree (*Acacia dealbata*) was found and should be removed. This individual tree was not of large size; however, this species is known to send out roots up to several meters away that can resprout after the main trunk is removed. Complete removal of the tree may require treatment with herbicide and repeated removal of resprouts. This individual can be cut and treated with Roundup. It can be treated any time but treatment would be most effective during the active growing season in spring. The tree should be cut and the stump painted with a Roundup solution. If runners are observed, their foliage should be treated with Roundup spray. The area around the stump should be monitored to ensure that additional sprouts do not emerge.

Pampas Grass

Pampas grass (*Cortaderia selloana*) has been found on the southern edge of the Property within and adjacent to the avocado grove there. It appears that at least one clump is growing north of the property line. Pampas grass can be removed by cutting it back and treating it with Roundup during the spring active growing season. It will require multiple treatments and may require digging out the root system if it continues to regenerate.

Red Gum (Eucalyptus)

Red gum (*Eucalyptus camaldulensis*) occurs along the eastern edge of the Property. While the California Invasive Plant Council inventory categorizes eucalyptus species as having overall ratings of “limited” or “moderate,” they are ranked as a high priority for removal/control on the Bottle Peak Property because they are large, nonnative species. These trees could be cut for removal at any time of the year. If resprouts occurred, they could be treated with herbicide or physically removed. There are questions about the value of eucalyptus as raptor nesting locations and whether the trees should be removed. The conclusion is that the more natural situation may be preferable due to the value of native trees and shrubs in providing nest sites for smaller birds that might be displaced by eucalyptus (Suddjian 2004).

Fennel

Fennel occurring near the dam should be removed. Fennel reproduces by root crown and seed. In some locations, particularly parts of Marine Corps Base Camp Pendleton, fennel is a widespread invasive that has altered landscapes or prevented the recovery of native vegetation from disturbance. Cutting, mowing, and chopping the plants leave the roots intact and ready to regrow. Repeated cuts may assist in killing the plants but the interval between the cuts must be short.

Cutting while plants are producing seed will promote rather than reduce dispersal. Prescribed burning by itself is not an effective means for removal of the plants, but fall burning with herbicide sprays the following two springs can reduce fennel cover by 95 to 100% (Bossard et al. 2000). Roundup sprayed on the plants is reported to reduce fennel cover by 75 to 80%. Use of Roundup would be most effective during the spring active growing season.

Treasure Flower

Treasure flower (*Gazania linearis*) was observed growing near the road to the northeast of the dry pond site. A relatively low number of plants were growing there. They should be removed to reduce spreading potential. Due to their small number, this can occur at any time.

Natalgrass

Natalgrass (*Melinis repens* ssp. *repens*) is a pink-colored grass that apparently spreads by wind. This species is an invasive pest in a number of locations world-wide including Australia, French Polynesia, and Florida. It was found growing in cracks in rocks on the higher peaks on the Property. It is a relatively recent invader. However, due to its ease at dispersing to the isolated portions of the Property, even if it was removed, it would reinvade. It currently does not form dense stands in potential habitat areas. Efforts should be carried out to ensure that it remains only in low numbers. It can be controlled through physical removal and chemical control (Sylvan Kaufman 2014) during the spring active growing season, particularly prior to seed set.

Tree Tobacco

Tree tobacco (*Nicotiana glauca*) was observed in the area near the avocado orchard on the southern portion of the Property. Tree tobacco is generally associated with disturbed habitats, but it can spread into the Property along roads and trails. Control through the use of Roundup appears to work as foliar spray, drizzle, or cut stump application (Oneto et al. 2005) during the spring active growing season.

Wavyleaf Beeblossom

Wavyleaf beeblossom (*Oenothera sinuosa*) was found in two locations. It is a perennial herb that would need to be excavated to remove it, and removal efforts would be necessary in consecutive periods to prevent reestablishment. It is not easily recognized unless it is in flower. Wavyleaf beeblossom is a species of concern in other locations. It should be removed during the spring active growing season when flowers make it more visible.

Fountaingrass

Fountaingrass (*Pennisetum setaceum*) occurs along the northern road into the site. It is not widespread on the site at this point. It is a rapidly spreading species that can be removed at this early stage of invasion of the Property. It will require spraying with Roundup and mechanical removal during winter months in order to make an effort to remove it before flowering and seed dispersal.

Milkthistle

Milkthistle (*Silybum marianum*) is a large, prickly thistle that can grow in dense thickets creating an impenetrable mass. Its removal should be a high priority. It can be dug up but the seeds must be gathered as well and it must be monitored for consecutive seasons to ensure that new seeds do not germinate. Removal would be best prior to flowering and seed set during the late winter months.

Tamarisk

Tamarisk (*Tamarix ramosissima*) is a very invasive species in riparian locations throughout its occurrences. It was observed along the northeast access road approximately 0.2 mile from the northeastern boundary of the Property. It should be removed from the Property and an examination should consider its potential source location. Mechanical removal is preferred; however, this species will need to be monitored for retreatment when the root systems resprout. It can be cut and treated at any time of the year.

Moundlily yucca

A plant that appears to be moundlily yucca (*Yucca gloriosa*) was observed beneath an oak tree on the northeast side entrance road. It appears as a low shrub with bright green strap-shaped leaves. It seems to be an individual plant that could be manually removed. The surrounding area should be examined to be sure that it has not spread. If resprouts occur, it should be treated with roundup or similar herbicide. Due to its limited number, it can be removed at any time.

3.2 REMOVAL METHODS

The selection of the appropriate removal methodology should be determined with consideration of many variables, including the time of year, severity of infestation, presence of sensitive plants and wildlife, degree of intermixing of invasive species with sensitive native habitats, access, and proximity to surface water. General recommendations for the Property are provided below.

3.2.1 Manual Removal

Manual vegetation removal (e.g., hand pulling, grubbing, and hoeing) is a low-impact but labor-intensive method of controlling invasive nonnative plant species within a focused area. It may be applicable to smaller annual or biennial species such as the prickly lettuce, and bristly ox tongue or even the petty spurge. It would also be appropriate for the wavy-leaf beeblossum, which is a herbaceous perennial that is limited to a relatively small area at present. Using hand tools, it is possible to remove the tap roots of species as well as underground rhizomes for some herbaceous perennial species. Invasive nonnative plant material that may be feasible to remove using this method should be collected in air-tight containers to prevent respread of seeds and other parts of the invasive weeds on the Property, and disposed of in a manner that does not promote spread or infestation of the species into new areas of the Property. It may be possible to contain the removed material on the Property for decomposition; however, that will take a concerted effort and might involve on the Property composting inside containers in which solar heat or heat from decomposition kills all potential propagules such as seeds and plant parts. If the plant material cannot be contained on the Property to decompose without regenerating, it should be carefully removed from the Property to a green waste facility or landfill.

3.2.2 Mechanical Removal

The larger trees such as eucalyptus, the fan palm, and the tamarisk would most effectively be removed with chain saws and other mechanical devices. Since none of these species are extensive on the Property, it may be possible to chip the cut material on the Property and dispose of it there. However, monitoring would still be necessary to ensure that no seeds remain in the chipped material and no stems resprout from the cut stumps. For control of some of the woody perennial trees and shrubs, it might be necessary to add herbicide application to the cut stump shortly after cutting to provide the best available situation for the absorption of the chemicals by the vascular system of the tree or shrub.

3.2.3 Herbicides

Several types of herbicides may be effective on the invasive species. Roundup (Glyphosate) has been used effectively on a number of plants, but additional herbicides can also be used on specific groups of species. The application of herbicides to control target invasive species may be used on its own, in limited areas in addition to cut root systems of trees. In a natural setting, it is difficult apply the herbicides in a widespread manner without affecting adjacent native vegetation.

A wide range of herbicides are available for such types of treatment. Herbicide labels and material safety data sheets list susceptible target plant species and provide proper direction in the use and handling of the products. Herbicides should be applied by state licensed applicators.

This page intentionally left blank.

4.0 HABITAT RESTORATION

With the exception of roughly 30 acres on the western slopes of the Property, the entirety of the Property burned in the 2003 Paradise Fire. Bottle Peak itself, which is located just off-site of the Property, did not burn. The northeastern boundary of the Property appears to be near the edge of the fire in that location with unburned land to the southeast of the access road. In the 11 years since that fire, the vegetation has exhibited nearly full recovery, particularly in the last 5 years as exhibited by examining the Google Earth aerial images from November 2013 and extending back in time. In addition to the images from November 11, 2013; images from October 27, 2012; April 24, 2010; August 23, 2010; May 24, 2009; February 29, 2008; January 31, 2008; December 19, 2006 and January 31, 2006; January 21, 2006; December 31, 2004; October 5, 2005; August 4, 2004; a portion on June 11, 2005; July 5, 2004; December 31, 2002; October 20, 2003; May 31, 2002 in black and white; September 29, 2009 in black and white; and October 1, 1995, were examined.

As was mentioned earlier, during the mid-1990s the Property was subjected to a significant level of off-highway vehicles that created loop trails in extensive locations through the east-central portions of the Property in addition to large areas that appeared to have been cleared prior to that. It also appears that a fuel break semi-cleared area existed along the entrance road from the northeast near Lake Wohlford. However, this area appears to be regrowing. It may have assisted in the prevention of the fire moving over the top of the Bottle Peak itself during the 2003 Paradise Fire. However, since the 1995 period, the overall amount of non-native annual grassland that remains on the Property has been reduced by roughly 50% through natural regrowth of the native shrub vegetation even though the Property was almost entirely consumed in the Paradise Fire during the intervening time period.

4.1 PROPOSED RESTORATION AREAS

In general, the Property does not exhibit large areas of heavy disturbance from past human activities. The role of restoration on a natural preserve such as the Property is to reestablish natural functions of areas that have been affected by human causes. Restoration methods include active revegetation (including planting of native species) and passive management, which may involve weed control or simply monitoring natural recruitment of native shrubs in the area. Restoration activities should use only local native species from the general area and should follow accepted techniques to avoid impacts to native vegetation that already exists on the Property.

4.1.1 Trails

The level of restoration for a particular Property that is being maintained as a preserve should also take into account ultimate goals for public access. Numerous vehicle trails still exist on the Property as a result of a previous designation of 19 parcels on the Property (Figure 7) and remnant construction pads. These vehicle trails have not been maintained and may not be currently passable in a vehicle. It may be of use to maintain a few of these old dirt vehicle trails as hiking trails since they have grown over in a number of locations; however, the pads themselves will need to be restored in some way to reduce erosion levels.

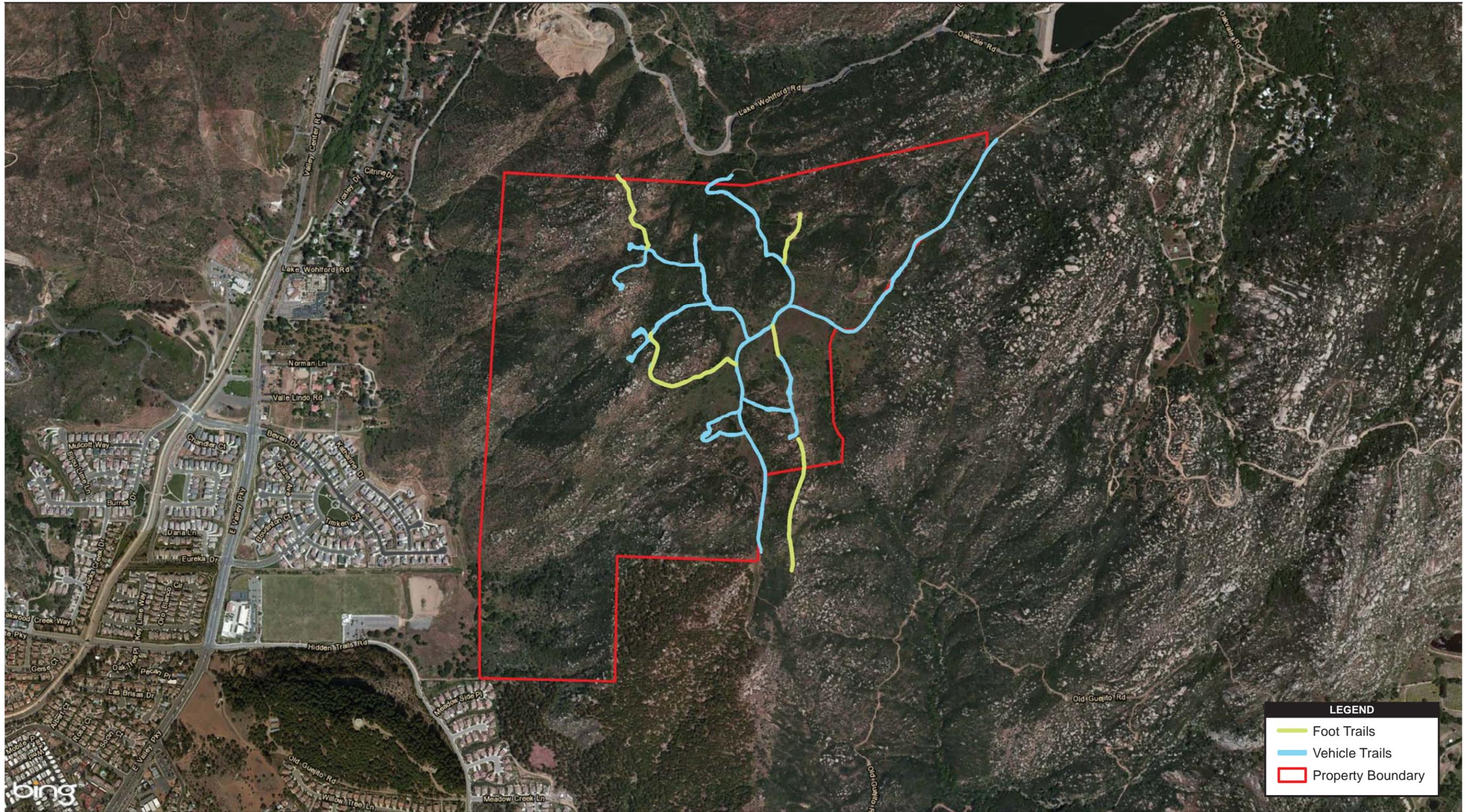
The main access road traverses from the northeast near the Lake Wohlford Dam off of Oakvale Road, and passes through the Property to the south, ending at an avocado grove. An alternate access route occurs from east of Lake Wohlford Road onto the Property and connects with the main access road at the grassy central area. Spur vehicle trails proceed to the northwest and west around Old Rocky Peak and Devil's Anvil Peak, and a loop vehicle trail exists on the west side of the main vehicle trail that occurs through the Property. Another vehicle trail, with a steep side spur, extends down a steep ridge that runs parallel to the eastern boundary of the Property.

Partially overgrown foot trails extend northwest from the northern base of Old Rocky Peak, and eastward from near the east base of Anvil Peak. A third trail passes down the east side of the Property to the south.

Several of the vehicle trails may serve as foot trails or emergency access roads. However, it may be appropriate to eliminate several of them and either assist in the rehabilitation of habitat or allow the trails to become overgrown by vegetation on the Property.

Restoring disturbed areas will provide an overall increase of acreage of native vegetation, connectivity of existing native vegetation, and erosion control in areas of disturbance. Restoration of these areas is important to the integrity of the surrounding vegetation communities, as cleared areas can provide opportunity for nonnative species to colonize (many nonnative annuals are flashy fuels that can increase fire danger), provide opportunity for erosion by exposing the soil surface, reduce acreage of native vegetation communities, and sever connectivity among vegetation communities.

Larger cleared areas on the Property have been passively restoring themselves since the mid-1990s. The larger grassy meadow areas are shrinking in size since they were artificially created. These areas may be monitored but directed restoration activities will not be necessary for them. However, other more intensively disturbed lands that merit restoration activities do exist on the Property. Specific restoration areas on the Property include a number of graded pads that were



LEGEND

- Foot Trails
- Vehicle Trails
- Property Boundary

Source: ESRI 2014; BING 2014

1,000 500 0 1,000 Feet

Scale: 1:12,000; 1 inch = 1,000 feet

Figure 7
Existing Trails

This page intentionally left blank.

apparently originally proposed for home sites, and a few of the wider and more erosive roads (Figure 8). County DPR may decide to maintain a few of these trails for access routes; however, all others would be restored.

4.2 RESTORATION METHODS

Restoration of these old pads and roads may occur either using passive means or active means. Passive restoration is simply monitoring habitats that are naturally restoring themselves. Weed control activities may assist in the restoration. Directed planting and seeding are not necessary because the areas are recovering and native vegetation is becoming established through natural means.

Active restoration involves preparing the soil and planting or seeding disturbed areas where native vegetation is not regrowing. On this Property, the areas for active restoration were previously cleared, and in some cases graded, and are becoming more degraded by erosion. These areas will likely require some soil contouring to reduce erosion and provide a stable slope for planting. In some cases, the act of creating a more stable slope will provide a surface that will be more readily vegetated by seeds dispersing onto the Property naturally. Otherwise, native plants and seed can be installed utilizing plant sources nearby. This may involve propagation of native stock collected from the area and then planting. The composition of the specific sites to be revegetated as well as plant quantities and rates should be determined on a case-by-case basis. Appropriate erosion control measures, such as placement of straw waddles and soil stabilizing mesh and burlap materials, should be installed to prevent or reduce erosion during the initial revegetation periods.

Restoration should prioritize seed application over installation of container plants. It might be possible to install container plants if installation is performed immediately prior to stormy weather with projected higher precipitation levels. It may also be possible to carry water in vehicles to several of the graded pad sites to augment the water needs of container plants.

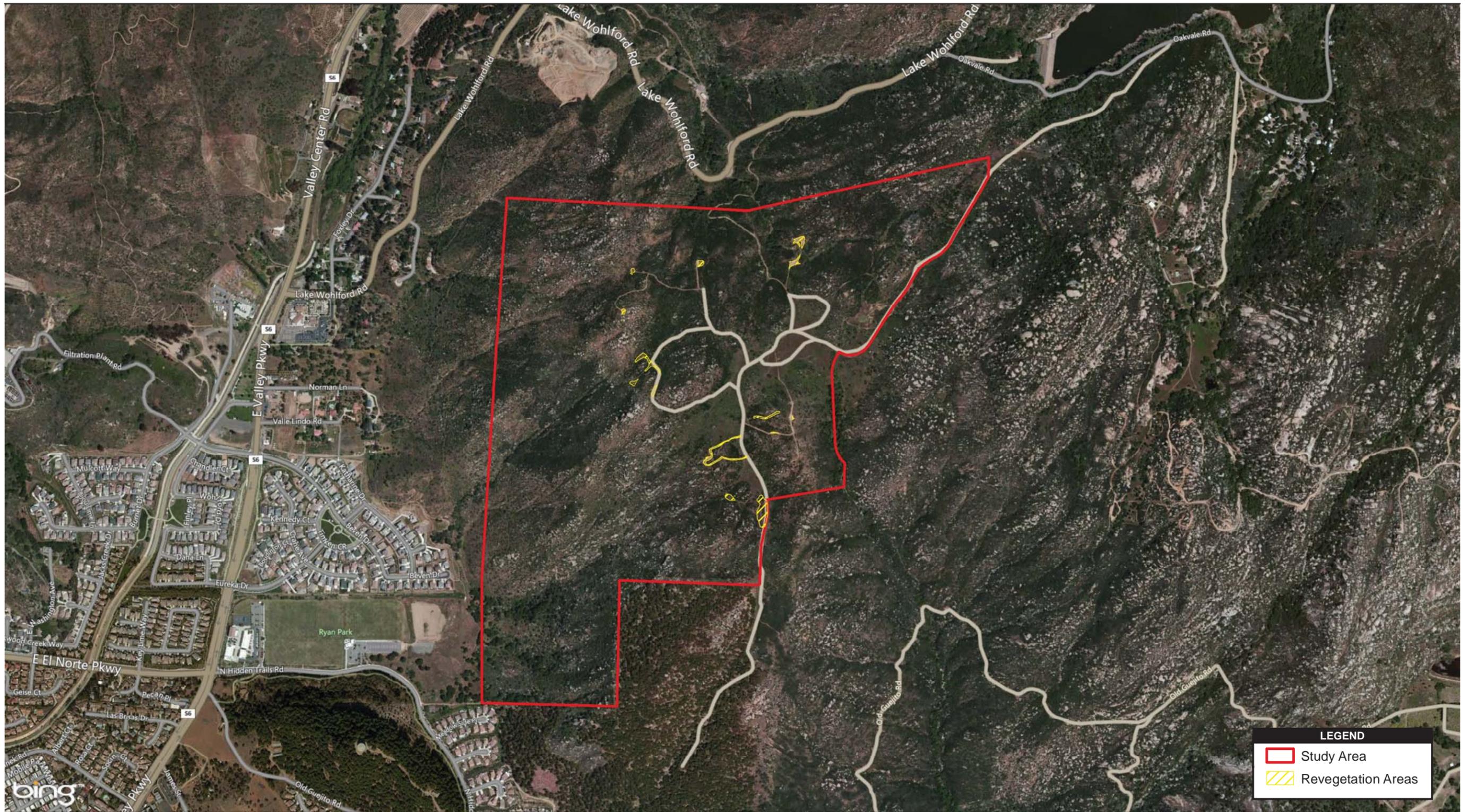
Restoration would occur on areas that are most exposed and eroding. Sloping soils that have been exposed would need to be cultivated to break up the compacted soil and cross bars should be installed to reduce erosion. Straw waddles could be used on the larger slopes with larger watersheds from which runoff could be generated. Cross bars and straw waddles would be placed parallel with the contours. Seeding should occur after soil has been cultivated to break the compacted layer. Seeds should be raked into the soil to assist in reducing the exposure of the seeds to birds, rodents, and other seed predators. The seeding should occur in the fall season, before winter rains.

For larger shrubs, *Ceanothus*, chamise (*Adenostoma fasciculatum*), and oaks, the use of container plants grown from stock collected from the Property should be considered. They too would be planted in fall before the winter rains. The goal would be to ensure their establishment in about 6 months. Rain watering can be augmented with watering trucks in areas where vehicle trails are to be maintained. Truck, pump, and hose watering can occur up to 1,000 feet from the main access roads to the northeastern part of the Property and the access road through the Property. Watering can be better facilitated if the truck is parked on a hill and the sites are at lower elevations to assist in gravity feeding the water to the plants.

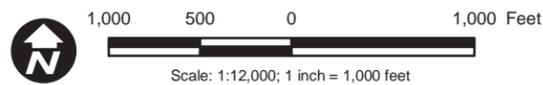
If no maintained roads are available, transporting water with backpacks would not be feasible. Watering would only occur for container plants, not for seed germination.

Breaking up the compacted soils may cause weeds to flourish and require removal. Treatment of weeds could be mechanical, by hand, or herbicide.

Weed removal in restored locations can utilize Glyphosate herbicide like Roundup and line trimmers that are mechanical. It is best to use remove weeds by hand where container plants have been utilized to avoid damaging the plants with the herbicide. Establishment takes 2 to 3 years before the plants may be left to survive on their own without hand treatment and augmented watering. Herbicides also work well for eliminating thistles while they are still small rosettes. Herbicide treatment becomes less effective after the thistles reach a large size. Fennel can be treated the same way as the thistles are treated. If already grown, fennel can be cut and treated. Tree tobacco can be cut and herbicide painted on the cut stems to ensure absorption by the plant.



Source: ESRI 2014; BING 2014



LEGEND
 [Red Outline] Study Area
 [Yellow Hatched] Revegetation Areas

Figure 8
Revegetation Areas

This page intentionally left blank.

5.0 FIRE MANAGEMENT

5.1 CURRENT FIRE MANAGEMENT PRACTICES

Currently, no specific fire management practices are established or in place for the Property. Existing dirt roads through the Property provide access that can be traversed in emergency situations to attack fire, set fire lines, or utilize backfires. It is likely that these roads have been used in the past during the fire events of the last two decades.

5.2 FIRE ENVIRONMENT

All of Southern California in the areas west of the lower desert floor is prone to fire, and fires have occurred extensively in the region of the Property as well as elsewhere in San Diego County. The major components that control the fire environment are climate or specific weather conditions, topography, and vegetation/fuels. The status of these components at any time and their relationship with each other affect the behavior of fire over the Property. A discussion of the existing conditions on the Property provides an understanding of the potential of fire occurring on the Property and its level of intensity.

Wildfires occurred naturally in Southern California prior to European contact, either ignited by natural causes such as lightning or the result of indigenous human inhabitants. In the past two decades, large human-caused fires have burned throughout the region. Long-term drought combined with control of fires over the past several decades may have aided in the accumulation of fuels in natural vegetation communities (Minnich 1983; Minnich and Chou 1997; Minnich 2006). Wildfires will continue to have a major effect in native landscapes in particular as global climate change occurs as a result of greenhouse gas buildup (San Diego Foundation 2008). Each fall, following a long summer with little or no precipitation, the vegetation reaches highly flammable conditions. Extreme weather with single-digit humidity and strong east winds and high temperatures associated with Santa Ana wind events enhance the hazardous fire conditions. Human-caused fire ignitions occur with regularity and when such ignitions take place during extreme weather conditions, rapidly moving fires are inevitable in wildland areas.

The Property is mapped on the CAL FIRE California Fire Hazard Severity Zone (FHSZ) map as Very High Fire Hazard (CAL FIRE 2009). This “is based on a combination of fuel/vegetation, terrain and seasonal climate. Government Code 51175-89 directs the California Department of Forestry and Fire Protection (CAL FIRE) to identify areas of very high fire hazard severity zones within Local Responsibility Areas (LRA). Mapping of the areas referred to as Very High Fire Hazard Severity Zones (VHFHSZ) is based on data and models of potential fuels over a 30-50

year time horizon and their associated expected fire behavior, and expected burn probabilities to quantify the likelihood and nature of vegetation fire exposure to buildings.”

5.2.1 Climate

The climate of the Property is influenced by the Pacific high-pressure system from the Pacific Ocean. The precipitation within this system typically occurs in winter through a series of sporadic storms that progress southward from the north. The yearly variation from this system is high, with numerous below-normal rainfall seasons. Summers are generally warm and dry, with some coastal low-cloud influence occurring in the early part of the day. The closest consistent weather station to the Property is the Escondido station (Western Regional Climate Center 2014). Average annual precipitation at Escondido is 14.93 inches of rain, with the greatest amount, 3.46 inches, falling in February (Table 6). July and August are the driest months, with only 0.08 inch of rain recorded. The summer months, from June through September, are generally dry and receive less than 0.25 inch of rain. The Property is located at a higher elevation than the rest of Escondido, and potentially receives 1 or 2 inches more than the average rainfall in Escondido. The average high temperature for August is 88.6°F, but extreme temperatures associated with Santa Ana wind events can occur in September and October. Santa Ana wind events drop humidity to below 10% and are the periods when wildfires typically occur.

Table 6. Rainfall Data for Escondido 2, California 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

The precipitation season 2004–2005 and 2010–2011 are the only two seasons that had above normal rainfall since 1998 for this region when, respectively, nearly 27 and more than 20 inches fell (Weather Warehouse 2014). The 2013–2014 season was the driest on record for Escondido with only 5.06 inches (Murphy 2014), the third below normal rainfall season in a row.

Winds generally flow from the northwest, particularly in the afternoons. Due to the presence of the Pacific Ocean with its stable temperatures and the desert southwest interior, as the land heats in the interior, it creates a thermally induced low-pressure system that draws in cooler air from over the ocean, partially stimulated by the rotation of the eastern Pacific high-pressure system.

During the night, as the land cools, the ocean may then draw air westward since its temperature continues to be stable. During fall, when interior high pressure may interact with offshore low-pressure gradients, offshore winds referred to as Santa Ana winds may develop with high velocity. During winter, associated with strong Pacific storms, winds from the west may be strong as well.

Fire season in this area may occur practically any month of the year and significant fires have occurred in February and May including May of 2014 under conditions of mid-90 to 103 °F temperatures and gusty northeasterly winds (Office of Emergency Services 2014). However, generally greater fire threat begins following the drying of the vegetation after spring. In fall, fire season extends until the first significant rains, usually in the end of October or November, but even later if rainfall is not significant.

One of the closest fuel moisture measuring stations is located on Mount Woodson, roughly 10 miles to the south. For 2014, and old growth chamise, the fuel moisture, which consists of the weight of live vegetation compared to its oven dry weight, has fluctuated but is currently running near its average level at 60%. Hot dry weather during the end of August and through September has likely lowered the moisture level significantly and it continues to decline. Typically, the fuel moisture begins to increase during October with the highest level over 100% to 120% for the month of May (National Fuel Moisture Database 2014).

5.2.2 Topography

The Property contains very steep sloping lands on the western edge. Elevations range from 763 feet on the southwestern edge to 1,000 feet on the northwestern corner and 1,600 feet in the northeast corner. The central portion is roughly 1,500 feet in elevation and the highest point at 1,726 feet is located in the northwest corner rising steeply from the 1,000-foot elevation Property line nearby. The topography of the Property will provide acceleration of wind speeds due to its proximity to the areas in the northeast end of Escondido. The abrupt nature of the elevation increase on the Property creates a wind obstruction, which results in acceleration of the wind speed at the higher elevations as well as the interior valley on the Property. Overall, the slope on the western side of the Property is roughly 35%; however, steeper short segments exist within that area. The western slope of the Property would pose a topographic issue for actions to control fires on the Property and access to the interior of the Property during a fire event would be hazardous. However, if a fire was some distance away, the interior access roads on the Property may be suitable for use to create backfires or fuel reduction zones.

5.2.3 Watershed Description

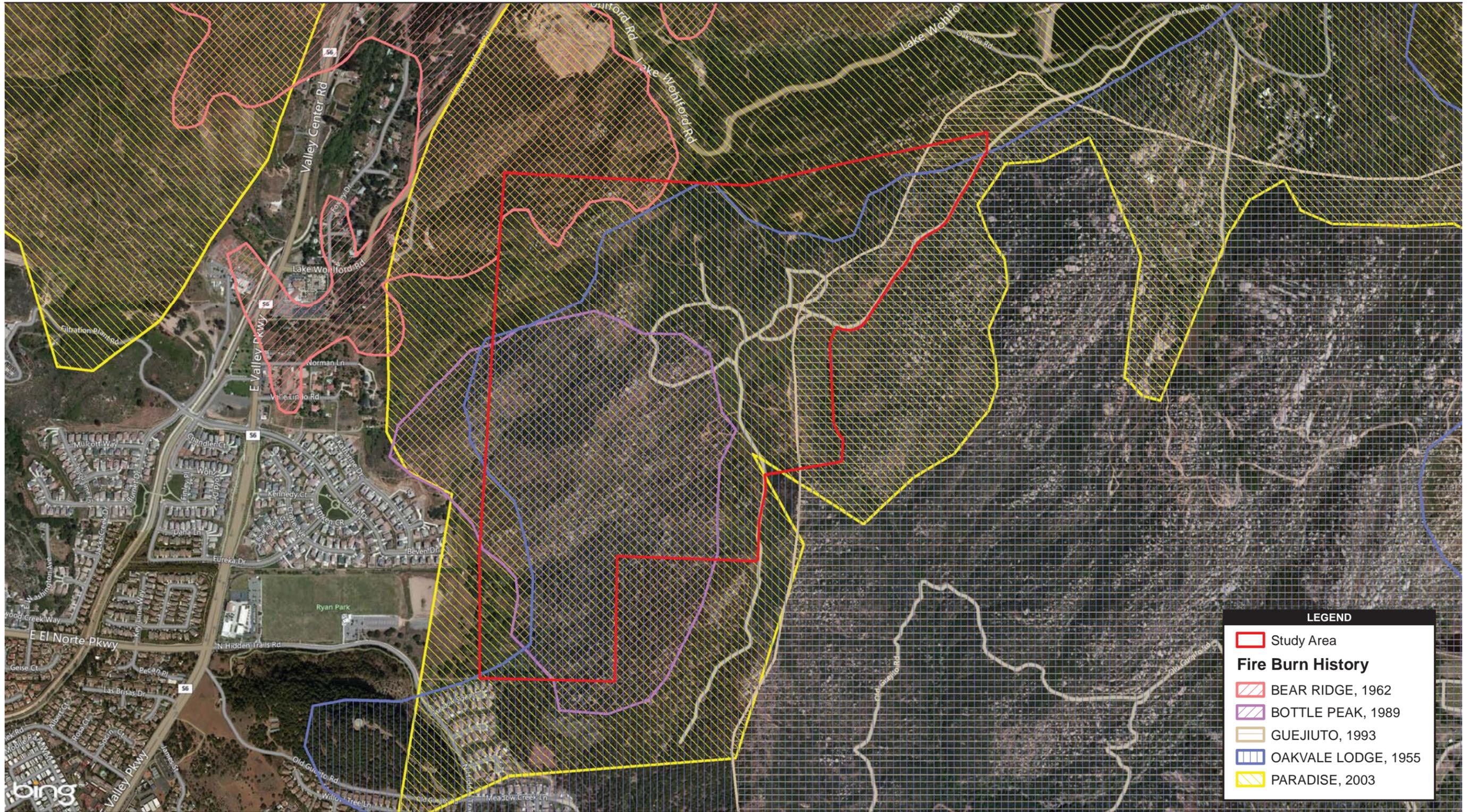
The Property is located in a saddle between watersheds (Figure 5). The northern and western portions of the Property drain into Escondido Creek, which flows through Escondido and enters the ocean through the San Elijo Lagoon. The headwaters of Escondido Creek are located in Bear Valley, just above Lake Wohlford (Escondido Creek Conservancy 2014). Lake Wohlford is the largest storage reservoir on the creek and is located approximately 0.25 mile northeast of the Property. Escondido Creek is channelized through approximately 6.25 miles of Escondido, with a portion of it contained underground beneath a major shopping center. The southern portion of the Property drains into a tributary to the San Dieguito River through San Pasqual Valley, upstream from Lake Hodges. Downstream from Lake Hodges, the San Dieguito River flows into the San Dieguito Lagoon at Del Mar and into the Pacific Ocean. Lake Hodges can hold up to 30,251 acre-feet of water and serves the San Dieguito Water and Santa Fe Irrigation Districts, and the City of San Diego. Lake Hodges relies solely on rainfall runoff; therefore, water levels at the lake are highly variable.

Flood periods occur occasionally in this region. The greatest flood on record occurred in January 1916, during which more than 19 inches of rain fell in the City of Escondido for the month (McGlashan and Ebert 1918). Other floods occurred in 1927 and more recently in 1980. The January 1916 flood is generally considered a 100-year flood, but the channel of Escondido Creek through Escondido was apparently designed to carry a 500-year level flood. In 1980, the San Dieguito River exhibited the largest spill since 1927 (Chin et al. 1991). The Property provides flow for both watersheds during flood periods.

5.2.4 Fire History

Based on historical fire data from the California Department of Forestry and Fire Protection and SANGIS.org, the Property has been affected by several different wildfires with parts of the property burning up to three times (Tables 7 and 8 and Figure 9). The most recent fire to burn the Property was the Paradise Fire of October 2003. The Paradise Fire burned the entire Property except for approximately 30 acres on the western slope. This 30-acre patch was apparently skipped over by the flames but was included in the larger-scale regional fire boundary. The Guejito Fire of 1993 burned approximately 39.88 acres of the Property. Two large fires, the Oakvale Lodge Fire of 1955 and the Bottle Peak Fire of 1989, burned approximately 77% and 41.5% of the Property, respectively.

Based on the historical fire map data (SANGIS 2014); the entirety of the Property has burned at least once during the period of time that fires have been mapped since at least 1955.



Source: SANGIS 2014; ESRI 2014; BING 2014

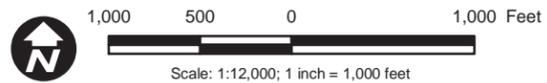


Figure 9
Fire History

This page intentionally left blank.

Approximately 183.38 acres or 48.19% of the Property has also burned three times: part in the Paradise Fire, the Bottle Peak Fire, and the Oakvale Lodge Fire and a portion of near the northeastern side in the Paradise Fire, Oakvale Lodge Fire, and Guejito Fire. The northwestern corner of the Property burned twice in the Bear Ridge fire and Paradise fire and the eastern side burned in the Paradise Fire and the Guejito Fire. Additional pieces scattered on the Property also burned in two other fires making a total of 138.05 acres or 36.27% of the Property. Approximately 15.54% of the Property burned only once. The acres of the total Property that has burned one, twice, or three times, and the percentage of the Property burned, are provided in Table 7. Fire interval information for the Property is provided in Table 8.

Table 7. Quantity of Times Burned for the Bottle Peak Property

Quantity of Times Burned	Acreage	Percentage
1	59.14	15.54%
2	138.05	36.27%
3	183.38	48.19%

Table 8. Fire Interval Data

Fire Year	Fire Name	Interval (years)	Acreage Burned	Percent of Property Burned
1955	Oakvale Lodge	--	293.35	77.08%
1962	Bear Ridge	7	14.08	3.7%
1989	Bottle Peak	27	157.98	41.51%
1993	Guejito	4	39.88	10.48%
2003	Paradise	10	380.09	99.87%

On average, the interval between fires is roughly 12 years for the Property; however, the individual portions of the Property have not burned that frequently since only a portion of the Property burned in three fires. Nearly the entire Property is covered with vegetation that is 11 years old associated with recovery since the 2003 Paradise Fire. Only a small inclusion that was passed over by the fire avoided being burned and it is only identifiable from specific examination of aerial photographs.

Younger-age vegetation is generally less flammable than old vegetation, particularly when the old vegetation contains large amounts of standing dead material. As the vegetation continues to recover, even with drought conditions with few above normal rainfall, the aging process will cause the vegetation to become more susceptible to new fires, especially during extreme weather conditions of heat, wind, and low humidity.

5.2.5 Vegetation Dynamics and Fuel Loads

Various models have been created to assess the behavior of fire in vegetation. Fuel models have been designed to address the variables associated with the vegetation communities that occur on the Property. A number of studies have evaluated these and several were reviewed in order to place the vegetation types into fuel models (Anderson 1982; Scott and Burgan 2005; Weise and Regelbrugge 1997, Andrews et al. 2008, Andrews 2009). Fuel model categories often utilized in the BehavePlus model are indicated in Table 9. These vegetation classifications follow the Holland/Oberbauer categories from Figure 3b. The model categories are included here for information purposes since the County standard model was used for the analysis in this plan as described in Appendix E.

Chaparral and sage scrub contain high levels of stem and leaf resin and they often retain dead plant material in addition to supporting a growth form that carries fire with high intensity. During extreme severe weather conditions of low humidity, high heat, and wind, the National Weather Service declares a Red Flag Warning indicating severe weather hazard for fires. During those conditions, fires may occur in most vegetation and will even burn younger-age vegetation, particularly if it has a high level of annual weed growth, though it might burn with lower intensity than if it was older. If nonnative invasive species become established, the frequency of fires in the overall area can be affected because high levels of dried annual fuels can become easily ignited (Brooks et al. 2004).

Table 9. Vegetation Communities and Associated Fuel Models for Bottle Peak Property

Vegetation Community Land Cover¹	Fuel Model	Acres	Percentage
Engelmann Oak Woodland	TU5	5.40	1.3%
Coast Live Oak Woodland	TU5	26.49	6.3%
Southern Mixed Chaparral	SH5	319.25	76.3%
Diegan Coastal Sage Scrub	SCAL18	62.52	14.9%
Nonnative Grassland	GR2	0.92	0.2%
Disturbed Habitat	GR1	3.18	0.8%
Total		418.39	100%

¹Holland Code is basis for models

Vegetation Dynamics

Vegetation contributes the greatest amount to fire behavior and modeling. Vegetation is dynamic in terms of varying over time. Succession of vegetation as it regrows following previous fires and drought are major factors that affect vegetation at any given time. The biomass on this Property will continue to increase over time as the shrubs grow larger following the Paradise Fire. Fires with short intervals may affect regrowth of shrub vegetation, particularly in areas with

fine soils. However, on this Property, even though fires have recently occurred, the shrubs have been replacing the grassy vegetation in areas that were cleared previously.

The Property is generally isolated from major urban development except for a relatively recently built housing development at the base of the slopes on the western side of the Property. It is probably more typical that ignitions from the housing area would burn upslope to the east to affect the Property; however, during a strong east wind, any fire that was ignited on the Property itself or on any land many miles to the east could be carried to the west onto the Property and downslope toward the nearby development. Fuel treatments may be necessary to prevent fire from entering the Property from the west or east as well as being carried through the Property into the surrounding areas.

Utilizing the standardized model in the County Report Format and Content Requirements Wildland Fire and Fire Protection (County of San Diego 2010) in which the Property is considered a Transitional Zone area, the County ran two scenarios for the BehavePlus model: Fuel Model 1 and Fuel Model 4. Model 4 represents more of an extreme condition than Model 1. Under Model 4, the maximum rate of spread of fire during extreme conditions may reach 1600 feet per minute with 87-foot flame lengths. However, under the more moderate model, maximum rate of spread is 730 feet per minute with flame lengths of 13 feet (see Appendix E).

Chaparral is the dominant vegetation on the Property, covering 319.25 acres or 76.3% of the Property. Sage scrub covers 62.52 acres or 14.9% of the Property. Coast live oak-dominated woodland is present in the drainages and a portion of the northern slopes constituting 26.49 acres or 6.3% of the Property while Engelmann oak-dominated woodland is found on the central rolling hills portion of the Property comprising 5.4 acres or 1.3% of the Property. Nonnative grassland is 0.92 acres or 0.2% of the Property within the area of the dried pond bottom. Disturbed land is 3.18 acres or 0.8% of the Property in the areas that have been graded for the roads and pads that remain as a result of the previous subdivision process.

Changes in the vegetation communities on the Property will occur with the lack of disturbance. The vegetation, particularly the shrubs, will continue to build biomass as they grow and, in many cases, retain dead material that may have broken off or been killed by drought. Coast live oak woodland recovery from a fire occurs as the branches extend outward and coverage of the understory becomes complete. The understory may consist of deep leaf litter that decays into an organic soil layer and little else. Engelmann oak woodland grows in a more open configuration with an understory of California buckwheat growing in the openings between the trees. Fire carried through the open woodlands in those cases behaves much like typical shrub fires but with the added dimension of the standing Engelmann oak trees generating longer-term heat.

Sage Scrub Fire Effects

Sage scrub generally grows on the western lower slopes and interior valley portions of the Property comprising 62.52 acres or 14.9% of the Property. On the western slopes, it grows on terrain that is relatively steep. It is dominated by aromatic shrubs that will lose their leaves during periods of drought and by the end of summer. Shrubs grow up to roughly 6 feet tall when fully grown. Typically, on steep slope land, fires start at the base of the slope and burn upward. In this case, the lower slopes and their proximity to a housing development provides a greater potential for fire ignition to occur and then burn upslope into the Property carried by the prevailing afternoon northwest winds. Fires during Santa Ana wind events may pass downslope across the Property into the adjacent lands, though burning downslope would normally only occur if a wind driving force was in effect.

In sage scrub habitat immediately following a fire, the first indication of recovery is the resprouting of laurel sumac (*Malosma laurina*). After the winter rains, large levels of germination of plants from seeds occur, including the shrubs that make up the habitat such as California sage brush (*Artemisia californica*), California buckwheat and plants such as sawtooth goldenbush (*Hazardia squarrosa*) at the same time an explosion of annual herbs occurs, including many that do not appear as adult plants for many years between fires. Annual weeds may also spread during this period. Under some conditions, they may spread extensively; however, on the Property, it appears that the weedy species have declined in area in spite of the fires that have occurred. Some of the herbaceous species that become apparent following fires are perennial geophytes, plants with bulbs and rhizomes, that exist in the soil but send up leaves and flowers the first few springs following a fire. The native annual species decline as the shrubs grow larger and overshadow them. Within 10 years, it may be difficult to tell that a fire had burned through the area except for a few skeletons of the larger woody shrubs that occur on the edges of this community.

The vegetation will continue to grow over time and the shrub cover will expand. Recovering shrub cover is less likely to burn in the first two decades following fire, but as the shrub cover ages it becomes more flammable. On this Property, the vegetation is nearly 11 years old.

Chaparral Fire Effects

The majority of the Property, 319.25 acres or 76.3%, is covered with mixed chaparral, a combination of broad leaved species such as wild lilac (*Ceanothus* spp.) and narrow-leaved species such as chamise. Shrubs generally grow to around 10 feet tall. Most are evergreen though they may lose a number of their leaves during extended dry periods. Following fires, plants such as mission manzanita (*Xylococcus bicolor*), scrub oak (*Quercus* sp.), and toyon (*Heteromeles*

arbutifolia) may resprout from underground root crowns that survive the burning of the upper part of the shrub. Others like *Ceanothus*, only reproduce by seed. Chamise, one of the most dominant shrubs, reproduces by both seed and resprouting (Conrad 1987; Keeley 1987).

The average fire interval on the Property is roughly 12 years as indicated from the fires that have occurred over the past 60 years. Historic fire frequency is more likely to have been in the range of 50 to 100+ years (Conard and Weise 1998; Zedler 1995). The number of ignitions in modern times is the result of the greater population in the region and higher probabilities for ignitions to occur.

Fire burn patterns for chaparral are similar to those described above for the sage scrub habitats. Fires usually consume the above-ground portion of the plants. Charred skeletons of the hard woody plants may stand for many years after the fire. The resprouting shrubs begin new growth relatively quickly following a fire. Following the winter rains, germination of the seed-reproducing species such as wild lilac and *Ceanothus* takes place. Large numbers of annual wildflowers such as phacelias, California poppies (*Eschscholzia californica*), fire poppy (*Papaver californica*), annual monkey flower (*Mimulus brevipes*), and ground pinks (*Linanthus dianthiflorus*) grow. Short-lived perennials such as golden eardrops (*Ehrendorferia chrysantha*) also appear. Geophytic plants such as death camas (*Toxicoscordion fremontii*), wild hyacinth (*Dichelostemma pulchella*), and Mariposa lilies (*Calochortus splendens*, *Calochortus weedii*) send up flowering stalks for the first few springs following a fire. Annual weeds may also spread into chaparral habitats during these periods; however, on this Property, the chaparral shrubs appear to be stable or advancing more than the weedy species are advancing even with the effects of fire.

Following a fire, the chaparral vegetative biomass will continue to increase for many decades unless a fire consumes the vegetation in the meantime. Some chaparral species live longer than others. Some of the obligate seeding wild lilac and other *Ceanothus* are thought to decline after long periods of time without fire though they are still represented in a seed bank that persists for very long times (League 2005). Other chaparral species may continue to grow unabated for additional decades to old ages. Periods of drought or stress may cause temporary die-back on some of the chaparral shrubs, and, in an area where wood decay is slow, the dead material accumulates until another fire occurs. Little seed reproduction of any kind occurs in chaparral between fire intervals (Zedler 1995).

Live Oak Woodland and Engelmann Oak Woodland Effects

Coast live oak woodland covers 26.49 acres or 6.3% of the Property. Fires that burn through coast live oak woodland are generally more slow moving than those in chaparral and sage scrub

vegetation. They also may continue to burn and smolder for a period of time after the fire front has moved past the area. Coast live oak trees are generally resistant to fires due to their thick bark though some mortality occurs for adult trees due to stresses from disease or drought that has weakened the trees (Steinberg 2002). The level of flammable understory growth also plays a role in determining how much mortality trees undergo during fires. Following a fire, upper branches typically resprout producing new growth. If the main trunk is damaged, the trees may also resprout from the base. The level of mortality and affected ability to resprout depends on a number of factors, including the severity of the weather conditions such as heat and humidity, and the intensity of the fire resulting from understory, adjacent vegetation, and level of standing dead material in the area. While large oak trees are resistant to damage from fire, younger trees are much more susceptible to damage from fires (Plumb 1980). Recovery of trees from fires may take several years.

Engelmann oak woodland has similar responses to fire as live oak woodland. However, because Engelmann oak woodland is more open and intermixed with shrub vegetation, it may have a different burning scenario. Engelmann oak trees are resistant to mortality from fires due to their thick bark. They may be affected by the intensity of fire associated with the surrounding shrubs; however, they are more typically associated with the lower sage scrub vegetation than heavy, woody chaparral.

Grassland Fire Effects

Annual grassland response to fire depends on the season in which the fire occurs; the height of the vegetation depending on the rainfall of the previous season; and the variables of wind speed, temperatures, and humidity. In some cases, burning annual grassland may enhance the reproduction of native annuals; however, it also may stimulate the spread of nonnative species. The best time for burning of species to enhance native species is when the native plants have dispersed their seeds but the nonnatives are still in the fruiting stage (DiTomaso and Johnson 2006). On this Property, the grassland habitat is predominantly confined to the area of the dry pond basin. If it rains enough to fill the pond, grassland habitat will be very limited on the Property and its flammability will not be an issue. While the pond is dry, which is the majority of the time, the grassland is still relatively limited and of low overall effect in influencing the fire behavior of the Property.

Fire Behavior

The County of San Diego Report Content Requirements (2010) regarding Wildland Fire and Fire Protection provides information regarding fire behavior modeling fire behavior modeling provides reasonably accurate representations of how wildfire would move through available

fuels in high-fire hazard areas. The Fire Behavior Model is a tool for fire authorities to estimate the behavior of fire that is moving across the vegetated landscape given certain assumptions. The Behavior Models are only an estimate and are not designed to replace eye-witness accounts or the experience of the local fire authority having jurisdiction who is familiar with wildland fire behavior. Additional information on the fire behavior assessment for the Property is included in Appendix E.

5.3 FUEL MANAGEMENT METHODS

Successful fire management requires pre-planning and utilization of fire prevention techniques and strategies. A majority of the Property has been fire-free for over 11 years. Management of fuels is an important component of overall Property management. No part of the Property exists within 250 feet of any structure. However, the entire Property could be considered as part of the Wildland Urban Interface (WUI) because it is entirely identified as Very High Fire Hazard Severity Zone. The Property has been divided into two Vegetation Management Units (VMUs) based on topography (Figure 10). One contains the slopes on the western side of the Property and the other is the remainder of the Property. VMU-specific fuel reduction recommendations are provided in Section 6.3. General fuel management methods and their suitability for use in the Property are discussed below.

5.3.1 Grazing

Animal grazing is a tool that can be used manage the vegetation on the Property, depending somewhat on whether it is intended that low-level vegetation, lower than 3 feet tall, is desired to be maintained on the Property. Grazing by cattle would generally be most effective in the central valley portion of the Property where slopes are not as steep, and goat grazing could be directed to areas where slopes are greater. However, in all cases, monitoring would be needed to ensure that the grazing animals are not dispersing nonnative weed species onto the Property and type converting the vegetation to a weed-based community. Furthermore, it is only a temporary control and needs to be used on a regular basis to be effective. Currently, there is no pressing need to introduce grazing. However, the method should remain an option for specific applications adjacent highly sensitive habitats, adjacent roadways and potentially in areas that are considered fuel modification zones.

5.3.2 Mowing

Controlled mowing can be a successful method for reducing fuel loads and can be compatible with Property management goals. Its usefulness, however, would be generally limited to areas adjacent to roads and trails. Again, it would need to be monitored to prevent it from causing a

permanent conversion of the vegetation into a grass or weedy habitat. Therefore, mowing should be conducted in late spring after weedy annuals have stopped growing but have not yet produced viable seed (Bell 2009).

5.3.3 Herbicides

Chemical means to control fuels/nonnative plants may be an effective method for reducing fire hazard, but it might be more appropriate for controlling specific outbreaks of weedy species. Herbicide use for fuel vegetation management may be more problematic due to the scale needed to be effective in addressing flammability of vegetation. Herbicides could be used in specific treatments for difficult issue areas.

5.3.4 Prescribed Fire

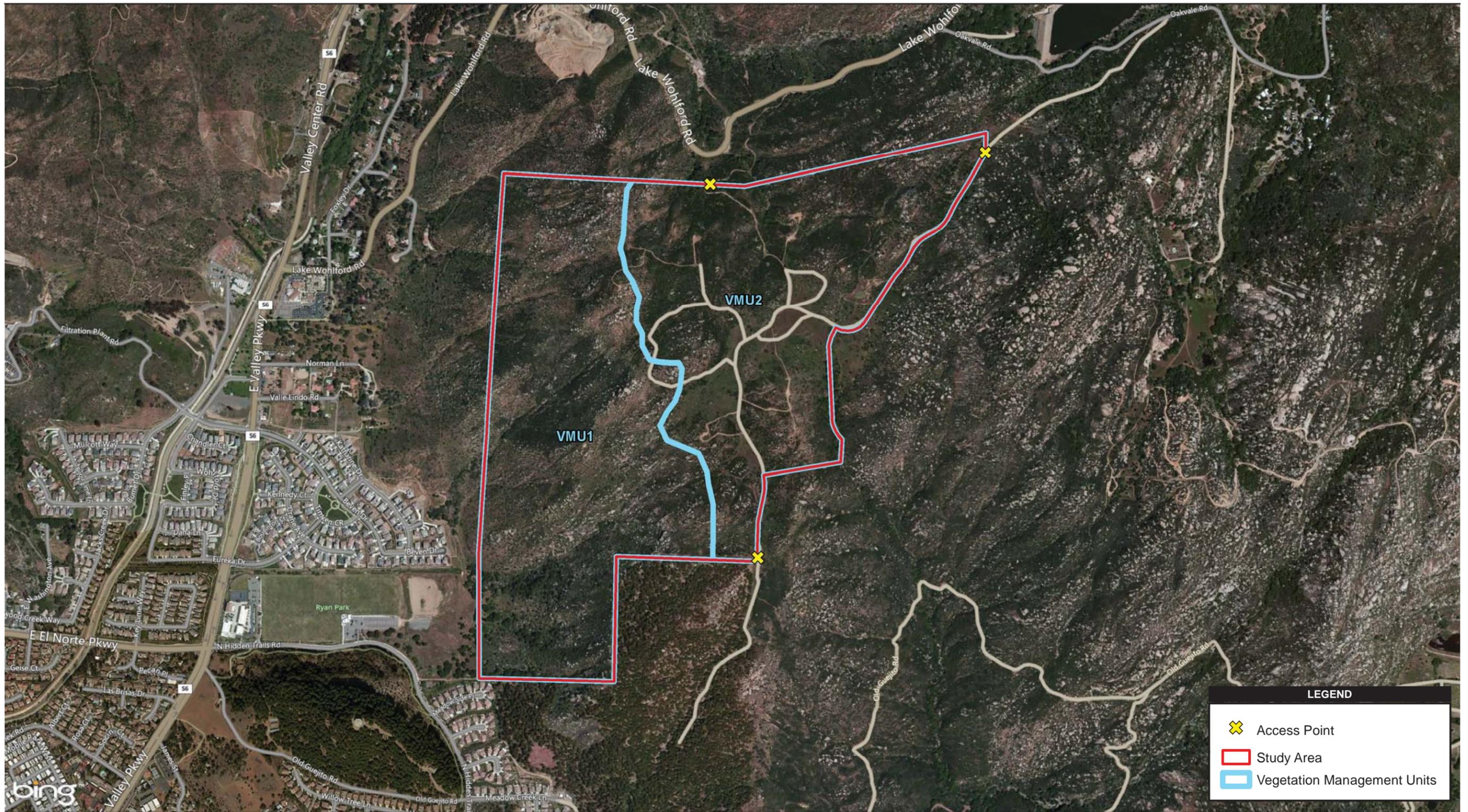
Prescribed fire occurs in two forms: (1) fire from external ignitions that may occur naturally through lightning strikes or incidental human ignitions that are allowed to burn through areas where there is no threat to life and property and (2) intentional, managed fires.

It is unlikely that fire from external ignitions, either natural or incidental human ignitions, would occur in a manner and under conditions that could be managed as the fire approached urban lands to the west of the Property. Therefore, it is not likely that external ignitions would be utilized as prescribed fire. Generally, if a fire was started in the area and was not part of a particular fire management operation, the desire would be to extinguish it.

Intentionally managed fires are designed for reducing fuels primarily for public safety or habitat improvement, and are regulated by applicable laws. Where prescribed burning is feasible, it shall be conducted under permit from CAL FIRE, or under contract with CAL FIRE under the statewide Vegetation Management Program. Prescribed fire on the Property is a potentially feasible operation. However, it would be necessary to create barriers on the Property to prevent the fire from escaping or burning portions of the Property where not intended. Prescribed fire can only be implemented by CAL FIRE, or a similar fire authority with experience and certifications to conduct burns. Prescribed fire can be the least expensive form of fuel reduction and it could be a feasible option in the future when and if it is determined that significant portions of the vegetation needed to be treated.

5.3.5 Hand Tool or Mechanical Equipment Thinning

Thinning can reduce fuel continuity and loading by selective removal of dead and dying vegetation, reduction of vegetation density in selected locations, and nonnatives. This type of



Source: ESRI 2014; BING 2014

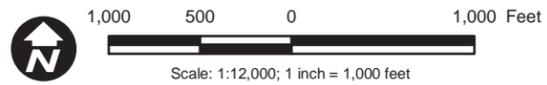


Figure 10
Vegetation Management Units

This page intentionally left blank.

fuel reduction is most useful in the interface and intermix areas around high-value resources, such as residences on the southwest side of the Property. Adjacent residences would have to maintain their own defensible space off the Property, but - extensions should be provided on the County though it appears that it is not currently necessary since no structures are within 250 feet of the Property boundary. If thinning was considered necessary, it is recommended to occur on an annual basis prior to June for fuel modification areas associated with off-site residences or other habitable structures. Thinning is appropriate anywhere in the Property where insect or disease outbreaks, frost, or drought has resulted in dense, dead vegetation.

5.3.6 Fuel Breaks

Fuel breaks provide areas of removed fuels that may play an important role in helping contain wildfires. The local fire departments and CAL FIRE attempt to minimize impacts to sensitive resources when fighting fires in wildlands. When feasible, fires are usually allowed to run to preexisting breaks, including trails and roads. These locations then serve as a defensive position for fighting the fire. Judging by the previous fire patterns, this has occurred on the Property in the past. The existing access road network through the Property and existing fuel modification zones outside the Property boundary on the west adjacent to residential residences generally meet the anticipated fuel break requirements for the Property.

5.4 FIRE RESPONSE PLAN

The Valley Center Fire Protection District (VCFPD) was formed by a majority vote of the people in 1982. VCFPD has a five-member elected Board of Directors. VCFPD contracts with the San Pasqual Reservation Fire Department for a Fire Chief and six Fire Captains. VCFPD averages 30 firefighters, who are District employees. The firefighters are considered career employees, not volunteers. A District Fire Marshal, a District Administrator, a Secretary, and a part-time bookkeeper are also employed.

VCFPD has two fire stations staffed with one San Pasqual Captain and three Firefighters daily on each front line engine. VCFPD owns three front-line Type 1 Fire Engines, one Rescue Squad, and one Type 2 Fire Engine. VCFPD also contracts with the County of San Diego for funding of a paramedic ambulance transport service provided by Mercy Ambulance Transportation Inc. This is an exclusive operating area that covers most of the northeast unincorporated area of the County.

VCFPD and CAL FIRE would be the primary responders to the Property. It is expected that VCFPD and CAL FIRE would be the primary agencies involved in wildland fire suppression on the Property. VCFPD is served by CAL FIRE and a San Pasqual Reservation Fire Department

Station. Land to the west of the Property, including the urban development, is within the City of Escondido and served by the Escondido Fire Department.

Working with CAL FIRE and the San Pasqual Reservation Fire Department, VCFPD is able to provide response in the area of the Property to structure fires, wildfires, and medical and associated emergencies. CAL FIRE has firefighting personnel and apparatus available throughout San Diego County that can be called upon for responding to wildfires within or in the vicinity of the Property. The following equipment is available:

- Air tankers
- Helicopters
- Air-tactical aircraft (AA)
- Various engine types
- Crew transports
- Bulldozers
- Communications centers

CAL FIRE utilizes three levels of dispatch and response based upon weather conditions and time of year. The three levels are:

- Low – includes two engines with three personnel each
- Medium – includes three engines (Type III) with three personnel each, one Battalion Chief, one mid-sized bulldozer, one Type III helicopter, and one 16-person hand crew
- High – includes five engines with three personnel each, one Battalion Chief, two medium-sized bulldozers, one AA, two air tankers, and one Type III helicopter.

Dispatch levels are based on weather conditions. Low dispatch occurs during the winter months from November through May. Medium and high dispatch occur during the normally declared fire season, which is June through October. There is some variation in the timing of the dispatch levels, based entirely on weather.

Fire Suppression Air Support with fire retardant drops may be a component of responses to the entire Property especially under conditions that would accelerate wildfire spread. Under extreme conditions, or at night, air support may not be available, and in these situations, response categories may become secondary to public safety.

In some cases, a fire passing through preserved lands such as the Property has moved into nearby urban areas. Response to a fire within the Property will likely include the use of existing access roads for firefighting personnel, Type I engines (limited to off-site paved roadways), Type III engines, fire crews, air attack and fire retardant, helicopters, and air tankers. On-site existing dirt roadways are all less than the required 20 feet in width. The central road onto the site from the north has portions that are nearly 15 feet in width but the majority of the other roads from the northeast and the south are between 8 and 10 feet wide with heavy erosion in places and not suitable for general access by fire trucks. Fire suppression actions may include direct attack with engines, fire crews, helicopters, and firing operations. Line construction activities within the Property would be best carried out by hand crews. Dozers/road graders may be activated but should not be put into operation on the Property itself unless necessary for improving existing roads for engine access or constructing line or secondary line for preservation of high-value resources, including plant and animal species, habitats, people, or property. Following fires, vegetation rehabilitation should take place to remediate any physical disturbance that occurs due to fire suppression activities.

5.4.1 Fire Hazard and Current Fire Management Practices Evaluation

Based on specific data analysis, the Property includes an ongoing fire hazard that can result in significant fire intensity and spread during extreme weather events. This section presents a discussion of fire hazard situations for the Property. This information was collected during initial Property analysis and reviews of project data, fire behavior modeling information, and high-resolution aerial imagery, and it was integrated into the preparation of this document and associated recommendations.

1. Based on topography, vegetation, and fire history of the region, a large conflagration during Santa Ana wind conditions will likely enter the Property from the east, traveling across Rancho Guejito and down toward Escondido as seen with the Paradise Fire in 2003. Fires during typical on-shore wind patterns are likely to enter the Property area from the adjacent urban lands in the City of Escondido in the vicinity of Valley High School or from Lake Wohlford Road outside the northwestern corner of the Property lands.
2. The Property area can be primarily classified as WUI representing the wildland part of the spectrum with undeveloped and often inaccessible lands to the east. There are a few roads that can serve as access and areas from which treatment may occur including Old Guejito Road; however, Old Guejito Road does not traverse the entire area.
3. Potential ignitions include a variety of residential-related sources including structure fire, hot works, and yard machines to the west but there are maintained open areas

surrounding the houses in that location that would limit those types of fires. During Santa Ana east wind events, the Oakvale Road area housing could be a source of fire. Accidental fire from adolescents living in the area and accessing the Property would be a potential source for ignitions as well. Ignition sources not associated with residential development include vehicular-associated ignitions (e.g., car fire, catalytic converter, tossed cigarette, etc.) along Lake Wohlford Road and Oakvale Road. Additional nonresidential ignition sources include electrical transmission lines near the Property, accidental fires from transient inhabitants of the area, and arson.

4. Wildfires fueled by Santa Ana winds may move rapidly across the Property. Chaparral fuels will be the predominant carriers of fire across the Property. Steep slopes on the west of an elevated shallow valley at the base of the steep Bottle Peak typify the topography of the Property. Fires in the smaller grassland areas move very quickly when carried by wind. Fires in chaparral or sage scrub fuels will move more slowly, but will produce greater flame lengths (greater than 20 feet) and associated heat output (in excess of 5,000 British thermal units).
5. A fire originating in a structure within approximately a 1-mile radius of the Property could result in burning embers landing within the Property, potentially resulting in vegetation ignition if there is a receptive fuel bed.
6. In general, fires that burn through the Property are more likely to be the result of ignition sources that occur outside of the Property lands, either far to the east, west, or potentially the north.

Based on current roadways, firefighting access is good for the northern side of the Property but limited on the east and southern portions. As mentioned above, it is likely that the existing road through the Property was used in the past as a base from which to fight fires including the use of back fires and other techniques. Air attack will be an important component for firefighting but may not be available or usable depending on the extent of the fire event and/or the time of day and weather conditions. Firefighting in the western portions of the Property is expected to be driven primarily by structure protection efforts, given the more significant urban interface with adjacent natural land at the bottom of the slopes. Air attack in this area may also be an important component depending on fire intensity and spread rate, but may not be available or usable depending on the extent of the fire event, the time of day, weather conditions, and proximity to overhead power lines.

The catastrophic wildfire threat for the Property is extreme when severe fire weather occurs, which will coincide with Red Flag Warning periods. Red Flag Warnings are declared by the National Weather Service and are issued when sustained winds are greater than 25 miles per

hour (mph) (with gusts greater than or equal to 35 mph) and relative humidity is 15% or lower (for at least 6 hours) or dry lightning occurs with more than isolated coverage (National Weather Service, San Diego Office 2012).

Beyond these provisions, fire management practices are restricted to response and tactical suppression efforts associated with wildfires originating on or burning onto the Property. No active fire or fuels management plans are currently employed on the Property.

5.4.2 Primary Actions and Contacts for Wildfire Emergency

The following persons/agencies should be contacted in the event of a wildfire on the Property or for information regarding fire management activities.

CAL FIRE

San Diego Unit

Emergency: 911

Non-Emergency – Unit Chief, El Cajon: (619) 590-3100

Website: <http://www.fire.ca.gov/>

Valley Center Fire Protection District Station 73

28205 N. Lake Wohlford Road

Valley Center, CA 92082

Emergency: 911

Non-Emergency (760) 751-7600

Website: <http://www.vcfd.org/>

5.4.3 Roads/Access

Road access in the Property is from the north off of Lake Wohlford Road approximately 1.5 miles east of the intersection with Valley Center Road or from Oakvale Road approximately a half a mile east of the intersection with Lake Wohlford Road (see Figure 10). A network of dirt access roads exists throughout the central portions of the Property; however, they do not meet minimum the 20-foot requirement for fire access vehicles due to their narrow width (generally less than 10 feet) and eroded nature. Access down the steep western slopes does not exist due to the terrain. Primary access is gained from the Lake Wohlford, Oakvale Road access.

5.4.4 Fuel Breaks

The existing road network throughout the Property area, and the existing fuel modification zones outside the Property boundary on the west adjacent to residential residences currently serve as fuel breaks. The existing road network (paved and dirt) in the Property area already provides numerous breaks in fuel continuity; therefore, creation of additional fuel breaks at this time is not recommended.

However, the need for fuel breaks is dependent on the specific conditions of a fire. If new fire breaks are required, the locations should be coordinated with the Incident Command Team where possible. The Incident Command Team includes the District Park Manager and fire agency staff with access to location information on sensitive biological and cultural resources that should be avoided, if possible. Fuel breaks created during fire episodes should be rehabilitated after the fire has been extinguished.

5.4.5 Emergency Staging Areas

Staging areas important for incident command, and to organize, plan, and implement firefighting strategies, typically occur on areas that are protected from fire and large enough to store vehicles in transition. They usually cause higher ground disturbance from personnel, vehicles, and equipment in confined areas. Staging areas for fires that affect the Property will likely occur off-site in well-defended, lower hazard areas.

5.4.6 Fire Hydrants

Fire hydrants are located within residential development areas off-site to the west and within the City of Escondido. Fire hydrants may be utilized during a fire event to refill engines, as necessary, provided agreements are in place for their use.

5.4.7 Other Water Sources

Other water sources that may be available during a wildfire event within the Property include:

- Lake Wohlford, approximately 0.2 mile from the northeastern corner of the Property area, could provide helicopter dipping access.
- Dixon Lake, approximately 1 mile to the west of the Property boundary, may also be available for helicopter dipping access.

6.0 MANAGEMENT DIRECTIVES

This section provides recommendations for vegetation management within the Property including management directives specifically related to: invasive species management; habitat restoration; and fire management.

6.1 INVASIVE SPECIES REMOVAL

The short-term management directives below address high-priority invasive species removal while longer-term management directives consider invasive species for their risk of reducing vegetation community quality over time.

Management Directive Invasive 1 – Remove and Control High-Priority Invasive Nonnative Species. Remove aggressive, invasive nonnative plant species and those with a high fire hazard within the Property, including saltcedar, as soon as possible. The eucalyptus trees on the Property are limited and not likely to spread.

Management Directive Invasive 2 – Identify and Pursue Funding for Long-term Invasive Nonnative Plant Control. Coordinate with other agencies, non-profit organizations, and/or volunteer groups to seek funding and implement invasive, nonnative plant removal projects for moderate and low-priority nonnative species within the Property.

Management Directive Invasive 3 – Conduct Invasive Nonnative Species Monitoring. Continue to monitor other identified nonnative species within the Property to determine if removal efforts are warranted in order to maintain and/or improve the quality of the existing native vegetation communities on the Property.

Management Directive Invasive 4 – Educational Outreach. Prepare and implement an invasive nonnative plant species educational outreach program/materials to reduce use of these plants by adjacent property owners and potential land managers.

6.2 RESTORATION

The primary management directives for native vegetation community restoration include:

Management Directive Restoration 1 – Restore Native Vegetation Community Quality and Function. Restore the identified degraded areas to reestablish and/or enhance the biological functions and values of native vegetation communities in these areas.

1A – Passive Restoration. Perform weed and erosion control as needed in disturbed areas where natural recruitment of native plant species is actively occurring.

1B – Active Restoration. Conduct soil preparation and native planting of disturbed or degraded areas where native vegetation recruitment is not actively occurring.

Management Directive Restoration 2 – Address Long-term Restoration Needs. Restoration activities should occur following landscape changing disturbances that remove, damage, degrade, or alter the existing native vegetation communities. Restoration methods will be customized to the Property, based on the type of disturbance, and will require preparation and implementation of a restoration plan. Restoration will incorporate active revegetation, including:

- Native vegetation community establishment/creation
- Native vegetation community enhancement
- Removal of invasive plants when they are young
- Application of herbicides, pesticides, and fertilizers if needed
- Application of supplemental irrigation if needed.

Management Directive Restoration 3 – Monitor Invasive Nonnative Plant Removal Sites. Continue to monitor invasive species removal sites to ensure that passive natural recruitment is successfully occurring in these areas.

Management Directive Restoration 4 – Monitor Native Vegetation Community Quality. Continue to monitor the quality of native vegetation communities throughout the Property using comparative vegetation mapping over time and evaluation of potential type conversions.

Management Directive Restoration 5 – Monitor Pests and Disease. Monitor the presence of disease or pest levels to determine outbreaks and prescribe an active treatment, as appropriate.

6.3 FIRE MANAGEMENT

The long-term strategic fire management plan considers strategic fire prevention activities, fire suppression with regard to fire effects on habitat, and post-fire monitoring and rehabilitation. The long-term strategic fire plan for the Property must prioritize public safety while meeting habitat management goals. Management directives are as follows.

Management Directive Fire 1 – Fire Suppression: Fire suppression, in combination with other management methods in targeted Property habitat management areas, is the priority for the Property (11-year-old vegetation) composed of southern mixed chaparral. Lengthening the fire return cycle to an optimal frequency will require fuel reduction experiments, research,

monitoring, and analysis as part of the overall management approach. The optimal fire frequency in southern mixed chaparral may be from 50 to 100 years or more (Conard and Weise 1998). It may be difficult to achieve the longer fire return intervals given the current and projected ignition sources that may affect the Property. However, results of site specific data analysis will more firmly establish the optimal return intervals to meet habitat goals, or if additional steps need to be implemented, to lengthen the return of fire.

Management Directive Fire 2 – Maintain Fuel Modification Zones. No fuel modification zones currently exist on the Property. They may be considered along the road into the Property in order to maintain access; however, that would not be suggested at this time. Maintaining the road would serve to provide suitable management control areas at this time. Manual thinning of vegetation along the road through the Property would be an important measure at this time.

Management Directive Fire 3 – Delineate Fuel Modification Areas. Consider fuel modification areas along the lower slopes of the Property near the residential development that occurs outside of the Property.

Management Directive Fire 4 – Access Data Sharing. Maintain local fire agency gate locks and report any notice of removed or missing locks to the appropriate fire agency. Signs should be installed indicating access limitations and extents (map form) and provide road quality to local fire responders. This information will be included in the responder's wildland pre-response plans, resulting in more efficient responses. Information readily accessible by responders not familiar with the area, such as out-of-County or out-of-state responders, will improve fire fighter safety.

Management Directive Fire 5 – Control Illegal Access. Continue to restrict off-highway vehicles and shooting access. These are potential ignition sources that must be managed through restricting access (e.g., continued use of fence, gates, signage) and by establishing a high-profile presence of park ranger staff. The legality of the presence of existing inhabitants within and adjacent to the area needs to be evaluated. If trespassers are present, they should be removed.

Management Directive Fire 6 – Educational Outreach. Private property owners in the interface or intermix (located adjacent to the Property) should be encouraged to play an active role in reducing the potential fire hazard. It will also be beneficial if the public understands the management actions occurring on the Property, such as grazing, mowing, and herbicides, as applicable. As such, this VMP recommends a concerted effort to reach property owners who are situated in locations that may be affected by wildfire on the Property or whose properties and actions may serve as Property ignition sources. Educational material can be customized for these homeowners to include discussion of the importance of the Property. Standard measures for

implementing a 100-foot fuel modification/defensible space zone can be provided from materials available from CAL FIRE and from the County of San Diego Department of Planning and Development Services. As part of the public education program, adjacent private property owners should be encouraged to participate to help curb illegal access and report potential problems.

Management Directive Fire 7 – Reduce Ignition Sources: Ignition sources are present near the Property. Adjacent sources include roadways with vehicular travel, especially Lake Wohlford Road and Oakvale Road, adjacent residences, and recreational users, among others. It is not possible to remove all sources of ignition. Rather, reducing the potential spread of wildfire onto or throughout the Property is recommended. Fuel modification buffers outside the Property edges near existing homes is provided in some instances, but will need to be provided for all adjacent ignition sources so that the source has 30 to 100 feet of fuel modification with half the fuel as an unmodified vegetation stand. Likewise, fuel reduction (especially nonnative trees) beneath nearby transmission lines, as appropriate, and along utility line access roadways/trails will reduce the likelihood of ignitions and fire spread from the line or from vehicles on the access roads.

Management Directive Fire 8 – Conduct Recommended Fuels Management. Conduct fuels management using the identified VMUs, as feasible and as presented in Table 10. Table 10 provides a summary of the high-value resource areas acknowledged for the Property and the associated fire prevention strategy recommended for achieving long-term management goals.

Management Directive Fire 9 – Post-fire Management and Erosion Control. Provide controls following fire events to stabilize soils in the burn area and minimize potential for erosion. Erosion control best management practices, such as mechanical rehabilitation treatments including straw mulch, hay bales, and jute rolls, should be in place as soon as possible after a fire and prior to the onset of the winter rainy season. Care should be taken to select and inspect these materials so they are not a source of invasive nonnative plants. The use of certified weed-free hay is good policy (Bell 2009). This may be particularly important along the bottom of the steep slopes on the western edge of the Property where erosion could affect adjacent land development.

Table 10. Fuel Management Activities by VMU

VMU	Sensitive Resources	Fuel Reduction Practice
<p>1 Area: 200.4 acres</p>	<p><u>Sensitive Plant Species:</u> Engelmann oak</p> <p><u>Sensitive Animal Species:</u> Coronado skink Belding’s orange-throated whiptail Coastal whiptail Coast horned lizard Coast patch-nosed snake Turkey vulture Southern California rufous-crowned sparrow Pallid bat Greater western mastiff bat Mule deer</p>	<p>VMU 1 consists primarily of mixed chaparral with a portion of sage scrub habitat especially on the lower western slopes. The land is mostly very steep and west-facing slope land. The majority of the vegetation is 11 years of age; however, a portion of the center of this VMU consisting of approximately 30 acres did not burn in the Paradise Fire of 2003 and existed as an area skipped over by the fire. That area burned in 1989 making it 25 years old.</p> <p>Fuel treatment in VMU 1 should be limited to potential thinning of vegetation on the southwest corner of the Property near the residential lands in the City of Escondido. Engelmann oaks and coast live oaks occur in that area as well. These trees should not be treated by any management actions.</p>
<p>2 Area: 180.2 acres</p>	<p><u>Sensitive Plant Species:</u> Engelmann oak</p> <p><u>Sensitive Animal Species:</u> Coronado skink Belding’s orange-throated whiptail Coastal whiptail Coast horned lizard Coast patch-nosed snake Turkey vulture Barn owl Olive-sided flycatcher Dulzura pocket mouse Pallid bat Greater western mastiff bat Mule deer</p>	<p>VMU 2 consists of mostly chaparral with a smaller portion of sage scrub habitat and oak woodlands. This vegetation is more dense and rapidly recovering since the 2003 fire into a dense chaparral community.</p> <p>Fuel treatment in VMU 2 should be limited to thinning activities to take place along the road into the Property from the north. Invasive species removal for tamarisk and several species of thistle and grass would be the most effective treatments for this area. The eucalyptus trees on this portion of the Property are very limited and may not pose a fire or invasive plant hazard.</p>

This page intentionally left blank.

7.0 REFERENCES

- AECOM. 2015. Biological Diversity Baseline Report for the Bottle Peak Property, County of San Diego, Department of Parks and Recreation.
- Anderson, H. E. 1982. Aids to determining fuel models for estimating fire behavior. United States Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station Ogden, Utah General Technical Report INT-122
- Andrews, P. L. 2009. BehavePlus fire modeling system version 5.0: variables. General Technical Report RMRS-GTR-213WWW Revised. Rocky Mountain Research Station, Forest Service, United States Department of Agriculture. 112p.
- Andrews, P. L., C. D. Bevins, and R. C. Seli. 2008. BehavePlus fire modeling system Version 4.0: User's Guide. General Technical Report RMRS-GTR-106WWW Revised. Rocky Mountain Research Station, Forest Service, United States Department of Agriculture. 117p.
- Bean, L. J., and F. C. Shipek. 1978. Luiseño. In California, edited by Robert F. Heizer, pp. 550–563. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.
- Bell, C. E. 2009. Invasive Plants and Wildfires in Southern California. University of California, Division of Agriculture and Natural Resources Publication No. 8397. August 2009.
- Bossard, C. C., J. M. Randall, and M. C. Hoshovsky. 2000. Invasive Plants of California's Wildlands. University of California Press. Berkeley, CA, Carla C. Bossard, John M. Randall, Marc C. Hoshovsky, Editors, 360 pages, 133 color photos, 76 line illustrations, 79 maps. University of California Press.
- Bowman, R. H. 1973. *Soil Survey of the San Diego Area, California, Part I*. United States Department of Agriculture, Soil Conservation Service and Forest Service in co-operation with University of California Agriculture Experiment Station, United States Department of Interior, Bureau of Indian Affairs, Department of the Navy United States Marine Corps. Soil Survey San Diego Area, California. 104 pages and 76 maps.

-
- Brooks, M. L., C. M. D'Antonio, D. M. Richardson, J. B. Grace, J. E. Keeley, J. M. DiTomaso, R. J. Hobbs, M. Pellant, and D. Pyke. 2004. Effects of Invasive Alien Plants on Fire Regimes. *Bioscience* 54(7):667–688.
- CAL FIRE. 2009. Fire Hazard Severity Zones in State Responsibility Areas: San Diego County. Available at http://frap.fire.ca.gov/webdata/maps/san_diego/fhszl_map.37.jpg. Accessed September 17, 2014.
- California Invasive Plant Inventory Database, California Invasive Plant Council. Available at <http://www.cal-ipc.org/paf/>. Accessed July 29, 2014.
- Cal-IPC Watchlist. Available at http://www.calflora.org/app/ipl?list_id=px141.
- California Department of Food and Agriculture Plant Health & Pest Prevention Services. 2014. California Noxious Weeds. http://www.cdfa.ca.gov/plant/ipc/weedinfo/winfo_table-sciname.html.
- Chin, E. H., B. N. Aldridge, and R. J. Longfield. 1991. Floods of February 1980 in Southern California and Central Arizona. U.S. Geological Survey Professional Paper 1494:1–135.
- Conard, S. G. and D. R. Weise. 1998. “Management of Fire Regime, Fuels, and Fire Effects in Southern California Chaparral: Lessons from the Past and Thoughts for the Future.” In *Fire in Ecosystem Management: Shifting the Paradigm from Suppression to Prescription*, edited by Teresa L. Pruden and Leonard A. Brennan, pp. 342–350. Proceedings of the 20th Tall Timbers Fire Ecology Conference.
- Conrad, C. E. 1987. *Common Shrubs of Chaparral and Associated Ecosystems of Southern California*. General technical report PSW-99. Berkeley, California: U.S. Department of Agriculture, Pacific Southwest Forest and Range Experiment Station.
- County of San Diego. 2009. *Vegetation Management Report: A Report On Vegetation Management in the Unincorporated Area of San Diego County*. Department of -Planning and Land Use. 97 pages (48 pages plus appendices)
- County of San Diego. 2010. *County Of San Diego Report Format and Content Requirements Wildland Fire and Fire Protection*. Land Use Environment Group, Department of Planning and Land Use, Department of Public Works. 18p.

-
- DiTomaso, J. M. and D. W. Johnson (eds.). 2006. *The Use of Fire as a Tool for Controlling Invasive Plants*. Cal-IPC Publication 2006-01. California Invasive Plant Council: Berkley, CA. 56 pp.
- DiTomaso, J. (ed). 2013. *Weed Control in Natural Areas in the Western United States*. U.C. Davis Weed Research and Information Center. 544 pages.
- Escondido Creek Conservancy. 2014. About the watershed. <http://escondidocreek.org/the-watershed/> Accessed September 22, 2014
- Global Invasive Species Database. 2014. *Sonchus asper*. Global Invasive Species Database. Available at <http://www.issg.org/database/species/ecology.asp?si=1450&lang=EN>. Accessed August 5, 2014.
- Holland, R. F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Unpublished report. California Department of Fish and Game, Natural Heritage Division, Sacramento, California.
- Johnson, W., Kendig, A, Smeda R., and F. Fishel. 1997. Johnsongrass Control G4872. University of Missouri Extension, Department of Agronomy. <http://extension.missouri.edu/p/G4872>. Accessed April 27, 2015.
- Keeley, J. E. 1987. Role of Fire in Seed Germination of Woody Taxa in California Chaparral. *Ecology* 68(2): 434–443.
- Kroeber, A. L. 1925. *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78. Washington, D.C. Reprinted 1976.
- League, Kevin R. 2005. *Ceanothus cuneatus*. In *Fire Effects Information System*, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available at <http://www.fs.fed.us/database/feis/>. Accessed September 24, 2014.
- McGlashan, H. D., and F. C. Ebert. 1918. Southern California Floods of January, 1916. United States Geological Survey Water-Supply Paper 426:1–80.
- Minnich, R. A. 1983. Fire Mosaics in Southern California and Northern Baja California. *Science. New Series* 219(4590):1287–1294.

-
- Minnich, R. A. 2006. California Climate and Fire Weather. *Fire in California's Ecosystems*, edited by N. G. Sugihara, J. W. VanWagtendonk, K. E. Shaffer, Joann Fites-Kaufman and A. E. Thode. University of California Press.
- Minnich R. A., and Y. H. Chou. 1997. Wildland Fire Patch Dynamics in the Chaparral of Southern California and Northern Baja California. *International Journal of Wildland Fire* 7:221–48.
- Murphy, S. 2014. San Diego's rain year ends as one of the driest on record. KPBS available at <http://www.kpbs.org/news/2014/jun/30/san-diegos-rain-year-ends-drought-continues/>. Accessed September 17, 2014.
- National Fuel Moisture Database. 2014. Mt. Woodson Station (Bi-monthly Data). Available at http://www.wfas.net/nfmd/include/site_page.php?site=Mt.WoodsonStation&gacc=SOCC&state=CA&grup=CDF San Diego Unit
- National Weather Service. 2012. San Diego National Weather Service Office: Watch, Warning, and Advisory Criteria Quick Reference.
- Oberbauer, T., M. Kelly, and J. Buegge. 2008. Draft Vegetation Communities of San Diego County Based on “Preliminary Descriptions of the Terrestrial Natural Communities of California” prepared by Robert F. Holland, Ph.D. for State of California, The Resources Agency, Department of Fish and Game (October 1986).
- Office of Emergency Services. 2014. May 2014 San Diego County Wildfires after Action Report. County of San Diego. 76 pages plus appendices.
- Oneto, S., J. M. DiTomaso, G. B. Kyser, S. Garcia, and S. Hale. 2005. *Control of Tree Tobacco (Nicotiana glauca)*. University of California Davis, University of California Cooperative Extension. Available at <http://www.cal-ipc.org/symposia/archive/pdf/17788.pdf>. Accessed August 4, 2014.
- Plumb, Tim R. 1980. “Response of Oaks to Fire.” In *Proceedings of the Symposium on the Ecology, Management, and Utilization of California Oaks*. Timothy R. Plumb, technical coordinator; 1979 June 26–28; Claremont, CA. Gen. Tech. Rep. PSW-44. Berkeley, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station: 202-215.

-
- San Diego Foundation. 2008. *The San Diego Foundation Regional Focus 2050 Study: Climate Change Related Impacts in the San Diego Region by 2050*. San Diego Foundation. 24 pp.
- SanGIS. 2014. Regional Data Warehouse. <http://www.sangis.org/download/index.html>.
- Scott, J. H. and R. E. Burgan. 2005. Standard fire behavior fuel models: a comprehensive set for use with Rothermel's surface fire spread model. US Department of Agriculture, Rocky Mountain Research Station. General Technical Report RMRS-GTR-153.
- Shipek, Florence C. 1995. Kumeyaay Tribal Boundaries, Alta and Baja California. Unpublished Manuscript at AECOMSpoooner, A. 1997. *Plantago lanceolata* L. FloraBase, the Western Australian Flora. Available at <https://florabase.dpaw.wa.gov.au/browse/profile/7303>. Accessed August 5, 2014.
- Sproul, F., Keeler-Wolf, T., Gordon-Reedy, P., Dunn, J., Klein A. and K. Harper. 2011. Vegetation classification manual for Western San Diego County. San Diego Association of Governments
- Steinberg, Peter D. 2002. *Quercus agrifolia*. In *Fire Effects Information System*, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available at <http://www.fs.fed.us/database/feis/>. Accessed September 24, 2014.
- Suddjian, D. L. 2004. "Birds and Eucalyptus on the Central California Coast: A Love-Hate Relationship." *Ecology and Impacts of Blue Gum Eucalyptus in Coastal California*. Conference notes from Elkhorn Slough Coastal Training Program, June 3, 2004. Available at <http://www.elkhornsloughctp.org/uploads/files/1108147180Suddjianunpublished%20conference%20notes.pdf>.
- Sylvan Kaufman, Denton. 2014. *Melinis repens*. Invasive species compendium. CABI. Available at <http://www.cabi.org/isc/datasheet/116730>. Accessed August 4, 2014.
- USDA Natural Resources Conservation Service. 2014. California State-listed noxious weeds. Available at <https://plants.usda.gov/java/noxious?rptType=State&statefips=06>.
- Washington State Noxious Weed Control Board. 2014. Italian thistle *Carduus pycnocephalus*. Available at <http://www.nwcb.wa.gov/detail.asp?weed=22>. Accessed July 30, 2014.

-
- Weather Warehouse. 2014. Past Monthly Weather Data for Escondido, CA. Available at http://weatherwarehouse.com/WeatherHistory/PastWeatherData_EscondidoNo2_Escondido_CANovember.html. Accessed September 17, 2014.
- Weise, D. R. and J. Regelbrugge. 1997. Recent chaparral fuel modeling efforts. Prescribed fire and Fire Effects Research Unit, Riverside Fire Laboratory, Pacific Southwest Research Station.
- Western Regional Climate Center. 2014. National Climatic Data Center Weather Station Escondido 2. Latitude 33.07; Longitude -117.05. Available at <http://www.wrcc.dri.edu/>. Accessed August 21, 2014.
- Zaller, J. G. 2004. Ecology and Non-chemical Control of *Rumex crispus* and *R. obtusifolius* (Polygonaceae): A Review. *Weed Research* 44: 414–432.
- Zedler, P. H. 1995. Fire Frequency in Southern California Shrublands: Biological Effects and Management Options. In *Brushfires in California Wildlands: Ecology and Resources Management*. J. E. Keeley and T. A. Scott, eds. International Association of Wildland Fire, Fairfield, WA. Pp 101–112.

APPENDIX A

PLANTS SPECIES DETECTED

Appendix A Plant Species Detected

Scientific name	Common name	Status (Federal/State/ County, North County Plan)
Vascular Species – Dicots		
ADOXACEAE - Muskroot Family		
<i>Sambucus nigra</i> subsp. <i>caerulea</i>	Blue elderberry	None/None/None
ANACARDIACEAE - Sumac or Cashew Family		
<i>Malosma laurina</i>	Laurel sumac	None/None/None
<i>Rhus ovata</i>	Sugar bush	None/None/None
<i>Toxicodendron diversilobum</i>	Western poison oak	None/None/None
APIACEAE - Carrot Family		
* <i>Foeniculum vulgare</i>	Fennel	None/None/None
<i>Sanicula crassicaulis</i>	Pacific sanicle	None/None/None
<i>Tauschia arguta</i>	Southern tauschia	None/None/None
APOCYNACEAE - Dogbane Family		
<i>Asclepias fascicularis</i>	Narrow-leaf milkweed	None/None/None
ASTERACEAE - Sunflower Family		
<i>Acourtia microcephala</i>	Sacapellote	None/None/None
<i>Ambrosia psilostachya</i>	Western ragweed	None/None/None
<i>Artemisia californica</i>	California sagebrush	None/None/None
<i>Baccharis pilularis</i> subsp. <i>consanguinea</i>	Coyote brush	None/None/None
<i>Baccharis salicifolia</i> subsp. <i>salicifolia</i>	Mulefat	None/None/None
<i>Brickellia californica</i>	California brickellbush	None/None/None
<i>Chaenactis artemisiifolia</i>	White pincushion	None/None/None
* <i>Carduus pycnocephalus</i> subsp. <i>pycnocephalus</i>	Italian thistle	None/None/None
* <i>Centaurea melitensis</i>	Tocalote	None/None/None
<i>Corethrogyne flaginifolia</i>	Common sandaster	None/None/None
* <i>Cotula australis</i>	Australian brass buttons	None/None/None
<i>Deinandra fasciculata</i>	Fascicled tarweed	None/None/None
<i>Erigeron foliosus</i>	Leafy daisy	None/None/None
<i>Eriophyllum confertiflorum</i> var. <i>confertiflorum</i>	Golden yarrow	None/None/None
* <i>Gazania linearis</i>	Treasure flower	None/None/None
<i>Gutierrezia californica</i>	California matchweed	None/None/None
<i>Hazardia squarrosa</i> var. <i>grindelioides</i>	Saw toothed goldenbush	None/None/None
* <i>Hedypnois cretica</i>	Crete weed	None/None/None
* <i>Helminthotheca echioides</i>	Bristly ox-tongue	None/None/None
* <i>Hypochaeris glabra</i>	Smooth cat's ear	None/None/None
<i>Isocoma menziesii</i> var. <i>vernonioides</i>	Coastal goldenbush	None/None/None
* <i>Lactuca serriola</i>	Prickly lettuce	None/None/None
* <i>Logfia gallica</i>	Narrow-leaf cottonrose	None/None/None

Scientific name	Common name	Status (Federal/State/ County, North County Plan)
<i>Porophyllum gracile</i>	Odora	None/None/None
<i>Pseudognaphalium californicum</i>	California everlasting	None/None/None
<i>Pseudognaphalium stramineum</i>	Cotton-batting plant	None/None/None
* <i>Silybum marianum</i>	Milk thistle	None/None/None
* <i>Sonchus asper</i> subsp. <i>asper</i>	Prickly sow thistle	None/None/None
<i>Uropappus lindleyi</i>	Silver puffs	None/None/None
<i>Stylocline gnaphaloides</i>	Everlasting nest-straw	None/None/None
BORAGINACEAE - Borage Family		
<i>Cryptantha intermedia</i>	Nievitans cryptantha	None/None/None
<i>Eriodictyon crassifolium</i> var. <i>crassifolium</i>	Felt-leaf yerba santa	None/None/None
<i>Eucrypta chrysanthemifolia</i> var. <i>chrysanthemifolia</i>	Common eucrypta	None/None/None
<i>Pectocarya linearis</i> subsp. <i>ferocula</i>	Slender combseed	None/None/None
<i>Phacelia cicutaria</i>	Caterpillar phacelia	None/None/None
<i>Phacelia parryi</i>	Parry's phacelia	None/None/None
<i>Plagiobothrys collinus</i> var. <i>californicus</i>	California popcornflower	None/None/None
BRASSICACEAE - Mustard Family		
* <i>Brassica nigra</i>	Black mustard	None/None/None
* <i>Hirschfeldia incana</i>	Short-pod mustard	None/None/None
* <i>Sisymbrium irio</i>	London rocket	None/None/None
CACTACEAE - Cactus Family		
* <i>Opuntia ficus-indica</i>	Mission prickly-pear	None/None/None
<i>Opuntia littoralis</i>	Coast prickly-pear	None/None/None
CAPRIFOLIACEAE - Honeysuckle Family		
<i>Lonicera subspicata</i> var. <i>denudata</i>	Johnston's honeysuckle	None/None/None
CARYOPHYLLACEAE - Pink Family		
* <i>Spergula arvensis</i>	Stickwort	None/None/None
* <i>Silene gallica</i>	Common catchfly	None/None/None
CHENOPODIACEAE - Goosefoot Family		
<i>Chenopodium californicum</i>	California goosefoot	None/None/None
CISTACEAE - Rock-rose Family		
<i>Crocanthemum scoparium</i>	Peak rush-rose	None/None/None
CONVOLVULACEAE - Morning Glory Family		
<i>Calystegia macrostegia</i> subsp. <i>tenuifolia</i>	San Diego morning-glory	None/None/None
<i>Cuscuta californica</i> var. <i>californica</i>	Chaparral dodder	None/None/None
CRASSULACEAE - Stonecrop Family		
<i>Crassula connata</i>	Pygmyweed	None/None/None
<i>Dudleya pulverulenta</i>	Chalk dudleya	None/None/None
CUCURBITACEAE - Gourd Family		
<i>Marah macrocarpa</i>	Wild-cucumber	None/None/None

Scientific name	Common name	Status (Federal/State/ County, North County Plan)
ERICACEAE - Heath Family		
<i>Xylococcus bicolor</i>	Mission manzanita	None/None/None
EUPHORBIACEAE - Spurge Family		
<i>Croton setiger</i>	Doveweed	None/None/None
* <i>Euphorbia peplus</i>	Petty spurge	None/None/None
<i>Euphorbia polycarpa</i>	Small seeded sandmat	None/None/None
FABACEAE - Legume Family		
* <i>Acacia dealbata</i>	Silver wattle	None/None/None
<i>Acmispon americanus</i> var. <i>americanus</i>	Spanish-clover	None/None/None
<i>Acmispon glaber</i> var. <i>glaber</i>	Coastal Deerweed	None/None/None
<i>Acmispon strigosus</i>	Strigose lotus	None/None/None
<i>Lathyrus vestitus</i> var. <i>alefeldii</i>	San Diego sweet pea	None/None/None
<i>Lupinus bicolor</i>	Miniature lupine	None/None/None
<i>Lupinus hirsutissima</i>	Nettle lupine	None/None/None
* <i>Medicago polymorpha</i>	Bur clover	None/None/None
* <i>Melilotus indicus</i>	Indian sweetclover	None/None/None
FAGACEAE - Oak Family		
<i>Quercus ×acutidens</i>	Torrey's scrub oak	None/None/None
<i>Quercus agrifolia</i>	Coast live oak	None/None/None
<i>Quercus engelmannii</i>	Engelmann oak	None/None/List D, Covered
GERANIACEAE - Cranesbill Family		
* <i>Erodium botrys</i>	Long-beak filaree	None/None/None
* <i>Erodium cicutarium</i>	Red-stem filaree	None/None/None
<i>Geranium carolinianum</i>	Carolina geranium	None/None/None
GROSSULARIACEAE - Gooseberry Family		
<i>Ribes indecorum</i>	White-flower currant	None/None/None
LAMIACEAE - Mint Family		
* <i>Marrubium vulgare</i>	Horehound	None/None/None
<i>Salvia apiana</i>	White sage	None/None/None
<i>Salvia columbariae</i>	Chia	None/None/None
<i>Salvia mellifera</i>	Black sage	None/None/None
<i>Scutellaria tuberosa</i>	Danny's skullcap	None/None/None
MALVACEAE - Mallow Family		
<i>Malacothamnus fasciculatus</i> var. <i>fasciculatus</i>	Chaparral bush mallow	None/None/None
<i>Sidalcea sparsifolia</i>	Checker-bloom	None/None/None
MONTIACEAE – Montia Family		
<i>Calandrinia breweri</i>	Brewer's redmaids	None/None/None
<i>Claytonia perfoliata</i>	Miner's lettuce	None/None/None
MYRSINACEAE - Myrsine Family		
* <i>Anagallis arvensis</i>	Scarlet pimpernel	None/None/None

Scientific name	Common name	Status (Federal/State/ County, North County Plan)
MYRTACEAE - Myrtle Family		
<i>*Eucalyptus camaldulensis</i>	Red gum	None/None/None
NYCTAGINACEAE - Four O'clock Family		
<i>Mirabilis laevis</i> var. <i>crassifolia</i>	Coastal wishbone plant	None/None/None
ONAGRACEAE - Willowherb Family		
<i>Camissoniopsis bistorta</i>	California sun cup	None/None/None
<i>Camossoniopsis ignota</i>	Jurupa Hills sun cup	None/None/None
<i>*Oenothera sinuosa</i>	Wavy-leafed gaura	None/None/None
OROBANCHACEAE - Broom-rape Family		
<i>Cordylanthus rigidus</i> subsp. <i>setigerus</i>	Dark-tip bird's beak	None/None/None
<i>Castilleja exserta</i>	Purple owl's clover	None/None/None
OXALIDACEAE - Wood Sorrel Family		
<i>*Oxalis pes-caprae</i>	Bermuda-buttercup	None/None/None
PAEONIACEAE - Peony Family		
<i>Paeonia californica</i>	California peony	None/None/None
PAPAVERACEAE – Poppy Family		
<i>Eschscholzia californica</i>	California poppy	None/None/None
PHRYMACEAE - Lopseed Family		
<i>Mimulus aurantiacus</i> var. <i>puniceus</i>	Coastal monkey flower	None/None/None
PLANTAGINACEAE - Plantain Family		
<i>Antirrhinum nuttallianum</i> subsp. <i>nuttallianum</i>	Nuttall's snapdragon	None/None/None
<i>Keckiella antirrhinoides</i>	Yellow bush penstemon	None/None/None
<i>Keckiella cordifolia</i>	Climbing bush penstemon	None/None/None
<i>Nuttallianthus texanus</i>	Blue toadflax	None/None/None
<i>Penstemon spectabilis</i> var. <i>spectabilis</i>	Showy penstemon	None/None/None
<i>*Plantago lanceolata</i>	English plantain	None/None/None
POLEMONIACEAE - Phlox Family		
<i>Navarretia hamata</i> subsp. <i>hamata</i>	Hooked skunkweed	None/None/None
POLYGONACEAE - Buckwheat Family		
<i>Eriogonum fasciculatum</i> var. <i>foliolosum</i>	Inland California buckwheat	None/None/None
<i>Pterostegia drymarioides</i>	Granny's hairnet	None/None/None
<i>*Rumex crispus</i>	Curly dock	None/None/None
RANUNCULACEAE - Buttercup Family		
<i>Thalictrum fendleri</i> var. <i>polycarpum</i>	Smooth-leaf meadow Rue	None/None/None
RHAMNACEAE - Buckthorn Family		
<i>Ceanothus crassifolius</i> var. <i>crassifolius</i>	Thick-leaf-lilac	None/None/None
<i>Ceanothus leucodermis</i>	Chaparral whitethorn	None/None/None
<i>Ceanothus oliganthus</i> var. <i>orcuttii</i>	Orcutt's hairy ceanothus	None/None/None
<i>Ceanothus tomentosus</i>	Ramona-lilac; woolly-leaved ceanothus	None/None/None

Scientific name	Common name	Status (Federal/State/ County, North County Plan)
<i>Rhamnus ilicifolia</i>	Holly-leaf redberry	None/None/None
<i>Rhamnus pilosa</i>	Hairy-leaf redberry	None/None/None
ROSACEAE - Rose Family		
<i>Adenostoma fasciculatum</i> var. <i>fasciculatum</i>	Chamise	None/None/None
<i>Cercocarpus minutiflorus</i>	San Diego mountain- mahogany	None/None/None
<i>Drymocallis glandulosa</i> var. <i>glandulosa</i>	Sticky cinquefoil	None/None/None
<i>Heteromeles arbutifolia</i>	Toyon	None/None/None
<i>Prunus ilicifolia</i>	Holly-leaf cherry	None/None/None
RUBIACEAE - Madder Family		
<i>Galium angustifolium</i>	Narrowly-leaf bedstraw	None/None/None
SALICACEAE - Willow Family		
<i>Salix lasiolepis</i>	Arroyo willow	None/None/None
SCROPHULARIACEAE – Figwort Family		
<i>Scrophularia californica</i>	California figwort	None/None/None
SOLANACEAE - Nightshade Family		
* <i>Nicotiana glauca</i>	Tree tobacco	None/None/None
<i>Solanum parishii</i>	Parish's nightshade	None/None/None
TAMARICACEAE - Tamarisk Family		
* <i>Tamarix ramosissima</i>	Saltcedar	None/None/None
URTICACEAE - Nettle Family		
<i>Parietaria hespera</i>	Western pellitory	None/None/None
Vascular Species - Ferns and Fern Allies		
SELAGINELLACEAE - Spike Moss Family		
<i>Selaginella bigelovii</i>	Bigelow's spike moss	None/None/None
DRYOPTERIDACEAE - Wood Fern Family		
<i>Dryopteris arguta</i>	California wood fern	None/None/None
PTERIDACEAE - Maidenhair Fern Family		
<i>Cheilanthes newberryi</i>	Newberry's lip fern	None/None/None
<i>Pellaea mucronata</i> var. <i>mucronata</i>	Bird's foot fern	None/None/None
<i>Pentagramma triangularis</i> subsp. <i>triangularis</i>	California goldback fern	None/None/None
Vascular Species - Monocots		
AGAVACEAE - Agave Family		
<i>Chlorogalum parviflorum</i>	Small-flower soap-plant	None/None/None
<i>Hesperoyucca whipplei</i>	Chaparral candle	None/None/None
* <i>Yucca gloriosa</i>	Moundlily yucca	None/None/None
ARECACEAE - Palm Family		
* <i>Washingtonia robusta</i>	Mexican fan palm	None/None/None
CYPERACEAE - Sedge Family		
<i>Carex spissa</i>	San Diego sedge	None/None/None
<i>Eleocharis macrostachya</i>	Pale Spike-rush	None/None/None

Scientific name	Common name	Status (Federal/State/ County, North County Plan)
IRIDACEAE - Iris Family		
<i>Sisyrinchium bellum</i>	Blue-eyed grass	None/None/None
JUNACEAE - Rush Family		
<i>Juncus dubius</i>	Mariposa rush	None/None/None
<i>Juncus bufonius</i>	Toad rush	None/None/None
POACEAE - Grass Family		
* <i>Avena fatua</i>	Wild oat	None/None/None
* <i>Bromus diandrus</i>	Ripgut grass	None/None/None
* <i>Bromus hordeaceus</i>	Soft chess	None/None/None
* <i>Bromus madritensis</i>	Compact brome	None/None/None
* <i>Cortaderia selloana</i>	Pampas grass	None/None/None
<i>Distichlis spicata</i>	Salt grass	None/None/None
* <i>Festuca myuros</i>	Rat-tail fescue	None/None/None
<i>Elymus condensatus</i>	Giant wild-rye	None/None/None
<i>Festuca octoflora</i>	Tufted fescue	None/None/None
* <i>Melinis repens</i> subsp. <i>repens</i>	Natal grass	None/None/None
<i>Muhlenbergia rigens</i>	Deer grass	None/None/None
* <i>Pennisetum setaceum</i>	Fountain grass	None/None/None
* <i>Polypogon monspeliensis</i>	Annual beard grass	None/None/None
* <i>Schismus barbatus</i>	Mediterranean schismus	None/None/None
* <i>Sorghum halepense</i>	Johnsongrass	None/None/None
<i>Stipa coronata</i>	Giant stipa	None/None/None
<i>Stipa lepida</i>	Foothill needle grass	None/None/None
THEMIDACEAE - Brodiaea Family		
<i>Dichelostemma capitatum</i>	Blue dicks	None/None/None

*Signifies non-native species

APPENDIX B

**SPECIAL-STATUS PLANT SPECIES
WITH POTENTIAL TO OCCUR**

APPENDIX B
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR

Common Name	Scientific Name	Status¹	General Habitat Description²	Microhabitat Description³	Habitat Present/Absent	Rationale
San Diego thorn-mint	<i>Acanthomintha ilicifolia</i>	USFWS: Threatened CDFW: Endangered CNPS: List 1B.1 County: List A NCMSCP: Covered	Clay soils, openings in chaparral, coastal scrub, valley and foothill grassland, and vernal pools. Elevation 10–960 meters. Annual herb. Blooms April–June.	Grassy openings in chaparral or sage scrub with broken clay soils. All sites have a crumbly or deeply fissured soil, which noticeably compresses when treaded upon even during the dry season.	Unmapped clay soils may occur in patches on site.	Low potential to occur if clay soil patches discovered.
California adolphia	<i>Adolphia californica</i>	CNPS: List 2.1 County List B. NCMSCP: Covered	Clay soils, chaparral, coastal scrub, and valley and foothill grassland. Elevation 45–740 meters. Perennial deciduous shrub. Blooms December–May.	Peripheral chaparral habitat with Diegan sage scrub, particularly near hillsides and next to creeks. California adolphia is associated with California buckwheat and California sagebrush.	Unmapped clay soils may occur in patches on the site.	Low potential to occur if clay soil patches are discovered

Common Name	Scientific Name	Status¹	General Habitat Description²	Microhabitat Description³	Habitat Present/ Absent	Rationale
San Diego ambrosia	<i>Ambrosia pumila</i>	USFWS: Endangered CNPS: List 1B.1 County List A. NCMSCP: Covered	Sandy loam or clay, often in disturbed areas, sometimes alkaline chaparral, coastal scrub, valley and foothill grassland, and vernal pools. Elevation 20–415 meters. Perennial rhizomatous herb. Blooms April–October.	Creek beds, seasonally dry drainages, floodplains, on the periphery of willow woodland. Soils include sandy alluvium.	Low drainage areas could provide habitat.	Low potential to occur, known from vicinity
Del Mar manzanita	<i>Arctostaphylos glandulosa</i> ssp. <i>crassifolia</i>	USFWS: Endangered CNPS: List 1B.1 County List A. NCMSCP: Covered	Chaparral (maritime, sandy). Elevation 0–365 meters. Perennial evergreen shrub. Blooms December–June.	Found in substrate with eroding sandstone, and chaparral vegetation is relatively low-growing. Soils include terrace escarpments and loamy alluvial land of Huerhuero complex.	Known from region but lower potential to occur because normally found on sandstone substrate.	Lower potential to occur but known from the region
Rainbow manzanita	<i>Arctostaphylos rainbowensis</i>	CNPS: List 1B.1 County: List A NCMSCP: Covered	Chaparral on gabbro and other granitic rocks Blooms January-February	Found on rocky areas and north slopes.	Collection known from vicinity	Moderate potential to occur since collection known from general vicinity

Common Name	Scientific Name	Status¹	General Habitat Description²	Microhabitat Description³	Habitat Present/Absent	Rationale
San Diego sagewort	<i>Artemisia palmeri</i>	CNPS: List 4.2 County List D.	Sandy, mesic soils, chaparral, coastal scrub, riparian forest, riparian scrub, riparian woodland. Elevation 15–915 meters. Perennial deciduous shrub. Blooms February–September.	Found along creeks and drainages near the coast. Found in rocky, sandy loams. Grows commonly in shaded understory beneath willow, sycamore, and cottonwood.	Low areas on site may support habitat for the species	Lower potential to occur but occurs in similar habitats to the southwest.
San Diego milk-vetch	<i>Astragalus oocarpus</i>	CNPS: List 1B.2 County List A.	Montane chaparral Blooms May-August	Openings between chaparral shrubs and oak trees	Habitat exists on site.	Lower potential to occur because most habitat is higher in elevation though a lower elevation collection has been made to the south.
Coulter's saltbush	<i>Atriplex coulteri</i>	CNPS: List 1B.2 County List A.	Alkaline or clay soils, coastal bluff scrub, coastal dunes, coastal scrub, and valley and foothill grassland. Elevation 3–460 meters. Perennial herb. Blooms March–October.	Sea bluff habitat is preferred but it has been collected at higher elevations.	Plant has been collected in habitat generally comparable to site.	Lower potential to occur because site is higher in elevation than normal for the species though it has been collected in a couple of locations with higher elevation.
Parish's brittlescale	<i>Atriplex parishii</i>	CNPS: List 1B.1 County List A	Alkaline or wetland and lowland soils Blooms June-October	Alkaline areas or open wetland habitats	Low drainage areas on site have potential.	Lower potential to occur because site is higher in elevation for the species though it has been collected ten miles to the south.

Common Name	Scientific Name	Status¹	General Habitat Description²	Microhabitat Description³	Habitat Present/ Absent	Rationale
Encinitas baccharis	<i>Baccharis vanessae</i>	USFWS: Threatened CDFW: Endangered CNPS: List 1B.1 County List A. NCMSCP: Covered	Sandstone, maritime chaparral, and cismontane woodland. Elevation 60–720 meters. Perennial deciduous shrub. Blooms August–November.	Found in low-growing chaparral, Corralitos loamy sand, and Cieneba rocky coarse sandy loam. Cryptic appearance much of the year.	Habitat for the species exists on the site in rocky peak areas	Moderate potential to occur since it has been found on rocky peak areas in central San Diego County.
Nevin's barberry	<i>Berberis nevinii</i>	USFWS: Endangered CDFW: Endangered County List A. CNPS: List 1B.1	Chaparral, cismontane woodland, coastal scrub, riparian scrub (sandy or gravelly). Elevation 274–825 meters. Evergreen shrub. Blooms March–June	Chaparral with strong desert affinities.	Rocky ridge habitat has potential for this species.	Low potential to occur on rocky ridge areas.
San Diego goldenstar	<i>Bloomeria clevelandii</i>	CNPS: List 1B.1 County List A. NCMSCP: Covered	Clay, chaparral, coastal scrub, valley and foothill grassland, and vernal pools. Elevation 50–465 meters. Perennial bulbiferous herb. Blooms April–May.	Clay soil and loamy soil patches in openings of chaparral and sage scrub habitats	Loamy conditions occur on site and a few clay patches may occur	Low potential. Known locations are to the southwest.

Common Name	Scientific Name	Status¹	General Habitat Description²	Microhabitat Description³	Habitat Present/ Absent	Rationale
Thread-leaved brodiaea	<i>Brodiaea filifolia</i>	USFWS: Threatened CDFW: Endangered CNPS: List 1B.1 County: List A NCMSCP: Covered	Clay soils in grassy habitats and openings in chaparral Blooms April-July	Clay soils on mesas and gentle slopes	Clay patches could occur on site but not known.	Low potential to occur. Known locations to the west. Site is higher in elevation than normal locations.
Orcutt's brodiaea	<i>Brodiaea orcuttii</i>	CNPS: 1B.1 County List A. NCMSCP: Covered	Mesic, clay, sometimes serpentinite, closed-cone coniferous forest, chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and vernal pools. Elevation 30–1,692 meters. Perennial bulbiferous herb. Blooms April–May.	Mima mound topography, vernal moist grasslands, periphery of vernal pools and ephemeral streams. Soils consist of stockpen gravelly loam and Redding gravelly loam.	Could occur in vernal moist drainages.	Moderate potential to occur due to collection location nearby
Round-leaved filaree	<i>California macrophylla</i>	CNPS: List 1B.1 County List B.	Clay soils Blooms March-July	Clay lenses with grassy cover	Unmapped clay lenses may occur on site	Low potential due to lack of known clay soils
Payson's jewelflower	<i>Caulanthus simulans</i>	CNPS: List 4.2 County List D.	Typically coarse sandy soils Blooms March-June	Openings in chaparral and desert scrub habitats	Openings in chaparral exist on site.	Not expected because outside of the normal range though there are old collections from areas to the north of the site.

Common Name	Scientific Name	Status¹	General Habitat Description²	Microhabitat Description³	Habitat Present/ Absent	Rationale
wart-stemmed ceanothus	<i>Ceanothus verrucosus</i>	CNPS: List 2.2 County List B. NCMSCP: Covered	Chaparral. Elevation 1–380 meters. Perennial evergreen shrub. Blooms December–May.	Coastal chaparral intermixed with chamise. Soils consist of Exchequer rocky silt loams and San Miguel-Exchequer rocky silt loams	Maritime forms of chaparral have not been observed on the site	Not expected because outside of the normal range of the species which is mostly in coastal regions.
southern tarplant	<i>Centromadia parryi</i> <i>ssp. australis</i>	CNPS: List 1B.1 County List A. NCMSCP: Covered	Margins of marshes and swamps, valley and foothill grassland, vernal pools. Elevation 0–425 meters. Annual herb. Blooms May–November.	Low alkali habitats and vernal moist low grasslands	Limited area of potentially qualifying habitat exists on site	Not expected due to isolated nature of limited potentially suitable habitat on site.
smooth tarplant	<i>Centromadia pungens</i> <i>ssp. laevis</i>	CNPS: List 1B.1 County List A	Alkaline habitat, chenopod scrub, meadows and seeps, playas, riparian woodlands, valley and foothill grasslands. Elevation 0–640 meters. Annual herb. Blooms April–September.	Lowland alkali habitat and vernal moist low grasslands	Limited area of potentially qualifying habitat exists on site.	Not expected due to isolated nature of limited potentially suitable habitat on site.

Common Name	Scientific Name	Status¹	General Habitat Description²	Microhabitat Description³	Habitat Present/ Absent	Rationale
Orcutt's pincushion	<i>Chaenactis glabriuscula</i> var. <i>orcuttiana</i>	CNPS: List 1B.1 County List A.	Sandy coastal bluff scrub, and coastal dunes. Elevation 0–100 meters. Annual herb. Blooms January–August.	Sandy soils along the immediate coast or in river valley	Suitable habitat not known from area	Not expected due to lack of suitable habitat and geographic location.
Peninsula spineflower	<i>Chorizanthe leptotheca</i>	CNPS: list 4.2 State Rank S3.2 Global Rank G4 County List D	Various soil types including gabbro and metavolcanic types. Elevation 160-1200 meters. Annual herb. Blooms April--July	Sandy soils in openings especially following fires	Suitable habitat and known from general area	Moderate potential to occur on site due to suitable habitat
Orcutt's spineflower	<i>Chorizanthe orcuttiana</i>	USFWS: Endangered CDFW: Endangered CNPS: List 1B.1 County List A. NCMSCP: Covered	Sandy openings, closed coniferous forest, maritime chaparral, coastal scrub. Elevation 3–125 meters. Annual herb. Blooms March–May.	Coastal chaparral openings in chamise with loose sand substrate. Soils include corralitos loamy sand and loamy alluvial land in the Huerhuero complex.	No suitable habitat on site	Not expected due to lack of suitable habitat and geographic location far east of normal distribution

Common Name	Scientific Name	Status¹	General Habitat Description²	Microhabitat Description³	Habitat Present/ Absent	Rationale
delicate clarkia	<i>Clarkia delicata</i>	CNPS: List 1B.2 County List A.	Gabbroic soils, chaparral, and cismontane woodland. Elevation 235–1,000 meters. Annual herb. Blooms April–June.	Found on the periphery of oak woodlands and cismontane chaparral. It is found in vernal mesic situations. Soils include banacas stony loam.	Oak woodland and chaparral habitat occurs on site.	Moderate potential to occur on site due to suitable habitat.
summer holly	<i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i>	CNPS: List 1B.2 County List A. NCMSCP: Covered	Chaparral and cismontane woodland. Elevation 30–790 meters. Perennial evergreen shrub. Blooms April–June.	Southern mixed chaparral, usually in mesic areas, north-facing slopes. This species is found west of I-15.	Suitable habitat exists on the lower slopes of Bottle Peak and the north side of this preserve	Moderate potential to occur due to suitable habitat on site and the occurrence of the species in other locations that are somewhat inland like the project.
Del Mar Mesa sand aster	<i>Corethrogyne filaginifolia</i> var. <i>linifolia</i>	CNPS: List 1B.1 County List A.	Sandy habitat, coastal bluff scrub, maritime chaparral, coastal scrub. Elevation 15–150 meters. Perennial herb. Blooms May–September.	Openings in shrub vegetation on sandy soils	Sandy soils associated with sedimentary deposits is lacking on site. Site is distant from existing locations for this taxa	Not expected due to distance from coast and lack of sedimentary sandstones on site.
Cuyamaca larkspur	<i>Delphinium hesperium</i> ssp. <i>cuyamacae</i>	CNPS: List 1B.2 County List A.	Montane meadows	Grassy soils on edges of meadows	No habitat present on site	Not expected due to lower elevation and lack of montane meadow habitat.

Common Name	Scientific Name	Status¹	General Habitat Description²	Microhabitat Description³	Habitat Present/ Absent	Rationale
variegated dudleya	<i>Dudleya variegata</i>	CNPS: List 1B.2 County List A.	Clay habitat, chaparral, cismontane woodland, coastal scrub, valley and foothill grassland, and vernal pools. Elevation 3–580 meters. Perennial herb. Blooms April–June.	Openings in sage scrub, chaparral, open grasslands, isolated rocky substrates, and found near vernal pools. Soils include stockpen gravelly loams and Redding gravelly loams.	Generally known from lower elevation areas and thin soils on metavolcanic rock or granitic slabs. No good habitat on site.	Not expected due to distance inland and lack of suitable soils.
sticky dudleya	<i>Dudleya viscida</i>	CNPS: List 1B.2 County List A.	Coastal bluff scrub, chaparral, cismontane woodland, coastal scrub. Elevation 10–550 meters. Perennial herb. Blooms May–June.	Steep slopes or cliff edges	Habitat on site is somewhat similar to habitat in the Santa Margarita Mountains to the northwest	Not expected due to distance from known locations and inland location
Palmer's goldenbush	<i>Ericameria palmeri</i> var. <i>palmeri</i>	CNPS: List 1B.1 County List B.	Mesic habitat, chaparral, and coastal scrub. Elevation 30–600 meters. Perennial evergreen shrub. Blooms July–November.	Coastal drainages, mesic chaparral, and occasionally occurs as a hillside element. Soils include Las Posas fine sandy loam.	Habitat more associated with larger drainages than occur on site.	Low potential due to lack of major drainage habitat.

Common Name	Scientific Name	Status¹	General Habitat Description²	Microhabitat Description³	Habitat Present/Absent	Rationale
San Diego button-celery	<i>Eryngium aristulatum</i> var. <i>parishii</i>	USFWS: Endangered CDFW: Endangered CNPS: List 1B.1 County List A. NCMSCP: Covered	Mesic habitat, coastal scrub, valley and foothill grassland, and vernal pools. Elevation 20–620 meters. Annual and perennial herb. Blooms April–June.	Areas with vernal pools, mima mounds, and vernal moist conditions. Soils include Redding gravelly loams.	No vernal pool habitat on site.	Not expected due to lack of vernal pool habitat on site.
San Diego barrel cactus	<i>Ferocactus viridescens</i>	CNPS: List 2.1 County List B. NCMSCP: Covered	Chaparral, coastal scrub, valley and foothill grassland, and vernal pools. Elevation 3–450 meters. Perennial stem succulent. Blooms May–June.	Diegan sage scrub hillsides, often at the crest of slopes and growing in cobbles, occasionally found on the periphery of vernal pools and mima mounds. Soil types include San Miguel-Exchequer rocky silt loams and Redding gravelly loams.	Low elevation coastal scrub lacking on site.	Not expected due to lack of habitat.
Palmer's grapplinghook	<i>Harpagonella palmeri</i>	CNPS: List 4.2 County List D	Clay habitat, chaparral, coastal scrub, and valley and foothill grassland. Elevation 20–955 meters. Annual herb. Blooms March–May.	Clay vertisols with open grassy slopes and open Diegan sage scrub. Diablo clays are favored on the coast.	Occurs on clay soils that have not been observed on site.	Low potential due to lack of potential habitat.

Common Name	Scientific Name	Status¹	General Habitat Description²	Microhabitat Description³	Habitat Present/ Absent	Rationale
Orcutt's hazardia	<i>Hazardia orcuttii</i>	USFWS: Candidate CDFW: Threatened CNPS: List 1B.1 County List A.	Coastal clay and loamy soils on sedimentary formations	Scrub habitat along the coast in clay soils	Site does not have coastal clay and loamy soils	Not expected due to distance from coast and suitable habitat.
beach goldenaster	<i>Heterotheca sessiliflora</i> ssp. <i>sessiliflora</i>	CNPS: List 1B.1	Chaparral (coastal), coastal dunes, and coastal scrub. Elevation 0–1,225 meters. Perennial herb. Blooms March–December.	Coastal scrub in sandy locales. Found on beach bluffs and maritime locales.	Site does not have coastal sandy soils.	Not expected due to distance from coast and lack of suitable sandy soil habitat.
Mesa horkelia	<i>Horkelia cuneata</i> var. <i>puberula</i>	CNPS: List 1B.1 County List A	Semi moist conditions in seep areas	Chaparral and scrub habitats	Seep areas with suitable habitat not present on site	Not expected due to lack of suitable habitat.
Ramona horkelia	<i>Horkelia truncata</i>	CNPS: List 1B.3 County List A.	Clay and gabbroic habitat. Elevation 400–1,300 meters. Perennial herb. Blooms May–June.	Chamise chaparral. Soil types include Cieneba very rocky coarse sandy loams and gabbro, frequently on ridge tops.	Some habitat on site may have potential for this species.	Low potential to occur due to lack of identified gabbro soils

Common Name	Scientific Name	Status¹	General Habitat Description²	Microhabitat Description³	Habitat Present/ Absent	Rationale
decumbent goldenbush	<i>Isocoma menziesii</i> var. <i>decumbens</i>	CNPS: List 1B.2 County List A.	Chaparral and coastal scrub (sandy, often open in disturbed areas). Elevation 10–135 meters. Perennial shrub. Blooms April–November.	Coastal sage scrub and is found in clay soils in coastal regions	Site lacks the coastal clay soils	Not expected to occur due to distance from the coastal habitat where species generally occurs.
San Diego marsh-elder	<i>Iva hayesiana</i>	CNPS: List 2.2 County List B.	Marshes, swamps, and playas. Elevation 10–500 meters. Perennial herb. Blooms April–October.	Creeks and intermittent streambeds, open riparian canopy allowing substantial sunlight.	Low drainages on site are potentially suitable habitat	Low potential to occur due to habitat on site but farther inland than known locations in this part of the County.
Southwestern spiny rush	<i>Juncus acutus</i> <i>leopoldii</i>	CNPS: List 4.2 State Rank S3.2 Global Rank G5T5 County List D	Marshes, lowland drainages. Elevation below 900 meters Perennial herb. Flowers June--August	Drainage lowlands and stream edges	Low drainages on site are potentially suitable habitat	Moderate potential to occur due to habitat on site
Robinson's pepper-grass	<i>Lepidium virginicum</i> var. <i>robinsonii</i>	CNPS: List 1B.2 County List A.	Chaparral and coastal scrub. Elevation 1–885 meters. Annual herb. Blooms February–July.	Openings in chaparral and sage scrub, usually found in foothill elevations. Sites are dry, exposed locales.	Site contains suitable habitat	Species has moderate potential to occur on site.

Common Name	Scientific Name	Status¹	General Habitat Description²	Microhabitat Description³	Habitat Present/Absent	Rationale
sea dahlia	<i>Leptosyne maritima</i>	CNPS: List 2.2 County List B.	Coastal bluff scrub and coastal scrub. Elevation 5–150 meters. Perennial herb. Blooms March–May.	Slopes and banks near the coast	No habitat on site.	Not expected to occur due to distance of site from the coast.
lemon lily	<i>Lilium parryi</i>	CNPS: List 1B.2 County List A.	Montane meadows Blooms June-September	Moist areas near streams	No habitat for this species exists on site.	Not expected to occur because site is far from known locations and lacks suitable habitat
Orcutt's linanthus	<i>Linanthus orcutti</i>	CNPS: List 1B.2 County List A.	Open loamy soils in montane environment	Openings in shrubs and trees	No habitat exists on site for this species	Not expected to occur. Site is at much lower in elevation than habitat typical for this species.
felt-leaved monardella	<i>Monardella hypoleuca</i> ssp. <i>lanata</i>	CNPS: List 1B.2 County List A. NCMSCP: Covered	Chaparral and cismontane woodland. Elevation 300–1,575 meters. Perennial rhizomatous herb. Blooms June–August.	Chaparral understory usually under stands of chamise in xeric situations. Soils include San Miguel-Exchequer rocky silt loams often near Otay Mountain.	Habitat exists on site that could serve the species.	Moderate potential due to ridge top and suitable understory habitat present on site.
Hall's monardella	<i>Monardella macrantha</i> ssp. <i>hallii</i>	CNPS: List 1B.3 County List A.	Montane forest habitat May-August	Openings in montane forest areas	No suitable habitat exists on site.	Not expected due to lack of suitable habitat and distance from forest areas.

Common Name	Scientific Name	Status¹	General Habitat Description²	Microhabitat Description³	Habitat Present/ Absent	Rationale
San Felipe monardella	<i>Monardella nana</i> ssp. <i>leptosiphon</i>	CNPS: List 1B.2 County List A.	Chaparral and rocky habitats at higher elevations Blooms May-August	Rocky habitats on ridges and upper slopes	No suitable habitat due to low elevation of site	Not expected due to geographic distance for known locations.
little mousetail	<i>Myosurus minimus</i> ssp. <i>apus</i>	CNPS: List 3.1 County List C. NCMSCP: Covered	Valley and foothill grassland and alkaline vernal pools. Elevation 20–640 meters. Annual herb. Blooms March–June.	Vernal pools. Soils include Huerhuero loam.	No suitable vernal pool or vernal wetland habitat exists on site	Not expected due to lack of habitat on site.
spreading navarretia	<i>Navarretia fossalis</i>	USFWS: Threatened CNPS: List 1B.1 County List A. NCMSCP: Covered	Chenopod scrub, marshes and swamps, playas, and vernal pools. Elevation 30–655 meters. Annual herb. Blooms April–June.	Vernal pools and vernal pool swales. Soils include Huerhuero loam	No vernal pool or suitable vernal wetlands on site	Not expected due to lack of suitable habitat on site.
Chaparral nolina	<i>Nolina cismontana</i>	CNPS: List 1B.2 County List A. NCMSCP: Covered	Gabbro chaparral Blooms May-July	Ridges and slopes in chaparral areas on Las Posas soils.	No known gabbro soil exists on the site but it does occur nearby	Not expected due to lack of suitable habitat.
California adder's tongue fern	<i>Ophioglossum californicum</i>	CNPS:List 4.2 County List D.	Openings in shrubs Emerges early Spring	Openings in shrubs on sandy and loamy soils. Visible for short period of time only.	Potential habitat exists on site	Moderate potential to occur due to habitat on site.

Common Name	Scientific Name	Status ¹	General Habitat Description ²	Microhabitat Description ³	Habitat Present/Absent	Rationale
Nuttall's scrub oak	<i>Quercus dumosa</i>	CNPS: List 1B.1 County List A. NCMSCP: Covered	Sandy and clay loam habitat. Elevation 15–400 meters. Perennial evergreen shrub. Blooms February–August.	Coastal chaparral with a relatively open canopy cover and relatively flat terrain.	No suitable habitat exists on site due to distance from the coast	Not expected due to distance from the coast
Engelmann oak	<i>Quercus engelmannii</i>	CNPS: List 4.2 County List D. NCMSCP: Covered	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. Elevation 50–1,300 meters. Perennial deciduous tree. Blooms March–June.	Oak woodland, southern mixed chaparral, and grasslands.	Suitable habitat present on site	Present. Engelmann oak was found on-site during the spring survey.
southern mountains skullcap	<i>Scutellaria bolanderi</i> <i>ssp. austromontana</i>	CNPS: List 1B.2 County List A.	Moist areas in montane areas Blooms June–July	Rocky stream edges in mountainous areas	No suitable habitat present on site	Not expected because typically occurs in montane areas at higher elevations to the east.
purple stemodia	<i>Stemodia durantifolia</i>	CNPS: List 2.1 County List B.	Ephemerally dry moist locations in dry landscape. Elevation 180–300 meters. Perennial herb. Blooms February–December.	Rocky drainage areas	No suitable habitat observed	Low potential due to no observed suitable habitat and distance from other known locations

Common Name	Scientific Name	Status ¹	General Habitat Description ²	Microhabitat Description ³	Habitat Present/Absent	Rationale
San Bernardino aster	<i>Symphotrichum defoliatum</i>	CNPS: List 1B.2	Forested and woodland areas with some occurrences in chaparral Blooms July-November	Higher elevation openings in forest, woodlands and chaparral	No habitat present due to lower elevation of site	Not expected because typically occurs in montane areas at higher elevations to the east.
Parry's tetracoccus	<i>Tetracoccus dioicus</i>	CNPS: List 1B.2 County List A. NCMSCP: Covered	Chaparral on soils derived from gabbro Blooms April-May	Las Posas soils derived from gabbro or in locations adjacent to those soils.	No mapped locations of gabbro soils known from site	Low potential to occur. Some chance there could be unmapped gabbro on site

1. Federal
Other

U.S. Fish and Wildlife Service (USFWS)
California Native Plant Society (CNPS):

1B: Plants rare, threatened, or endangered in California and elsewhere

2: Plants rare, threatened, or endangered in California, but more common elsewhere

3: Plants more information is needed – a review list

4: Plants of limited distribution – a watch list

CNPS R-E-D Code -

R (Rarity): 1 = Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time;

2 = Occurrence confined to several populations or to one extended population;

3 = Occurrence limited to one or a few highly restricted populations, or present in such numbers that it is seldom reported

E (Endangerment): 1 = Not endangered; 2 = Endangered in a portion of its range; 3 = Endangered throughout its range

D (Distribution): 1 = More or less widespread outside California; 2 = Rare outside California; 3 = Endemic to California

County Designations-

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

County List B Plants rare, threatened, or endangered in California but common elsewhere

County List C Plants which may be rare, but need more information to determine their true rarity status

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

NCMSCP: Included on the draft North County Multiple Species Conservation Program (NCMSCP) covered plant species list (2009)

APPENDIX C

WILDLIFE SPECIES DETECTED

Appendix C
Wildlife Species Detected

Common Name	Scientific Name	Order	Family
Invertebrates			
Wolf spider sp.	--	Araneae	Lycosidae
Fig eater beetle	<i>Cotinis mutabilis</i>	Coleoptera	Scarabaeidae
Darkling beetle	<i>Eleodes sp.</i>	Coleoptera	Tenebrionidae
European earwig	<i>Forficula auricularia</i>	Dermaptera	Forficulidae
Western honeybee	<i>Apis mellifera</i>	Hymenoptera	Apidae
Ant spp.	--	Hymenoptera	Formicidae
Velvet ant sp.	<i>Dasymutilla sp.</i>	Hymenoptera	Mutillidae
Tarantula hawk spp.	<i>Pepsis spp.</i>	Hymenoptera	Pompilidae
Pacific coast tick	<i>Dermacentor occidentalis</i>	Ixodida	Ixodidae
Funereal duskywing	<i>Erynnis funerealis</i>	Lepidoptera	Hesperiidae
Mournful duskywing	<i>Erynnis tristis</i>	Lepidoptera	Hesperiidae
Rural skipper	<i>Ochlodes agricola</i>	Lepidoptera	Hesperiidae
Bernardino blue	<i>Euphilotes Bernardino</i>	Lepidoptera	Lycaenidae
Marine blue	<i>Leptotes marina</i>	Lepidoptera	Lycaenidae
Hedgerow hairstreak	<i>Satyrium saepium</i>	Lepidoptera	Lycaenidae
Mountain mahogany hairstreak	<i>Satyrium tetra</i>	Lepidoptera	Lycaenidae
Painted lady	<i>Vanessa sp</i>	Lepidoptera	Nymphalidae
Checkered white	<i>Pontia protodice</i>	Lepidoptera	Pieridae
Behr's metalmark	<i>Apodemia mormo virgulti</i>	Lepidoptera	Riodinidae
Dragonfly spp.	--	Odonata	--
True cricket sp.	--	Orthoptera	Gryllidae
Jerusalem cricket	--	Orthoptera	Stenopelmatidae
Centipede spp.	--	Scolopendromorpha	Scolopendridae
Windscorpion spp.	--	Solifugae	Eremobatidae
Reptiles & Amphibians			
Coast horned lizard	<i>Phrynosoma blainvillii</i>	Squamata	Phrynosomatidae
Coronado island skink	<i>Plestiodon skiltonianus interparietalis</i>	Squamata	Scincidae

Common Name	Scientific Name	Order	Family
Belding's orange-throated whiptail	<i>Aspidoscelis hyperythra beldingi</i>	Squamata	Teiidae
Coastal whiptail	<i>Aspidoscelis tigris stejnegeri</i>	Squamata	Teiidae
Southern alligator lizard	<i>Elgaria multicarinata</i>	Squamata	Anguidae
Western fence lizard	<i>Sceloporus occidentalis</i>	Squamata	Phrynosomatidae
Granite spiny lizard	<i>Sceloporus orcutti</i>	Squamata	Phrynosomatidae
Side-blotched lizard	<i>Uta stansburiana</i>	Squamata	Phrynosomatidae
Granite night lizard	<i>Xantusia henshawi</i>	Squamata	Xantusiidae
California striped racer	<i>Coluber lateralis lateralis</i>	Squamata	Colubridae
California kingsnake	<i>Lampropeltis californiae</i>	Squamata	Colubridae
Gopher snake	<i>Pituophis catenifer</i>	Squamata	Colubridae
Coast patch-nosed snake	<i>Salvadora hexalepis virgultea</i>	Squamata	Colubridae
Southwestern speckled rattlesnake	<i>Crotalus mitchellii pyrrhus</i>	Squamata	Viperidae
Southern Pacific rattlesnake	<i>Crotalus oreganus helleri</i>	Squamata	Viperidae
Avian			
Red-tailed hawk	<i>Buteo jamaicensis</i>	Accipitriformes	Accipitridae
Turkey vulture	<i>Cathartes aura</i>	Accipitriformes	Cathartidae
White-throated swift	<i>Aeronautes saxatalis</i>	Apodiformes	Apodidae
Anna's hummingbird	<i>Calypte anna</i>	Apodiformes	Trochilidae
Costa's hummingbird	<i>Calypte costae</i>	Apodiformes	Trochilidae
Common poorwill	<i>Phalaenoptilus nuttallii</i>	Caprimulgiformes	Caprimulgidae
Mourning dove	<i>Zenaida macroura</i>	Columbiformes	Columbidae
Greater roadrunner	<i>Geococcyx californianus</i>	Cuculiformes	Cuculidae
Bushtit	<i>Psaltiriparus minimus</i>	Passeriformes	Aegithalidae
Black-headed grosbeak	<i>Pheucticus melanocephalus</i>	Passeriformes	Cardinalidae
Western scrub-jay	<i>Aphelocoma californica</i>	Passeriformes	Corvidae
American crow	<i>Corvus brachyrhynchos</i>	Passeriformes	Corvidae
Common raven	<i>Corvus corax</i>	Passeriformes	Corvidae
Southern California rufous-crowned sparrow	<i>Aimophila ruficeps canescens</i>	Passeriformes	Emberizidae
Lark sparrow	<i>Chondestes grammacus</i>	Passeriformes	Emberizidae
California towhee	<i>Melozone crissalis</i>	Passeriformes	Emberizidae
Spotted towhee	<i>Pipilo maculatus</i>	Passeriformes	Emberizidae

Common Name	Scientific Name	Order	Family
Black-chinned sparrow	<i>Spizella atrogularis</i>	Passeriformes	Emberizidae
House finch	<i>Haemorhous mexicanus</i>	Passeriformes	Fringillidae
Lawrence's goldfinch	<i>Spinus lawrencei</i>	Passeriformes	Fringillidae
Lesser goldfinch	<i>Spinus psaltria</i>	Passeriformes	Fringillidae
Barn swallow	<i>Hirundo rustica</i>	Passeriformes	Hirundinidae
Cliff swallow	<i>Petrochelidon pyrrhonota</i>	Passeriformes	Hirundinidae
Violet-green swallow	<i>Tachycineta thalassina</i>	Passeriformes	Hirundinidae
Red-winged blackbird	<i>Agelaius phoeniceus</i>	Passeriformes	Icteridae
Bullock's oriole	<i>Icterus bullockii</i>	Passeriformes	Icteridae
Brown-headed cowbird	<i>Molothrus ater</i>	Passeriformes	Icteridae
California thrasher	<i>Toxostoma redivivum</i>	Passeriformes	Mimidae
Oak titmouse	<i>Baeolophus inornatus</i>	Passeriformes	Paridae
Wilson's warbler	<i>Cardellina pusilla</i>	Passeriformes	Parulidae
Macgillivray's warbler	<i>Geothlypis tolmiei</i>	Passeriformes	Parulidae
Orange-crowned warbler	<i>Oreothlypis celata</i>	Passeriformes	Parulidae
Yellow-rumped warbler	<i>Setophaga coronata</i>	Passeriformes	Parulidae
Townsend's warbler	<i>Setophaga townsendi</i>	Passeriformes	Parulidae
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	Passeriformes	Poliptilidae
Phainopepla	<i>Phainopepla nitens</i>	Passeriformes	Ptilonotidae
Wrentit	<i>Chamaea fasciata</i>	Passeriformes	Sylviidae
Canyon wren	<i>Catherpes mexicanus</i>	Passeriformes	Troglodytidae
Rock wren	<i>Satyrium auretteorum</i>	Passeriformes	Troglodytidae
Bewick's wren	<i>Thryomanes bewickii</i>	Passeriformes	Troglodytidae
House wren	<i>Troglodytes aedon</i>	Passeriformes	Troglodytidae
Hermit thrush	<i>Catharus guttatus</i>	Passeriformes	Turdidae
Olive-sided flycatcher	<i>Contopus cooperi</i>	Passeriformes	Tyrannidae
Western wood-pewee	<i>Contopus sordidulus</i>	Passeriformes	Tyrannidae
Pacific-slope flycatcher	<i>Empidonax difficilis</i>	Passeriformes	Tyrannidae
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>	Passeriformes	Tyrannidae
Cassin's kingbird	<i>Tyrannus vociferans</i>	Passeriformes	Tyrannidae
Warbling vireo	<i>Vireo gilvus</i>	Passeriformes	Vireonidae

Common Name	Scientific Name	Order	Family
Hutton's vireo	<i>Vireo huttoni</i>	Passeriformes	Vireonidae
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	Pelecaniformes	Ardeidae
Northern flicker	<i>Colaptes auratus</i>	Piciformes	Picidae
Acorn woodpecker	<i>Melanerpes formicivorus</i>	Piciformes	Picidae
Nuttall's woodpecker	<i>Picoides nuttallii</i>	Piciformes	Picidae
Barn owl	<i>Tyto alba</i>	Strigiformes	Tytonidae
Double-crested cormorant	<i>Phalacrocorax auritus</i>	Suliformes	Phalacrocoracidae
Mammals			
Mule deer	<i>Odocoileus hemionus</i>	Artiodactyla	Cervidae
Coyote	<i>Canis latrans</i>	Carnivora	Canidae
Gray fox	<i>Urocyon cinereoargenteus</i>	Carnivora	Canidae
Bobcat	<i>Lynx rufus</i>	Carnivora	Felidae
Striped skunk	<i>Mephitis mephitis</i>	Carnivora	Mephitidae
Western mastiff bat	<i>Eumops perotis californicus</i>	Chiroptera	Molossidae
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>	Chiroptera	Molossidae
Pallid bat	<i>Antrozous pallidus</i>	Chiroptera	Vespertilionidae
Big brown bat	<i>Eptesicus fuscus</i>	Chiroptera	Vespertilionidae
Western small-footed myotis	<i>Myotis ciliolabrum</i>	Chiroptera	Vespertilionidae
Yuma myotis	<i>Myotis yumanensis</i>	Chiroptera	Vespertilionidae
Western pipistrelle	<i>Pipistrellus hesperus</i>	Chiroptera	Vespertilionidae
Desert cottontail	<i>Sylvilagus audubonii</i>	Lagomorpha	Leporidae
Dulzura pocket mouse	<i>Chaetodipus californicus femoralis</i>	Rodentia	Heteromyidae
Dulzura kangaroo rat	<i>Dipodomys simulans</i>	Rodentia	Heteromyidae
Large-eared woodrat	<i>Neotoma macrotis</i>	Rodentia	Muridae
California mouse	<i>Peromyscus californicus</i>	Rodentia	Muridae
Cactus mouse	<i>Peromyscus eremicus</i>	Rodentia	Muridae
Deer mouse	<i>Peromyscus maniculatus</i>	Rodentia	Muridae
Western harvest mouse	<i>Reithrodontomys megalotis</i>	Rodentia	Muridae
California ground squirrel	<i>Spermophilus beecheyi</i>	Rodentia	Sciuridae

APPENDIX D

**SPECIAL-STATUS WILDLIFE SPECIES
WITH POTENTIAL TO OCCUR**

Appendix D
Special-Status Wildlife Species with Potential to Occur on Property

Scientific Name	Common Name	Status	General Habitat	Potential for Occurrence
INVERTEBRATES				
<i>Branchinecta sandiegonensis</i>	San Diego fairy shrimp	USFWS: Endangered County: Group 1 NCMSCP: Covered	Vernal pools and seasonal depressions, restricted to mesas and other areas with suitable soils.	Not expected to occur. The Property contains no suitable habitat (vernal pools) for this species.
<i>Lycaena hermes</i>	Hermes copper butterfly	Federal: Candidate County: Group 1	Hermes copper butterfly larvae utilize redberry (<i>Rhamnus crocea</i>) as a foodplant and the distribution of the Hermes copper is closely tied to the distribution of redberry, typically occurring in chaparral or coastal sage scrub. Adults visit flowers, especially those of flat-top buckwheat (<i>Eriogonum fasciculatum</i>).	High potential to occur. The property contains suitable chaparral habitat with abundant nectar sources. Larval host plants may be present.
<i>Pyrgus ruralis lagunae</i>	Laguna Mountains skipper	USFWS: Endangered County: Group 1	Inhabits wet montane meadows, reaching altitudes of approximately 4,000 to 6,000 feet (1,800 m) in yellow pine forests of the Laguna and Palomar Mountains. The larval host plant is Cleveland's Horkelia (<i>Horkelia clevelandii</i>)	Not expected to occur. The Property is located outside of the known range of this species.
AMPHIBIANS				
<i>Anaxyrus californicus</i>	Arroyo toad	USFWS: Endangered CDFW: SSC County: Group 1 NCMSCP: Covered	Gravelly or sandy washes, stream and river banks, and arroyos. Also upland habitat near washes and streams such as sage scrub, mixed chaparral, Joshua tree woodland, and sagebrush habitats.	Not expected to occur. The Property contains no suitable habitat for this species.
<i>Spea hammondi</i>	Western spadefoot	CDFW: SSC County: Group 2 NCMSCP: Covered	Sandy or gravelly soil in grasslands, open chaparral and pine-oak woodlands, coastal sage scrub; vernal pools or freshwater marshes are essential for breeding.	High potential to occur. The Property contains suitable habitat for this species.
<i>Rana muscosa</i>	Sierra Madre yellow-legged frog	USFWS: Endangered County: Group 1	Inhabits rocky streams in narrow canyons and in the chaparral belt.	Not expected to occur. This species is extirpated from San Diego County
REPTILES				
<i>Aspidoscelis hyperythra beldingi</i>	Belding's orange-throated whiptail	CDFW: SSC County: Group 2 NCMSCP: Covered	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 documented during AECOM surveys in spring 2014.

Scientific Name	Common Name	Status	General Habitat	Potential for Occurrence
<i>Aspidoscelis tigris stejnegeri</i>	Coastal whiptail	County: Group 2	Open areas in grasslands, scrublands, and woodlands.	Present. This species was documented during AECOM surveys in spring 2014.
<i>Lichanura orcutti</i>	Northern Three-lined Boa (former subspecies of coastal rosy boa)	County: Group 2	Scrub habitats with rock outcrops. Once common on the coast, now typically found in inland locations.	High potential to occur. The Property contains suitable habitat for this species.
<i>Coleonyx variegatus abbottii</i>	San Diego banded gecko	County: Group 2	Occurs in arid areas including creosote flats, sagebrush desert, pinion-juniper woods, and chaparral. Prefers rocky areas but may occur in rock-free areas such as sand dunes.	High potential to occur. The Property contains suitable habitat for this species.
<i>Crotalus ruber</i>	Red diamond rattlesnake	CDFW: SSC County: Group 2 NCMSCP: Covered	Coastal sage scrub and grasslands. Occurs in rocky areas and dense vegetation with rodent burrows, cracks in rocks, or surface cover objects.	High potential to occur. The Property contains suitable habitat for this species.
<i>Diadophis punctatus similis</i>	San Diego ringed neck snake	County: Group 2	Prefers moist habitats, including wet meadows, rocky hillsides, gardens, grassland, chaparral,, mixed coniferous woods, and woodlands.	High potential to occur. The Property contains suitable habitat for this species.
<i>Anniella stebbinsi</i>	Southern California legless lizard (formerly silvery legless lizard)	CDFW: SSC County: Group 2	Occurs in moist warm loose soil with plant cover.	High potential to occur. The Property contains suitable habitat for this species.
<i>Clemmys marmorata pallida</i>	Southwestern pond turtle	CDFW: SSC County: Group 1 NCMSCP: Covered	Ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches, with abundant vegetation, and either rocky or muddy bottoms, in woodland, forest, and grassland. In streams, prefers pools to shallower areas. Logs, rocks, cattail mats, and exposed banks are required for basking. May enter brackish water and even seawater.	Not expected to occur. The Property lacks suitable wetland habitat for this species.
<i>Ensatina klauberi</i>	Large-blotched salamander	CDFW: SSC County: Group 1	Inhabits moist shaded evergreen and deciduous forests and oak woodlands on Palomar Mountain and in the Peninsular Ranges.	Not expected to occur. The Property lies outside the known range of this species.
<i>Phrynosoma blainvillei</i>	Coast horned lizard	CDFW: SSC County: Group 2 NCMSCP: Covered	Coastal sage scrub and chaparral in arid and semi-arid climate conditions. Prefers friable, rocky, or shallow sandy soils.	Present. This species was documented during AECOM surveys in spring 2014.
<i>Eumeces skiltonianus interparietalis</i>	Coronado Island skink	CDFW: SSC County: Group 2	Scrub habitats with leaf litter and sandy substrates.	Present. This species was documented during AECOM surveys in spring 2014.
<i>Salvadora hexalepis virgulata</i>	Coast patch-nosed snake	CDFW: SSC County: Group 2	Grasslands, scrublands, and woodlands with sandy soils and leaf litter.	Present. This species was documented during AECOM surveys in spring 2014.
<i>Thamnophis hammondi</i>	Two-striped garter snake	CDFW: SSC County: Group 2 NCMSCP: Covered	Aquatic habitats, preferably rocky streams with protected pools, cattle ponds, marshes, vernal pools, and other shallow bodies of water lacking large aquatic predators.	Low potential to occur. The Property lies close enough to suitable wet drainages that there is potential for dispersal.

Scientific Name	Common Name	Status	General Habitat	Potential for Occurrence
BIRDS				
<i>Accipiter cooperii</i>	Cooper's hawk	CDFW: Watch List (Nesting) County: Group 1	Usually found nesting in oak woodlands, but occasionally in willow or eucalyptus woodlands.	High potential to occur. The Property contains suitable habitat for this species.
<i>Accipiter striatus</i>	Sharp-shinned hawk	CDFW: Watch List (Nesting) County: Group 1	A winter visitor, distributed over the coastal slope of San Diego County. The habitat of this species encompasses a variety of vegetation communities and land covers. It requires a certain amount of dense cover, but this can be localized and scattered through relatively open country.	High potential to occur. The Property contains suitable foraging habitat for this species, but the Property lies outside its known breeding range.
<i>Agelaius tricolor</i>	Tricolored blackbird	CDFW: Watch List County: Group 1 NCMSCP: Covered	Freshwater marshes with cattails and other emergent vegetation.	Low potential to occur. There is no suitable breeding habitat on site, but this species could be attracted to forage at seasonal pools.
<i>Aimophila ruficeps canescens</i>	Southern California rufous-crowned sparrow	CDFW: Watch List County: Group 1 NCMSCP: Covered	Coastal sage scrub and sparse mixed chaparral, often in steep or rocky terrain.	Present. This species was documented during AECOM surveys in spring 2014.
<i>Amphispiza belli</i>	Bell's sparrow	CDFW: Watch List County: Group 1 NCMSCP: Covered	Coastal sage scrub and sparse chaparral, typically in large unfragmented blocks in inland locales.	High potential to occur. The Property contains suitable habitat for this species.
<i>Aquila chrysaetos</i>	Golden eagle	CDFW: Fully Protected; Watch List (Nesting and Wintering) County: Group 1 NCMSCP: Covered	Nests on cliff ledges and trees on steep slopes. Hunts for prey in nearby grasslands, sage scrub, or broken chaparral. Requires very large territories.	High potential to occur. The Property contains suitable foraging habitat for this species.
<i>Athene cunicularia hypugaea</i>	Western burrowing owl	CDFW: SSC County: Group 1 NCMSCP: Covered	Grasslands, open scrublands, and margins of agriculture fields with burrows. Subterranean nester, dependent upon burrowing mammals, especially California ground squirrel.	Moderate potential to occur. The Property contains areas of open scrubland with ground squirrel activity providing potential suitable burrows.
<i>Buteo lineatus</i>	Red-shouldered hawk	County: Group 1	Occurs mainly in swamp and forest habitats. They use the same nesting site from year to year.	High potential to occur. The Property contains suitable habitat for this species.
<i>Campylorhynchus brunneicapillus sandiegensis</i>	Coastal (San Diego) cactus wren	CDFW: SSC County: Group 1 NCMSCP: Covered	Coastal sage scrub usually with abundant cactus patches.	Low potential to occur. The Property lacks large patches of cactus that this species requires for nesting.

Scientific Name	Common Name	Status	General Habitat	Potential for Occurrence
<i>Cathartes aura</i>	Turkey vulture	County: Group 1	Forages aerially above virtually any vegetation type or terrain, except dense human development. Secluded cliff ledge or rock fissure in remote, rugged terrain required for nesting. Native or non-native tree groves in lowlands often used as winter roosts.	Present. This species was documented during AECOM surveys in spring 2014.
<i>Charadrius alexandrinus nivosus</i>	Western snowy plover	Federal: Threatened CDFW: SSC County: Group 1	Coastal sandy beaches, dunes, and estuary habitats.	Not expected to occur. The Property contains no suitable habitat for this species.
<i>Contopus cooperi</i>	Olive-sided flycatcher	CDFW: SSC County: Group 2	Inhabits openings in and edges to dense coniferous forests	Present. A migrating individual of this species was documented during AECOM surveys in spring 2014.
<i>Dendroica petechia brewsteri</i>	Yellow warbler	CDFW: SSC County: Group 2	Mature riparian woodlands consisting of cottonwood, willow, alder, and ash trees. Restricted to this increasingly patchy habitat.	Moderate potential to occur. Very little riparian habitat occurs on the Property so this species is only likely to occur as a migrant.
<i>Elanus leucurus</i>	White-tailed kite	CDFW: Fully Protected; SSC (Nesting) County: Group 1	Widespread over the coastal slope of San Diego County preferring riparian woodlands, oak groves, or sycamore groves adjacent to grasslands.	High potential to occur. The Property contains suitable habitat for this species.
<i>Empidonax traillii eximus</i>	Southwestern willow flycatcher	USFWS: Endangered CDFW: Endangered County: Group 1 NCMSCP: Covered	Restricted to a few colonies in riparian woodlands scattered throughout southern California. Riparian forests are integral to this species' persistence.	Low potential to occur. Very little riparian habitat occurs on the Property so this species is only likely to occur as an occasional migrant.
<i>Icteria virens</i>	Yellow-breasted chat	CDFW: SSC County: Group 1 NCMSCP: Covered	Riparian woodland, with dense undergrowth.	Low potential to occur. Very little riparian habitat occurs on the Property so this species is only likely to occur as an occasional migrant.
<i>Ixobrychus exilis</i>	Least bittern	CDFW: SSC County: Group 2	Marsh habitats or large emergent wetlands with cattails (<i>Typha</i> sp.) and tules.	Not expected to occur. The Property contains no suitable habitat for this species.
<i>Laterallus jamaicensis coturniculus</i>	California black rail	CDFW: SSC, Fully Protected County: Group 2	Freshwater and saltwater marshes with bulrush or pickleweed.	Not expected to occur. The Property contains no suitable habitat for this species.
<i>Passerculus sandwichensis beldingi</i>	Belding's savannah sparrow	CDFW: Endangered County: Group 1	Salt marsh and mudflats with pickleweed.	Not expected to occur. The Property contains no suitable habitat for this species.
<i>Phalacrocorax auritus</i>	Double-crested cormorant	CDFW: Watch List County: Group 2	Marine, freshwater and estuary environments. Needs water for foraging and perching areas to dry out.	Present. This species was documented during AECOM surveys in spring 2014.

Scientific Name	Common Name	Status	General Habitat	Potential for Occurrence
<i>Plegadis chihi</i>	White-faced ibis	CDFW: Watch List County: Group 1 NCMSCP: Covered	Freshwater marsh, shallow lacustrine waters, muddy ground of wet meadows, and irrigated or flooded pastures and croplands. Nests in dense freshwater marsh.	Not expected to occur. The Property contains no suitable habitat for this species.
<i>Polioptila californica californica</i>	Coastal California gnatcatcher	Federal: Threatened CDFW: SSC County: Group 1 NCMSCP: Covered	Coastal sage scrub below 2,500 feet in elevation. Low, coastal sage scrub, in arid washes, on mesas and slopes.	Low potential to occur. Scrub habitats on the Property are marginally suitable for this species.
<i>Rallus longirostris levipes</i>	Light-footed clapper rail	USFWS: Endangered CDFW: Endangered, Fully Protected County: Group 1 NCMSCP: Covered	Coastal salt marshes and freshwater marshes with connection to estuarine habitats	Not expected to occur. The Property contains no suitable habitat for this species.
<i>Sialia mexicana</i>	Western bluebird	County: Group 2	Frequents open woodlands for foraging, but requires suitable roosting and nesting cavities usually in snags. Availability of snags may limit population density.	High potential to occur. The Property contains suitable habitat for this species.
<i>Sterna antillarum browni</i>	California least tern	USFWS: Endangered CDFW: Endangered, Fully Protected County: Group 1	Coastal beaches and saltflats.	Not expected to occur. The Property contains no suitable habitat for this species.
<i>Tyto alba</i>	Barn owl	County: Group 2	Inhabit grasslands, deserts, marshes, agricultural fields, narrow forest strips, brushy fields, and suburbs and cities. They nest in tree cavities, caves, and in buildings	Present. This species was documented during AECOM surveys in spring 2014.
<i>Vireo bellii pusillus</i>	Least Bell's vireo	USFWS: Endangered CDFW: Endangered County: Group 1 NCMSCP: Covered	Willow and mulefat-dominated riparian forests and woodlands.	Low potential to occur. Very little riparian habitat occurs on the Property so this species is only likely to occur as an occasional migrant.
MAMMALS				
<i>Antrozous pallidus</i>	Pallid bat	CDFW: SSC County: Group 2 NCMSCP: Covered	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 documented during AECOM surveys in spring 2014.

Scientific Name	Common Name	Status	General Habitat	Potential for Occurrence
<i>Chaetodipus californicus femoralis</i>	Dulzura pocket mouse	CDFW: SSC County: Group 2	Slopes covered with chaparral and live oaks.	Present. This species was documented during AECOM surveys in spring 2014.
<i>Chaetodipus fallax fallax</i>	Northwestern San Diego pocket mouse	CDFW: SSC County: Group 2 NCMSCP: Covered	Sagebrush scrub, annual grassland, chaparral, and desert scrubs. Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	Moderate potential to occur. Suitable habitat is present on the Property
<i>Dipodomys stephensi</i>	Stephens' kangaroo rat	USFWS: Endangered CDFW: ST County: Group 1 NCMSCP: Covered	Inhabits annual and perennial grassland habitats, but may occur in coastal scrub or sagebrush with sparse canopy cover, or in disturbed areas.	Moderate potential to occur. Suitable habitat is present on the Property
<i>Eumops perotis californicus</i>	Western mastiff bat	CDFW: SSC County: Group 2	Chaparral; live oaks; and arid, rocky regions. Requires downward-opening crevices.	Present. This species was documented during AECOM surveys in spring 2014.
<i>Lasionycteris noctivagans</i>	Silver-haired bat	CDFW: Special Animal	Old growth coniferous or mixed coniferous and deciduous forests.	Not expected to occur. The Property contains no suitable habitat for this species.
<i>Lasiurus blossevillii</i>	Western red bat	CDFW: SSC County: Group 2	Feeds over grasslands, shrublands, open woodlands, forests, and croplands. Roosts primarily in trees and at times, shrubs, often in edge habitats along streams, fields, or urban areas.	Moderate potential to occur: The Property contains suitable foraging habitat.
<i>Lasiurus cinereus</i>	Hoary bat	CDFW: Special Animal	Prefers trees at the edge of clearings, but has been found in trees in heavy forests, open wooded glades, and shade trees along urban streets and in city parks.	Moderate potential to occur: The Property contains suitable foraging habitat.
<i>Lasiurus xanthinus</i>	Western yellow bat	CDFW: SSC, Special Animal	Associated with thorny vegetation on the Mexican Plateau and found in desert regions of the southwestern United States, particularly in association with palms.	Not expected to occur. The Property lies outside the know range of this species.
<i>Lepus californicus bennettii</i>	San Diego black-tailed jackrabbit	CDFW: SSC County: Group 2 NCMSCP: Covered	Grasslands, open scrub habitats, disturbed areas, and agricultural fields.	High potential to occur. The Property contains suitable habitat for this species.
<i>Macrotus californicus</i>	California leaf-nosed bat	CDFW: SSC, Special Animal County: Group 2	Preferred habitats are caves, mines, and rock shelters, mostly in Sonoran desert scrub.	High potential to occur. The Property contains suitable habitat for this species.
<i>Myotis ciliolabrum</i>	Western small-footed myotis	CDFW: Special Animal	Inhabits deserts, semideserts, 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 documented during AECOM surveys in 2014.
<i>Myotis evotis</i>	Long-eared myotis	County: Group 2	Uses mostly forested areas, especially with broken rock outcrops, also shrubland, meadows near tall timber, wooded streams, and reservoirs. Often roosts in buildings, hollow trees, mines, caves, fissures, etc.	High potential to occur. The Property contains suitable habitat for this species.

Scientific Name	Common Name	Status	General Habitat	Potential for Occurrence
<i>Myotis thysanodes</i>	Fringed myotis	CDFW: SSC County: Group 2	Occurs in a variety of habitats from desert scrub to fir-pine associations. Oak and pinyon woodlands most commonly used. Roost within caves, mines, and buildings	High potential to occur. The Property contains suitable habitat for this species.
<i>Myotis yumanensis</i>	Yuma myotis	CDFW: Special Animal County: Group 2	Primarily an inhabitant of desert regions where it is most commonly encountered in lowland habitats near open water, where it prefers to forage.	Present. This species was documented during AECOM surveys in 2014.
<i>Neotoma lepida intermedia</i>	San Diego desert woodrat	CDFW: SSC County: Group 2	Sagebrush scrub, annual grassland, chaparral, and desert scrubs, often with cactus patches, rock outcrops, or rock piles.	High potential to occur. The Property contains suitable habitat for this species.
<i>Nyctinomops femorosaccus</i>	Pocketed free-tailed bat	CDFW: SSC County: Group 2	Rugged cliffs, rocky outcrops, and slopes in desert shrub and pine oak forests.	High potential to occur. The Property contains suitable habitat for this species.
<i>Nyctinomops macrotis</i>	Big free-tailed bat	CDFW: SSC County: Group 2	Low-lying arid areas in southern California.	High potential to occur. The Property contains suitable habitat for this species.
<i>Odocoileus hemionus</i>	Mule deer	County: Group 2	Mountain forests, wooded hills, desert areas and in chaparral.	Present. This species was documented during AECOM surveys in spring 2014.
<i>Perognathus longimembris pacificus</i>	Pacific pocket mouse	USFWS: Endangered CDFW: SSC County: Group 1	Coastal areas with sandy substrates and sparse vegetation.	Not expected to occur. The Property contains no suitable habitat for this species.
<i>Puma concolor</i>	Mountain lion	County: Group 2 NCMSCP: Covered	Rugged mountains, forests, deserts, and swamps.	High potential to occur. The Property contains suitable habitat for this species.
<i>Taxidea taxus</i>	American badger	CDFW: SSC County: Group 2 NCMSCP: Covered	Shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food and friable soils. Preys on burrowing rodents.	High potential to occur. The Property contains suitable habitat for this species.

Status Abbreviations: FE – federally endangered; SE – state endangered; FT – federally threatened; ST – state threatened; SSC – state species of special concern; FP – state fully protected; SA – state special animal (bats only, sensitivity designated by the Western Bat Working Group)

APPENDIX E

FIRE BEHAVIOR MODELING RESULTS

Appendix E

Fire Behavior Modeling Results

The fire effects on the Bottle Peak Property (Property) and the behavior of fire in relation to the vegetation that exists on the Property is an important consideration for a VMP for the Property. Information for the behavior of fire on the Property was generated utilizing the standardized model results information in the *County of San Diego Report Format and Content Requirements, Wildland Fire and Fire Protection* (2010). The following are excerpts from these report format and content requirements.

Analysis of 44 years of weather data (1961–2005) from the USDA Forest Service’s Weather Information Management System (WIMS) provides a sampling of weather patterns across San Diego County. San Diego County is divided into five climate zones from the coast to the desert: Climates of San Diego County, Agricultural Relationships, University of California, Agricultural Extension Service, and U.S. Weather Bureau. Daily afternoon weather observations were manually taken at selected fire stations across the county between 1961 and the early 1990s. Remote Automated Weather Stations (RAWS) replaced manual observations beginning in 1992. (<http://famweb.nwcg.gov/weatherfirecd/>).

Fire Family Plus software (USDA Forest Service) was used to summarize and analyze historical daily fire weather observations and to compute fire danger indices based on the National Fire Danger Rating System (NFDRS).

Weather data from April 15 through December 31 were chosen to represent the general limits of the fire season. Fires have occurred between January 1 and April 14; while dangerous fire weather conditions occur during this period, they typically are not as severe as September and October weather conditions. Including winter weather records would dilute the data and add numerous winter storms that require manual interpretation. Summer fire conditions were derived from records beginning June 15 and ending September 15.

Maximum wind speed data were checked for reasonableness by comparing speed with surrounding stations. Winds associated with winter storms were identified by cross checking with precipitation and relative humidity observations and then excluded. The Santa Ana wind season is assumed to start on September 15. Wind speed is measured at 20 feet above the ground and averaged for at least 10 minutes.

Maximum wind speed was calculated by taking the difference between the maximum recorded wind speed and the 99th percentile wind speed, adding this difference to the 99th percentile wind, adding 10% for a safety margin, and rounding the answer up. This had the effect of throwing out the outliers while including the highest reasonable winds. A table showing days with winds over the 99th percentile is included for each zone. Peak wind for each zone is the highest recorded wind by a RAWS during the Cedar fire (October 26, 2003).

The program for calculating fire behavior and spread requires temperature and relative humidity ranges as inputs. Temperature ranges of 90°–109°F and relative humidities of 5%–9% are reasonable for most areas of the county under Santa Ana conditions. The Burning Index represents the relative difficulty of controlling a wildfire and is calculated from temperature, wind, relative humidity, fuel (vegetation), moisture, and wind.

Utilizing the information described above, the County of San Diego prepared zone level analysis of the behavior of fire utilizing the BEHAVE Plus fire behavior model. The Bottle Peak Property is located within the transitional zone as shown in the following Table 1 and Table 2.

Table 1
BEHAVE Plus 5.0.1

Worst-case Sustained Winds (10-minute average and peak) Fuel Model 1 at 50% Slope

Zone	Period	Temperature	Relative Humidity	Sustained Wind Speed	Burning Index (99%)	Rate of Spread Feet/min	Flame Length
Transitional	Summer	90-109°F	10-14%	19 mph	119	430	9
	Santa Ana	90-109°F	5-9%	28 mph	145	730	13
	Peak	90-109°F	5-9%	41 mph	-	730	13

Table 2
BEHAVE Plus 5.0.1

Worst-case Sustained Winds (10-minute average and peak) Fuel Model 4 at 50% Slope

Zone	Period	Temperature	Relative Humidity	Sustained Wind Speed	Burning Index (99%)	Rate of Spread Feet/min	Flame Length
Transitional	Summer	90-109°F	10-14%	19 mph	119	615	54
	Santa Ana	90-109°F	5-9%	28 mph	145	1100	73
	Peak	90-109°F	5-9%	41 mph	-	1600	87

Under extreme fire conditions, worst-case scenario modeled using BEHAVE Plus 5.0.1 indicates that the rate of spread of a fire through a transitional zone location such as the Bottle Peak Property will reach 1,600 feet or more than a quarter-mile per minute with 87-foot flame length. However, under more normal conditions, the spread rate would be 730 feet per minute with flame lengths of 13 feet.

References:

County of San Diego. 2010. *County Of San Diego Report Format and Content Requirements Wildland Fire and Fire Protection*. Land Use Environment Group, Department of Planning and Land Use, Department of Public Works. 18pp.

APPENDIX F

INVASIVE SPECIES WITH MODERATE AND LOW OR NO PRIORITY FOR REMOVAL

APPENDIX F

INVASIVE SPECIES WITH MODERATE AND LOW OR NO PRIORITY FOR REMOVAL

Species with medium and low priority for removal are discussed below and mapped in (Figure Appendix F).

Medium Priority for Removal

Black Mustard, Shortpod Mustard, and London Rocket

Black mustard (*Brassica nigra*), shortpod mustard (*Hirschfeldia incana*) and London rocket (*Sisymbrium irio*) are products of disturbed habitat. These species are generally found along roads and trails and in the dry pond bed. London rocket may be still spreading into disturbed locations. It may be possible to control the extent of the presence of these species though they are considered naturalized species in many locations with little hope for reduction or removal. It is unlikely that they could be completely removed from this Property, however, because they are not extensively distributed on the Property and can be mechanically pulled or treated with herbicides to reduce their extent during the winter growing season.

Italian Thistle

Italian thistle (*Carduus pycnocephala*) has expanded greatly in the last decade and may be still expanding, especially following favorable rainfall seasons. Italian thistle can be controlled with the use of herbicides, and a fungus has been tested for control with some success (Washington State Noxious Weed Control Board 2014). Application may take place in the late winter and early spring to affect its growth. However, repeated application may be necessary to reduce this weed.

Horehound

Horehound (*Marrubium vulgare*) occurs in the central portion of the Property. It invades areas that have had soil disturbance. Its removal could be accomplished but the source of the plant seeds on the Property would also need to be evaluated and eliminated to permanently remove the plants from the property. It can be mechanically removed any time of the year but its seeds would need to be removed as well.

Yellow Oxalis

Yellow oxalis (*Oxalis pes-caprae*) is a problematic species that should be removed. It is somewhat resistant to removal since it produces hundreds of small bulblets and complete removal would require elimination of all of the bulblets. Chemical treatment may be necessary.

Curly Dock

Curly dock (*Rumex crispus*) is native to Europe and western Asia but is a very widespread weed. It is one of the five most widely distributed plants in the world and is a major weed in agricultural areas. This species is toxic to some livestock and produces large amounts of seed that remain viable for many years. Because this plant is not widespread on the Property, mechanical removal of the taproots by hand is a viable option but continued removal would be necessary to reduce the seed bank (Zaller 2004). It would need to be pulled during the late winter and early spring growing season. It has a limited distribution in the dried pond area.

Johnsongrass

Plants that appear to be Johnsongrass (*Sorghum halepense*) occur inside the edge of the seasonally dry pond on the site. In other portions of the United States, this species is a serious agricultural pest. Roundup is considered an effective treatment (Johnson et al. 1997) This species' presence on the site currently appears limited in area where greater levels of moisture exist and would seem to make it a treatable species. It would need to be treated during late winter or early spring. It may be inundated by the pond if it fills during a major rainfall season.

Mexican Fan Palm

Mexican fan palm (*Washingtonia robusta*) also occurs as one tree near the southern part of the Property near the southeastern boundary. It should be removed though it is considered of low risk and is not likely to spread with any significance on this Property. The individual tree does not appear of historic value. It can be removed at any season.

Low Priority For Removal

Tocalote

Tocalote (*Centaurea melitensis*) is fairly widespread in grassy locations. It is a competitor with a number of native annual species but would be difficult to remove. However, mowing and burning at the appropriate time before seed sets may assist in reducing its cover, and biocontrol insects have also been used (California Invasive Plant Council 2014). It can be treated in early spring during its growing period.

Petty Spurge

Petty spurge (*Euphorbia peplus*) is found in a limited area on the Property in somewhat moist and less exposed sites. Removal can be accomplished by hand but, because the sap of this plant causes skin irritation, it is necessary to wear gloves and avoid touching one's eyes. Its infestation area was somewhat reduced in 2015 due the expansion of the native common Eucrypta (*Eucrypta chrysanthemifolia*).

Bristly Ox Tongue

Bristly ox tongue (*Helminthotheca echioides*) is a moderately sized yellow-flowered thistle-like plant. It grows in low disturbed areas with a bit more moisture in the soil and may live a few years. It can be controlled through hand pulling or line trimming before plants set seed in late winter.

Prickly Lettuce

Prickly lettuce (*Lactuca serriola*) grows in locations similar to the bristly ox tongue. However, mowing and cutting appear to be poor control for this species. Prescribed burning in addition to hand pulling may be effective (DiTomaso 2013). Hand pulling should occur in late winter.

Mission Fig

Mission fig (*Opuntia ficus-indica*) usually grows in areas that were intentionally planted. Though this species may persist for many years, it does not typically expand its habitat. If there is historical significance to the plants on the Property, they can be maintained because this species does not normally pose a problem. This species can be removed at any time.

Buckhorn Plantain

Buckhorn plantain (*Plantago lanceolata*) is often a weed of landscaped gardens and can be controlled in those situations by hand pulling and mowing. On the Property, it grows in low areas with a bit more moisture and is limited in distribution to the area near the dam. It is resistant to burning due to a large tap root (Spooner 1997). It is not likely to spread much on the Property. It can be removed by hand during the spring growing season.

Prickly Sow Thistle

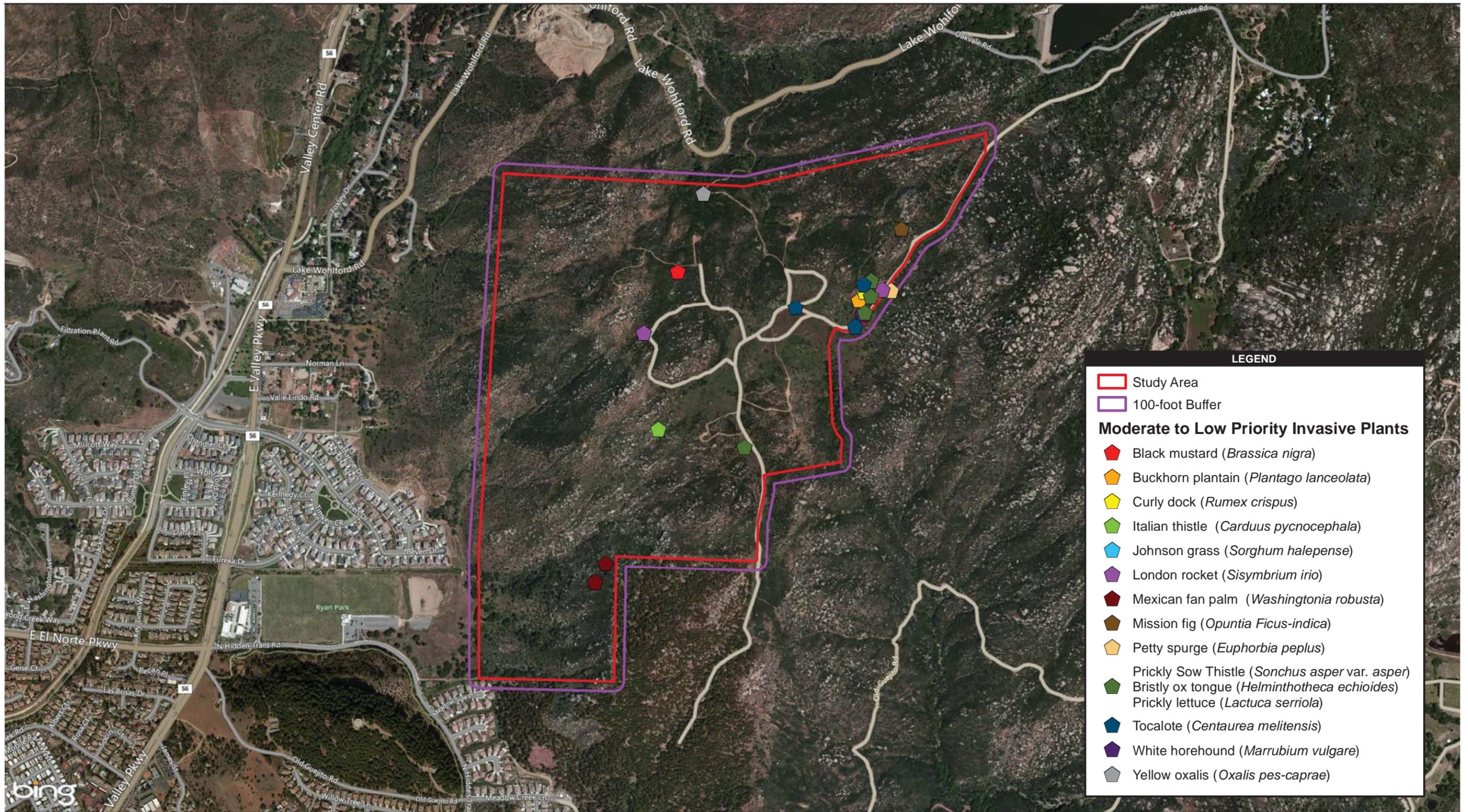
Prickly sow thistle (*Sonchus asper* ssp. *asper*) grows in locations similar to bristly ox tongue and prickly lettuce. Control by mowing and cutting is not very effective due to the presence of a tap root. Roundup has been used effectively (Global Invasive Species Database 2014) during the active growing season.

Corn Spurry

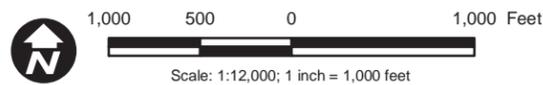
Corn spurry (*Spergula arvensis*) is a small annual that occupies disturbed and packed soils. It is found in a few locations on the Property. It is somewhat resistant to a number of herbicides but can be controlled by hand pulling; however, it is not likely to expand. Due to its widespread nature along the roads, it was not mapped.

No Priority for Removal

A number of nonnative species are so widespread and prevalent in the landscape that attempts to remove or even reduce their presence would be ineffective without a great deal of expense and effort. These species are not recommended for removal at this time. These species include scarlet pimpernel (*Anagallis arvensis*), wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), soft brome (*Bromus hordeaceus*), red brome (*Bromus madritensis* ssp. *rubens*), Australian brass buttons (*Cotula australis*), broadleaf filaree (*Erodium botrys*), redstem filaree (*Erodium cicutarium*), rattail fescue (*Festuca myuros*), Crete weed (*Hedypnois cretica*), smooth cat's ear (*Hypochaeris glabra*), narrow-leaf cottonrose (*Logfia gallica*), burclover (*Medicago polymorpha*), Indian sweetclover (*Melilotus indicus*), rabbitfoot grass (*Polypogon monspeliensis*), Mediterranean grass (*Schismus barbatus*), and common catchfly (*Silene gallica*).



Source: ESRI 2014; BING 2014



Appendix F
Low to Moderate Priority
Invasive Plant Species Locations

