

Resource Management Plan  
for  
**Hellhole Canyon Preserve**  
**San Diego County**



June 2009

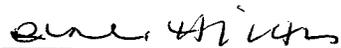


HELLHOLE CANYON  
PRESERVE

RESOURCE MANAGEMENT PLAN

June 30, 2009

Approved by:



\_\_\_\_\_  
Renee Hilton, Assistant Director  
County of San Diego  
Department of Parks and Recreation

6/30/09

\_\_\_\_\_  
Date

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**APPENDICES**

Appendix A	Biological Diversity Baseline Report for the Hellhole Canyon Preserve, County of San Diego
Appendix B	Management Plan for Archaeological Resources within the Hellhole Canyon Preserve, San Diego County

## **1.0 INTRODUCTION**

Hellhole Canyon Preserve (Preserve) consists of approximately 1,850 acres located six miles northeast of Escondido in Valley Center, east of Valley Center Road and north of Santee Lane (Figure 1). The County acquired the Preserve in 1997 and additional parcels in 2005 and 2007 and is included in the Draft Multiple Species Conservation Program North County Plan preserve system. The Preserve consists of high to very high value native habitats, as well as areas that have been marginally impacted by human activities including a staging area, amphitheater, a primitive camping area, and trails.

### **1.1. Purpose of Management Plan**

This Resource Management Plan (RMP) has been prepared as a guidance document to manage and preserve the biological and cultural resources within the Preserve, and to provide Area-Specific Management Directives (ASMDs) pursuant to the requirements of the Draft North County Multiple Species Conservation Program (MSCP) Plan and Draft Framework Resource Management Plan (County 2009). More specifically, this RMP will:

- a) guide the management of vegetation communities/habitats, plant and animal species, cultural resources, and programs described herein to protect and, where appropriate, enhance biological and cultural values;
- b) serve as a guide for appropriate public uses of the property;
- c) provide a descriptive inventory of the vegetation communities/habitats, plant and animal species, and the archaeological and/or historical resources that occur on this property;
- d) establish the baseline conditions from which adaptive management will be determined and success will be measured; and provide an overview of the operation and maintenance requirements to implement management goals.

Chapter 5 of this RMP includes ASMD's for Hellhole Canyon Preserve.

It is recognized that the County owned land is only a small portion of the MSCP preserve system. The County does ensure management of other lands that are dedicated as a conservation easement for discretionary project mitigation, through requiring land developers to prepare Resource Management Plans. The County will spearhead a larger coordinated effort to ensure that other conserved lands in the area that make up the MSCP Preserve are also being monitored and managed consistent with this RMP and the overall goals of the MSCP Plan and County's MSCP North County Plan once it is finalized.

#### **1.1.1 Draft MSCP North County Plan Background**

The Draft North County Plan (Plan) is one of several large habitat conservation planning efforts in the County. This Plan expands the County Multiple Species Conservation

Program (MSCP) into the northwestern unincorporated areas of the County. The area included in this Plan encompasses approximately 489 square miles. This Plan will help conserve habitat that benefits numerous species, including the 63 species covered under the Plan.

Agencies participating in the MSCP include the County, other local jurisdictions, the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). Local jurisdictions and special districts implement their respective portions of the MSCP Plan (City of San Diego 1998) through Subarea plans, which describe specific implementing mechanisms for the MSCP. The combination of the subregional MSCP Plan and Subarea plans serve as a Multiple Species Habitat Conservation Plan (HCP) pursuant to Section 10(a)(1)(B) of the Federal Endangered Species Act (FESA), the Natural Community Conservation Planning (NCCP) Program pursuant to the California NCCP Act of 1991 and the California Endangered Species Act (CESA). Hellhole Canyon Preserve is owned and operated by the County and is included under the County of San Diego Draft MSCP North County Plan (County of San Diego, 2009).

### **1.1.2 Draft North County Plan**

The Plan is currently in draft form. The Draft Plan includes the following unincorporated communities: Bonsall, De Luz, Fallbrook, Harmony Grove, Lilac, Pala, Pauma Valley, Rainbow, Ramona, Rincon Springs, Twin Oaks Valley, and Valley Center. Hellhole Canyon Preserve is located east of Valley Center. Properties surrounding Hellhole Canyon Preserve have been designated as Preserve Areas, Pre-Approved Mitigation Areas (PAMA), Tribal Lands, and Outside PAMA.

### **1.1.3 Draft Framework Resource Management Plan and Area-Specific Management Directives**

According to Section 9.1 of the Draft Plan and as a condition of the Implementing Agreement with the Wildlife Agencies (Section 10.10), the County was required to prepare a Framework Resource Management Plan for the portion of the MSCP Preserve within the Plan's boundaries. The Framework Resource Management Plan provides general direction for all preserve management and biological monitoring within the preserve system.

The Framework Resource Management Plan also incorporates a requirement for the subsequent preparation and implementation of ASMDs to address management and monitoring issues at the site-specific level. ASMDs will guide ongoing resource management on preserves and will be developed by applying the guidelines in the Framework Resource Management Plan to information gained during baseline surveys of species distribution and management needs.

# Hellhole Canyon Preserve Baseline Surveys



**Basemap Legend**

- Freeway
- River
- Lake/Reservoir/Lagoon



## **1.2. Implementation**

### **1.2.1 Management Approach**

A key concept of the MSCP is the use of “Adaptive Management Techniques” directed at the conservation and recovery of individual species. This term refers to modifying management actions when monitoring of the resources indicates that changes are needed. It is particularly useful where there is uncertainty regarding the efficacy of certain management measures and/or the needs of target species. Adaptive management and an associated monitoring program are designed to inform land managers of the status and trends of covered species, natural communities, and landscapes in a manner that provides data to allow informed management actions and decisions.

It is anticipated that the recommended management actions provided in this RMP will be dynamic in nature. Applying adaptive management, the effectiveness and appropriateness of recommended management actions would be determined through review of management goal and objective achievement so that changes can be made to management directives and implementation measures as needed. Adaptive management techniques depend upon the specific issues impacting the resources. Therefore, the techniques herein may be subject to change or revisions when applied. Additionally, the monitoring protocols/requirements for MSCP covered species and habitats will be revisited periodically by participants of the MSCP and are subject to change based on adoption of updated protocols.

### **1.2.2 Responsible Parties/Designation of Land Manager**

The County is responsible for management, biological monitoring, and meeting the conditions of MSCP coverage on County-owned lands conserved as part of the MSCP Preserve system. The Preserve is fully owned and operated by the County Department of Parks and Recreation (DPR) and the DPR District Park Manager assigned to the Preserve is the land manager. DPR (District Park Manager and staff of Resources Management Division) will be responsible for the implementation and enforcement of the RMP.

The Preserve is located in the management district of one supervising park ranger, one park ranger, and one park attendant. The Preserve is patrolled two to three times per week. It is expected that many of the implementation measures, especially the maintenance tasks, will be carried out by the rangers who are most familiar with the site and currently patrol the Preserve.

### **1.2.3 Regulatory Context**

The County’s park rangers manage County parks and enforce preserve rules and regulations pursuant to San Diego County Code of Regulatory Ordinances Title 4, Division 1, Chapter 1 County Parks and Recreation. In addition, per County Code of

Regulatory Ordinance Sec 41.111, 41.112, 41.113, all wildlife, plant, historical artifacts, and geologic features are protected and are not to be damaged or removed. Any person who violates any provision of Sections 41.111, 41.112, 41.113 is guilty of a misdemeanor as provided in Sections 11.116, 11.117, and 11.118 of this Code, punishable by fines up to \$2,500 a day for each day the person violates these sections. The park rangers will contact law enforcement who will cite the offending individual. In addition, if an individual does not comply with signs within a facility and ignores park ranger instructions, the individual could potentially be charged with a misdemeanor by law enforcement.

#### **1.2.4 Limitations and Constraints**

It is understood that the ability to implement and the timing of many of the management directives will be directly related to the availability of funding in any fiscal year and in regards to biological priority of the directives. Therefore, all management and monitoring activities described below is subject to funding availability which is determined in the DPR annual budget.

### **2.0 PROPERTY DESCRIPTION**

#### **2.1 Legal Description**

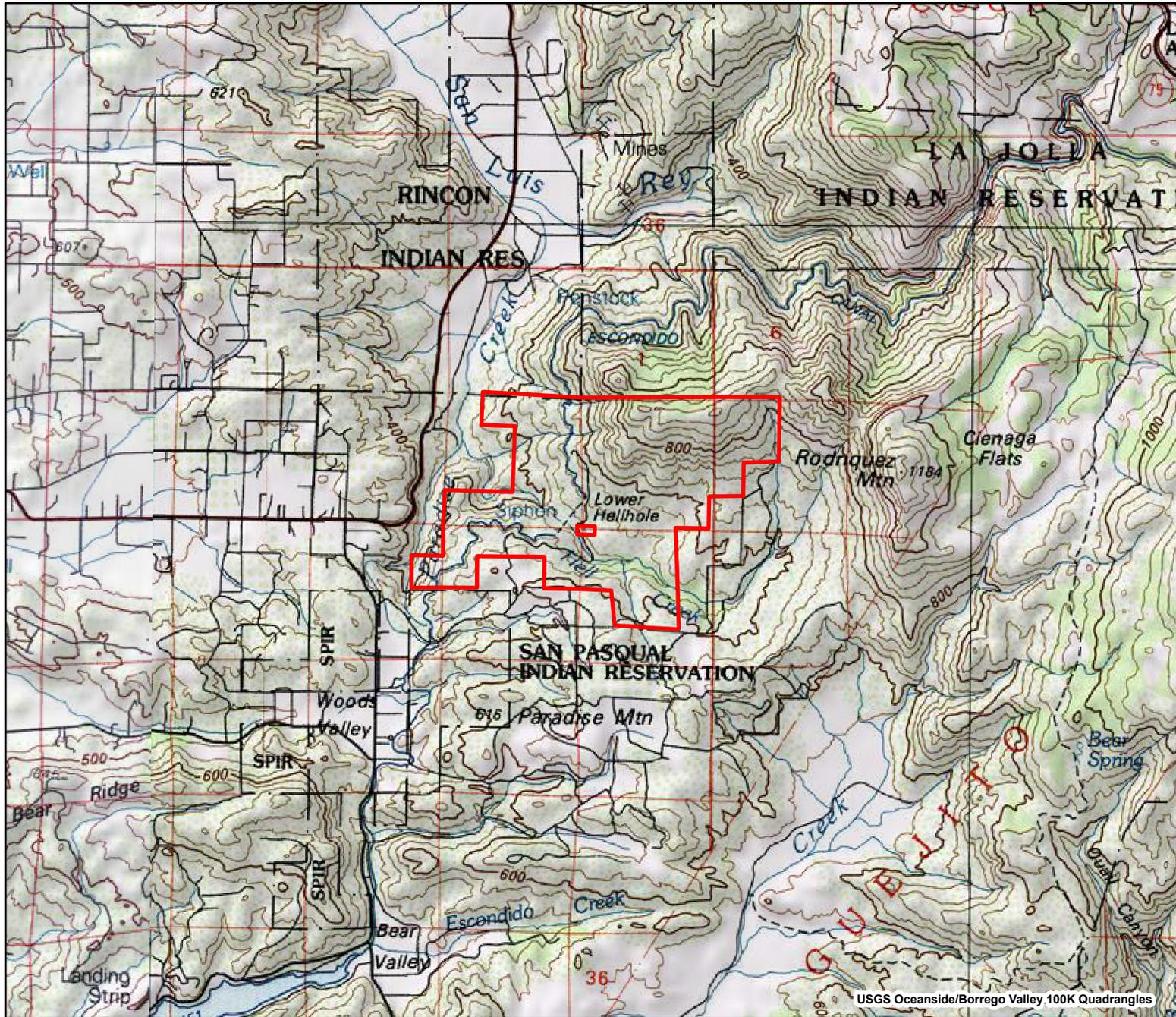
The Preserve property is specifically located approximately six miles northeast of Escondido in Valley Center, east of Valley Center Road and north of Santee Lane (Figure 2). On the USGS 7.5' Oceanside/Borrego Valley Quadrangle, Township 11 South, Range 1 West, Sections 11-15 and Township 11 South, Range 1 East, Section 7. The Assessor's Parcel Numbers for the Preserve are 188-100-39, 189-080-57, 189-080-58, 189-052-31, 188-310-02, 189-080-02, 189-080-25, 189-080-26, 191-060-19, and 189-081-24.

#### **2.2 Geographical Setting**

The Preserve is located in northeastern San Diego County in the Peninsular Geomorphic Range. The Preserve ranges in elevation between approximately 1,900 and 3,200 feet (580-975 meters) above mean sea level (msl) with the highest elevation occurring at the ridge of an unnamed peak located near the northern edge of the Preserve, east-northeast of Rodriguez Mountain.

##### **2.2.1 Site Access**

Existing access points to the Preserve (see Figure 6) include: 1) gate at the southeastern border of the Preserve where Santee Lane provides access to the staging area; 2) gate on the southern border of the Preserve west of the staging area; 3) gate at the western boundary of the Pulver property; and 4) gate on the southwestern border of the Preserve where Canal Road dead ends at the Preserve. A new gate will be installed within the Preserve on the Private Road north of Canal Road. The road alignment for Santee Lane continues through the Pulver property associated with the Preserve. This alignment is not open to public vehicles.



# Hellhole Canyon Preserve Baseline Surveys



**Legend**  
 Hellhole Canyon Preserve Boundary



Feet  
  
 0 5,800

USGS Oceanside/Borrego Valley 100K Quadrangles

## **2.2.2 MSCP Context**

The Preserve is designated under the Draft MSCP North County Plan as Preserve Area (Figure 3). Bureau of Land Management property is located to the north and northeast designated as Preserve Area, rural residential development to the east, west, and south designated as PAMA, and tribal lands to the southwest and northwest.

## **2.3 Physical and Climatic Conditions**

### **2.3.1 Geology and Soils**

According to the Natural Resource Conservation Service's (NRCS) Web Soil Survey (WSS), 12 different soil types are present throughout the Preserve (Figure 4). The WSS provides soil data and information produced by the National Cooperative Soil Survey and provides access to the largest natural resource information system in the world. A brief description of each soil type is provided in detail below.

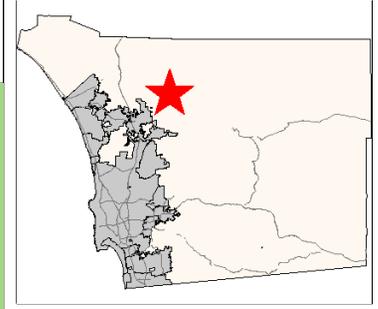
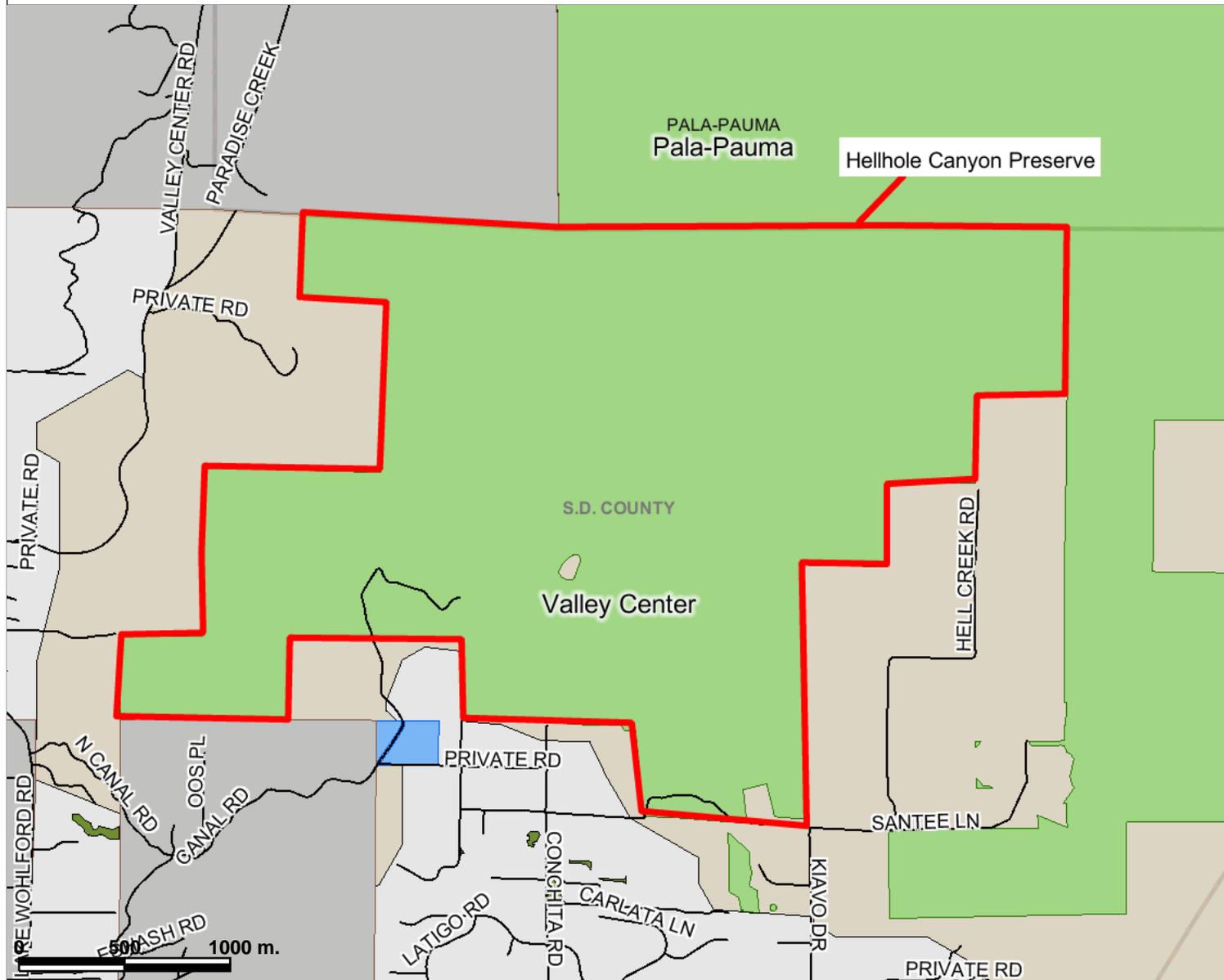
#### Acid Igneous Rock Land

Acid igneous rock land soil is found in rough broken terrain. The topography ranges from low hills to steep mountains. Large boulders and rock outcrops of granite, quartz diorite, gabbro, basalt, and other rock types cover greater than 50 percent of the total area. The soil material is very shallow consisting of loam to loamy course sand textures over decomposed granite or basic igneous rock. In some locales, pockets of deep soils may be present between the rocks. Many areas are practically barren and have very rapid runoff. The vegetation for this soil type varies by elevation and climate. In the foothills and mountains, acid igneous rock land supports various chaparral vegetation communities. In the foothills, the dominant vegetation species on this soil type are laurel sumac (*Malosma laurina*), sugarbush (*Rhus ovata*), chamise (*Adenostoma fasciculatum*), and ceanothus (*Ceanothus* spp.). In the mountains the dominant species are chamise (*Adenostoma fasciculatum*), manzanita (*Arctostaphylos* spp.), red shank (*Adenostoma sparsifolium*), lilac (*Ceanothus* spp.), and scrub oak (*Quercus berberidifolia* or *Q. xacutidens*). On the Preserve this soil type supports southern mixed chaparral.

#### Bonsall Sandy Loam, 9 to 15 percent slopes, eroded

The Bonsall Sandy Loam, 9 to 15 percent slopes, soil type is a moderately well drained, shallow to moderately deep sandy loam with a heavy clay loam subsoil. This soil type occurs on strongly sloping terrain and is frequently cut by shallow gullies. Fertility is medium and permeability is very slow. Runoff is medium and the erosion hazard is moderate. This soil type supports rangeland/grazing land uses and can be found in association with seven vegetation communities on the Preserve, including: (1) coast live oak woodland, (2) southern coast live oak riparian forest (3) disturbed coastal sage scrub, (4) nonnative grassland, (5) southern mixed chaparral, (6) disturbed habitat, and (7) developed/urbanized land.

# Figure 3. Draft North County MSCP Subarea Designations



### Legend

- Highways
- Freeways
- Streets
- Water Bodies**
- Water Bodies
- Public Version: DRAFT MSCP Designations - North**
- Preserve Areas
- Pre-Approved Mitigation Area (PAMA)
- Open Space Easement outside PAMA
- Pre-negotiated (Hardlined) Take Authorized Areas
- Outside Pre-Approved Mitigation Area (PAMA)
- Tribal Lands
- US Forest Service
- Special Districts
- Sponsor Groups**
- Other
- Community Planning Area**
- Community Planning Areas
- Incorporated Areas**
- S.D. COUNTY
- Other

Scale: 1:29,124

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# Hellhole Canyon Preserve Baseline Surveys



## Legend

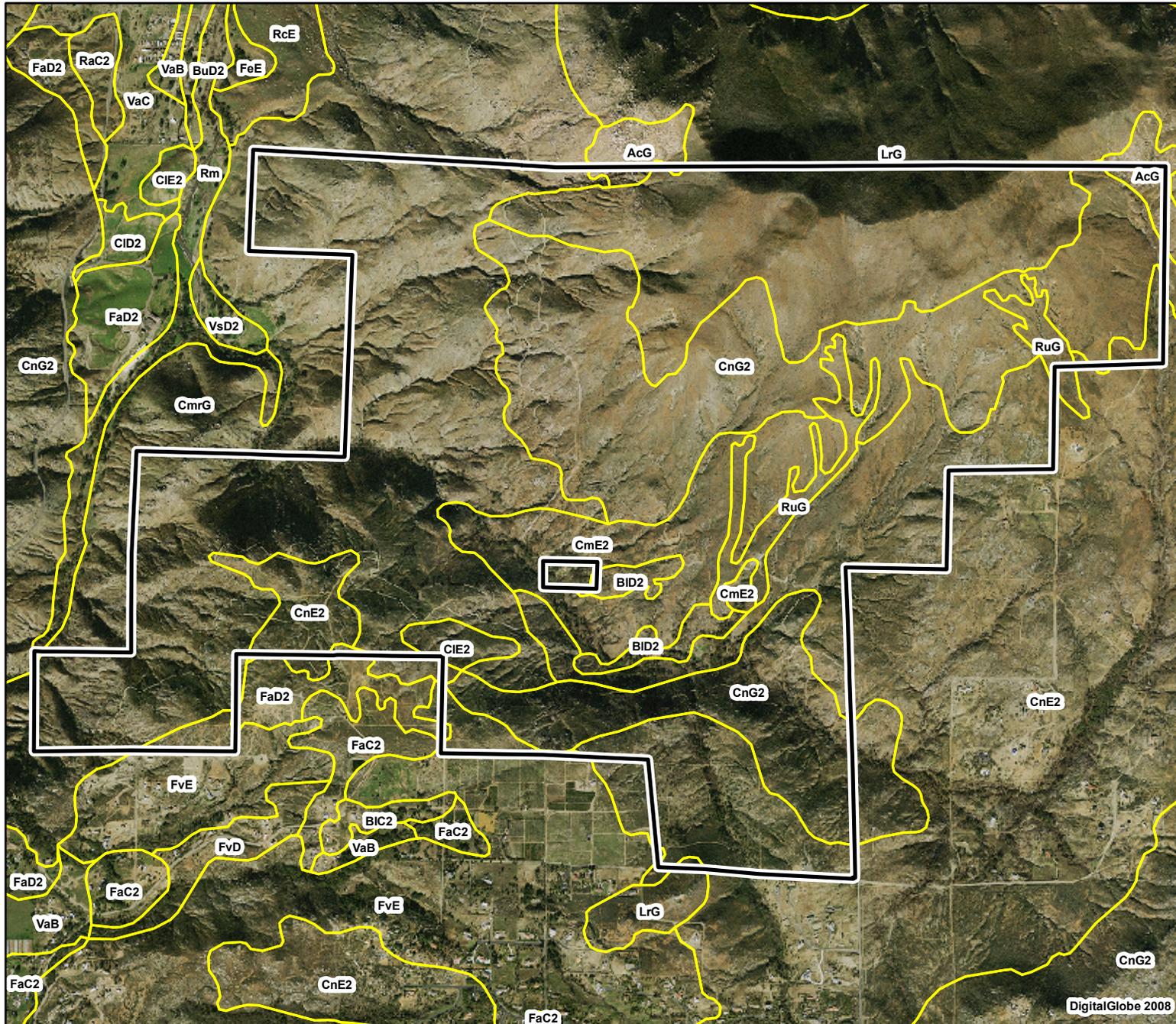
Code	Soil Type
AcG	Acid igneous rock land
BIC2	Bonsall sandy loam, 2 to 9 percent slopes,
BID2	Bonsall sandy loam, 9 to 15 percent slopes, eroded
BuD2	Bull Trail sandy loam, 9 to 15 percent slopes, eroded
CID2	Cieneba coarse sandy loam, 5 to 15 percent slopes, eroded
CIE2	Cieneba coarse sandy loam, 15 to 30 percent slopes, eroded
CmE2	Cieneba rocky coarse sandy loam, 9 to 30 percent slopes, eroded
CmrG	Cieneba very rocky coarse sandy loam, 30 to 7 percent slopes
CnE2	Cieneba-Fallbrook rocky sandy loam, 9 to 30 percent slope, eroded
CnG2	Cieneba-Fallbrook rocky sandy loams, 30 to 6 percent slopes, eroded
FaC2	Fallbrook sandy loam, 5 to 9 percent slopes, eroded
FaD2	Fallbrook sandy loam, 9 to 15 percent slopes, eroded
FeE	Fallbrook rocky sandy loam, 9 to 30 percent slopes
FvD	Fallbrook-Vista sandy loams, 9 to 15 percent slopes
FvE	Fallbrook-Vista sandy loams, 15 to 30 percent slopes
LrG	Las Posas stony fine sandy loam, 30 to 65 percent slopes
RaC2	Ramona sandy loam, 5 to 9 percent slopes, eroded
RcE	Ramona gravelly sandy loam, 15 to 30 percent slopes
Rm	Riverwash
RuG	Rough broken land
VaB	Visalia sandy loam, 2 to 5 percent slopes
VaC	Visalia sandy loam, 5 to 9 percent slopes
VsD2	Vista coarse sandy loam, 9 to 15 percent slopes, eroded

## Basemap Legend

 Hellhole Canyon Preserve Boundary



Feet



DigitalGlobe 2008

Cieneba Coarse Sandy Loam, 15 to 30 percent slopes, eroded

Cieneba Coarse Sandy Loam, 15 to 30 percent slopes, is an excessively drained, very shallow to shallow coarse sandy loam formed from material weathered in place from granitic rock. This soil type occurs on hilly terrain located in uplands. Fertility is low and permeability is rapid. Runoff is medium to rapid and the erosion hazard is moderate to high. This soil type can support wildlife habitat, recreation, and incidental grazing. It is often associated with chaparral and chamise. Within the Preserve this soil type supports southern mixed chaparral and disturbed habitat.

Cieneba Rocky Coarse Sandy Loam, 9 to 30 percent slopes, eroded

This soil type is similar in origin, texture, runoff/drainage, permeability, and erosion hazard to Cieneba Coarse Sandy Loam, 15 to 30 percent slopes. In contrast to Cieneba Coarse Sandy Loam, 15 to 30 percent slopes, this soil type generally occurs in rolling to hilly terrain and has more emergent rock outcrops. This soil type can support wildlife habitat, recreation, and incidental grazing. This soil type is often associated with chaparral and chamise. Seven vegetation communities occur within this soil type on the Preserve, including: (1) coast live oak woodland, (2) southern coast live oak riparian forest, (3) disturbed coastal sage scrub, (4) nonnative grassland, (5) southern mixed chaparral, (6) disturbed habitat, and (7) developed/urbanized land.

Cieneba Very Rocky Coarse Sandy Loam, 30 to 75 percent slopes

This soil type is similar in origin, texture, and permeability, to Cieneba Coarse Sandy Loam, 15 to 30 percent slopes. Cieneba Very Rocky Coarse Sandy Loam, 30 to 75 percent slopes, is excessively drained, very shallow to shallow, coarse sandy loam formed from material weathered in place from granitic rock. This soil type occurs on steep to very steep terrain. Fertility is low. Runoff is rapid to very rapid, and the erosion hazard is high to very high. This soil type has poor overall productivity but supports wildlife habitat, recreation, and incidental grazing. Within the Preserve this soil type supports five vegetation communities: (1) coast live oak woodland, (2) southern coast live oak riparian forest, (3) southern mixed chaparral, (4) disturbed habitat, and (5) developed/urbanized land.

Cieneba – Fallbrook Rocky Sandy Loam, 9 to 30 percent slopes, eroded

This complex is a mixture of two discrete soil mapping types containing approximately 55 percent Cieneba Course Sandy Loam and 40 percent Fallbrook Sandy Loam with 5 percent rock outcrops. This complex occurs in uplands between 200 and 3,000 feet (60 to 915 meters) above mean sea level. This complex displays the geophysical characteristics of both of its constituent sources. The Cieneba course sandy loam component of this complex is excessively drained, permeability is moderately rapid, and fertility is low. The Fallbrook sandy loam component is well drained, permeability is moderately slow, and fertility is medium.

The runoff for both soils is medium to rapid and the erosion hazard is moderate to high with sheet erosion and gully erosion classified as moderate. This soil type supports wildlife habitat, recreation, and managed grazing. It supports a wide range of vegetation on the Preserve, including: (1) coast live oak woodland, (2) southern coast live oak riparian forest, (3) disturbed coastal sage scrub, (4) eucalyptus woodland, (5) nonnative grassland, (6) southern mixed chaparral, (7) row crops, (8) disturbed habitat, and (9) developed/urbanized land. Special-status plant species observed on this soil type during 2008 surveys included Brewer's calandrinia.

Cieneba – Fallbrook Rocky Sandy Loam, 30 to 65 percent slopes, eroded

This complex is similar in origin, texture, runoff/drainage, permeability, and erosion hazard to Cieneba – Fallbrook Rocky Sandy Loam, 9 to 30 percent slopes, eroded. This complex is a mixture of two discrete soil mapping types containing approximately 55 percent Cieneba Course Sandy Loam and 40 percent Fallbrook Sandy Loam with 10 percent rock outcrops and 10 percent large boulders. The Cieneba course sandy loam component of this complex is low in fertility, excessively drained, and moderately to rapidly permeable. Fallbrook Sandy Loam is medium in fertility, well drained, and slowly to moderately permeable. For both constituent soils included in this complex runoff is rapid to very rapid and the erosion hazard is high to very high. Sheet and gully erosion are classified as moderate. This soil type supports wildlife habitat, recreation, and incidental grazing. Six vegetation communities occur within this soil type on the Preserve, including: (1) coast live oak woodland, (2) southern coast live oak riparian forest, (3) eucalyptus woodland, (4) southern mixed chaparral, (5) disturbed habitat, and (6) developed/urbanized land. Special-status species observed on this soil type during 2008 surveys included: Humboldt's lily and fish's milkwort.

Fallbrook Sandy Loam, 5 to 9 percent slopes, eroded

Fallbrook Sandy Loam, 5 to 9 percent slopes (eroded) is a well drained, moderately deep to deep sandy loam formed in material weathered in place from grandiorite. This soil type is similar in origin, texture, runoff/drainage, permeability, and erosion hazard to Fallbrook Sandy Loam, 5 to 9 percent slopes, with slightly different water holding capacities. As described for the series, and Fallbrook Sandy Loam, 5 to 9 percent slopes, in particular, these soils are located on gently sloping terrains in uplands. Fertility is medium, and permeability is moderate. Runoff is slow to medium and the erosion hazard is slight to moderate. Sheet and gully erosion are characterized as moderate. This soil type supports grazing and production of irrigated avocados, citrus, truck crops and non-irrigated small grain and hay. Within the Preserve, row crops and disturbed habitat occur in conjunction with this soil type.

Fallbrook Sandy Loam, 9 to 15 percent slopes, eroded

This soil type occurs on strongly sloping terrain over rock. This soil type is similar in origin, texture, and permeability to Fallbrook Sandy Loam, 5 to 9 percent slopes,

eroded. Runoff is medium and erosion hazard is moderate. Sheet and gully erosion are characterized as moderate. Like other soils of the Fallbrook series, this soil type supports grazing and production of irrigated avocados, citrus, truck crops and non-irrigated small grain and hay. This soil type supports four vegetation communities on the Preserve, including: (1) southern mixed chaparral, (2) row crops, (3) disturbed habitat, and (4) developed/urbanized land.

#### Fallbrook-Vista Sandy Loam, 15 to 30 percent slopes, eroded

This complex is a mixture of two discrete soil mapping types containing approximately 50 percent Fallbrook Sandy Loam and 40 Percent Vista Sandy Loam. This complex occurs in uplands between 200 and 3,000 feet (60 to 915 meters) above mean sea level and is formed on weathered granitic rock. Both constituent soils are well drained. Fertility is medium. Runoff is medium, and the erosion hazard is moderate. Vista sandy loam is moderately rapidly permeable while Fallbrook Sandy Loam is moderately permeable. This soil type supports grazing and production of avocados, citrus, and other crops. This soil type supports four vegetation communities on the Preserve, including: (1) southern mixed chaparral, (2) row crops, (3) disturbed habitat, and (4) developed/urbanized land.

#### Las Posas stony fine sandy loam, 30 to 65 percent slopes

Las Posas stony fine sandy loam, 30 to 65 percent slopes, is a well drained, moderately deep, stony, fine sandy loam with a clay subsoil. It occurs on steep to very steep terrain in uplands. Fertility is medium. Permeability is moderately slow in the subsoil, and water holding capacity is 4 to 6 inches. Runoff is rapid to very rapid, and erosion hazard is high to very high. This soil type supports incidental grazing and wildlife habitat. On the Preserve, this soil type supports three vegetation communities: (1) southern mixed chaparral, (2) disturbed habitat, and (3) developed/urbanized land. The substratum in this series is a gabbro soil.

#### Gabbro Soils

Gabbro soils are a rare soil type in San Diego County and are present on the Preserve in the form of Las Posas soils. These mafic soils, derived from coarse-grained, igneous, gabbroic rock, are chemically similar to the more familiar fine-grained basalt. Gabbro soils contain high levels of magnesium and iron relative to other soil types. On the opposite side of the spectrum are felsic rocks (e.g. granite) with high silica levels and lower levels of metals such as iron and magnesium and the granitic soils which they form. Gabbro soils are found in various locales in the northern and northeastern parts of the County in areas such as Fallbrook and Pala. These soils support unique southern mixed chaparral communities which often include several species of limited distribution known almost exclusively from sites underlain by gabbro soils such as cismontane beargrass (*Nolina cismontane*), Parry's tetraococcus (*Tetraococcus dioicus*), and Gander's butterweed (*Senecio ganderi*). Special-status plant species observed on this soil type during the 2008 surveys included: Cleveland's bush monkey flower, felt-leaved monardella, and fish's milkwort.

### Rough Broken Land

Rough Broken Land is made up of well drained to excessively drained, steep to very steep land dissected by many narrow “V-shaped” valleys and canyons. Areas of exposed raw sediments are common and there are few areas of very shallow soils. Runoff is rapid to very rapid and erosion is very high. Vegetation mostly consists of sparse, woody shrubs. Generally, lands dominated by this soil type are not suitable for farming or ranching operations. Four vegetation communities occur within this soil type on the Preserve, including: (1) coast live oak woodland, (2) southern mixed chaparral, (3) disturbed habitat, and (4) developed/urbanized land.

#### **2.3.2 Climate**

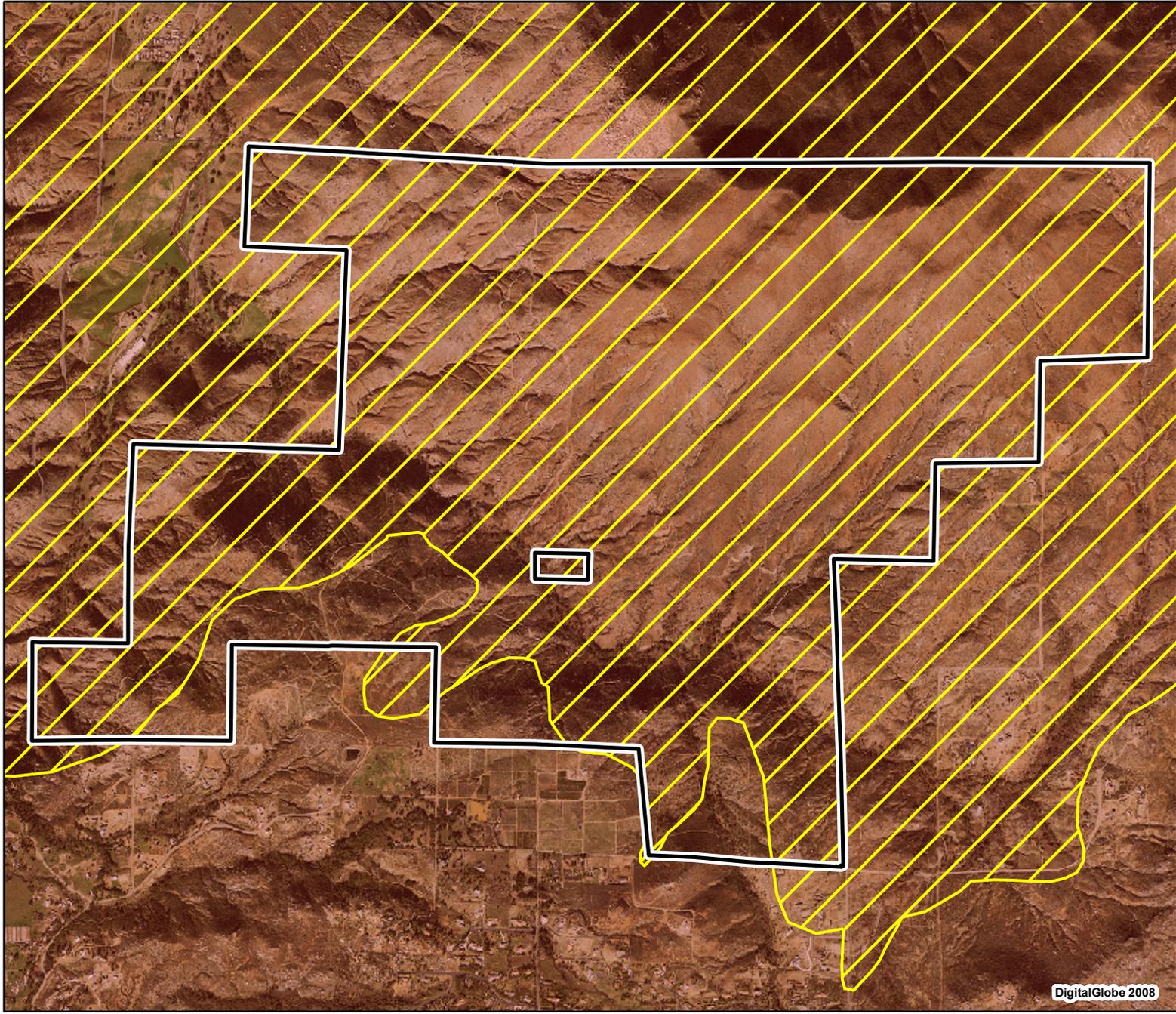
San Diego County and Southern California have a Mediterranean climate characterized by mild wet winters and arid summers. The growing season is generally considered to be 365 days per year in this area. Higher elevations in the Preserve have cooler temperatures on average than the lower elevation and during winter months may infrequently receive some precipitation in the form of snowfall. Higher elevations generally receive more precipitation than lower elevations from weather systems which, upon colliding with cooler air masses such as those over the mountains, may drop several inches of precipitation in a rather short period of time. Higher elevations may also receive occasional summer rains and moisture from tropical weather systems. In addition to differing precipitation patterns, temperatures at higher elevations within the Preserve may drop below 32°F for extended periods of time, resulting in freezing soil conditions, thereby limiting winter growth.

#### **2.3.3 Hydrology**

The entire Preserve is located within the watershed of the San Luis Rey River. The majority of the precipitation that falls within the Preserve drains first to Hell Creek, an intermittent blue-line stream that originates to the east of the Preserve and courses roughly east-west across the center of the Preserve. Near the western edge of the Preserve, Hell Creek converges with Paradise Creek, another intermittent blue-line stream that runs roughly from south to north along the western edge of the Preserve. Downstream (north) of the confluence of Hell Creek, Paradise Creek continues north off the Preserve for approximately five miles before draining into the San Luis Rey River on the Rincon Indian Reservation (Figure 2). The San Luis Rey River is an intermittent streambed which continues west after converging with Paradise Creek, ultimately draining to the Pacific Ocean near Oceanside, California.

#### **2.3.4 Fire History**

Recent noteworthy wildfires have been recorded on the Preserve in 2003 (Paradise Fire) and the 2007 (Poomacha Fire). The 2003 Paradise Fire consumed the entire Preserve; while the Poomacha wildfire in October 2007 re-burned the entire Preserve, but in patches (Figure 5). The entire riparian corridor was re-burned. Southern portions of the Preserve are located in the Valley Center Fire Protection



# Hellhole Canyon Preserve Baseline Surveys



### Legend

-  2007 Poomacha Fire
-  2003 Paradise Fire
-  Overlap between 2003 and 2007 Fires

### Basemap Legend

-  Hellhole Canyon Preserve Boundary



Feet



DigitalGlobe 2008

District and the northern portions in the jurisdiction of the California Department of Forestry and Fire Protection (CalFire).

## **2.4 Land Use**

### **2.4.1 On-Site Land Use**

Facilities within the Preserve include 13.5 miles of hiking and equestrian trails, staging area, amphitheater, restrooms, and primitive group camping area. A canal/flume is located in the southwestern portion of the Preserve traversing north to south.. The foundation of a burnt home occurs within the Pulver property within the Preserve. Three emergency helicopter landing zones are located within the Preserve (Figure 14). These locations include: 1) the staging area; 2) approximately 1.5 miles north of the staging area off of the trail; and 3) north of the in-holding within the Preserve

### **2.4.2 Adjacent Properties**

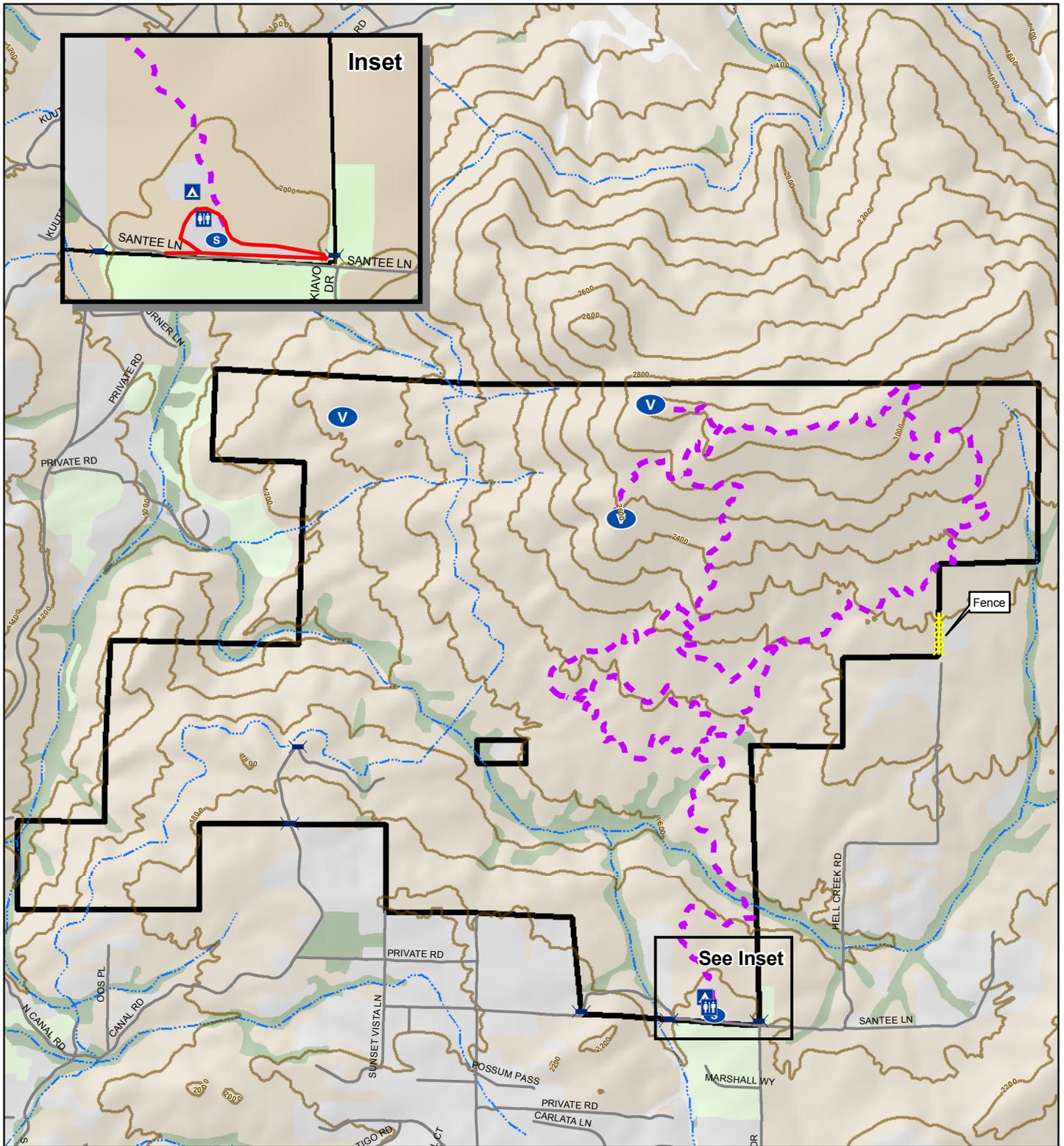
The Preserve is located approximately 0.15 mile east of the San Dieguito River. Open space lands owned by Bureau of Land Management, Rincon Indian Reservation, and San Pasqual Indian Reservation, are located to the northeast, northwest, and south of the Preserve respectively. In addition, sparse rural residential development is located to the northeast and south of the Preserve.

### **2.4.3 Easements or Rights**

Several easements are present within the Preserve. The City of Escondido Water Department and Vista Irrigation District both have water utility easements through the Preserve in association with the canal/flume.

## **2.5 Trails**

The Preserve contains approximately 13 miles of trails for hiking and equestrian uses (Figure 6). Two loop trails, one moderate and one strenuous, take the user through open chaparral and grassland or chamise chaparral. Another trail descends rapidly through dense north-facing chaparral to a riparian area. Past Hell Creek, the trail runs along the rock-lined bed of the Escondido Canal.



	Park Boundary		View Point		Park Trail		200' Topographic Contours		Woodland
	Fuel Modification Zone		Campground		Street		Grasslands and Meadows		Non-Native or Developed
	Gate		Restroom		River		Scrub and Chaparral		
	Staging Area								

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**Figure 6**  
**Trails, Gates, Fences**  
**Hellhole Canyon Preserve**

### 3.0 BIOLOGICAL RESOURCES DESCRIPTION

In 2008 Technology Associates International Corporation conducted baseline biological resources surveys of the Preserve. The results of these surveys can be found in the biological resources report entitled, *Biological Diversity Baseline Report for the Hellhole Canyon Preserve, County of San Diego*, dated October 2008, and attached as Appendix A. The survey results were used in the preparation of this RMP.

The surveys documented nine vegetation communities and 292 species within the Preserve. The surveys detected 177 plant species, 55 bird species, 24 mammal species (eight bats, nine small mammals, and seven medium and large bodied mammals), 12 herptiles (three amphibian and nine reptiles), and 24 invertebrate species. Thirty-one special-status species were detected during baseline surveys, of which eight are MSCP-covered species (six wildlife and two plants).

#### 3.1 Vegetation Communities/Habitat

Vegetation communities and land cover types present within the Preserve consist of southern coast live oak riparian forest, Diegan coastal sage scrub, southern mixed chaparral, mafic southern mixed chaparral, non-native grassland, coast live oak woodland, eucalyptus woodland, disturbed habitat, and urban/developed (Table 1, Figure 7). A description of the vegetation communities and the dominant plant species detected during the survey are found below. A complete list of plant species observed within the Preserve is provided as Appendix A. A description of the vegetation communities and the dominant plant species detected during the survey are found below.

**Table 1. Vegetation Communities within the Preserve**

<b>Vegetation Community</b>	<b>Acres</b>
Southern Coast Live Oak Riparian Forest	50.7
Diegan Coastal Sage Scrub	5.0
Southern Mixed Chaparral	1,438.0
Mafic Southern Mixed Chaparral	274.7
Non-native Grassland	0.9
Coast Live Oak Woodland	43.6
Eucalyptus Woodland	0.5
Disturbed Habitat	25.4
Urban/Developed	12.2
<b>TOTAL</b>	<b>1,850.9</b>

# Hellhole Canyon Preserve Baseline Surveys



## Legend

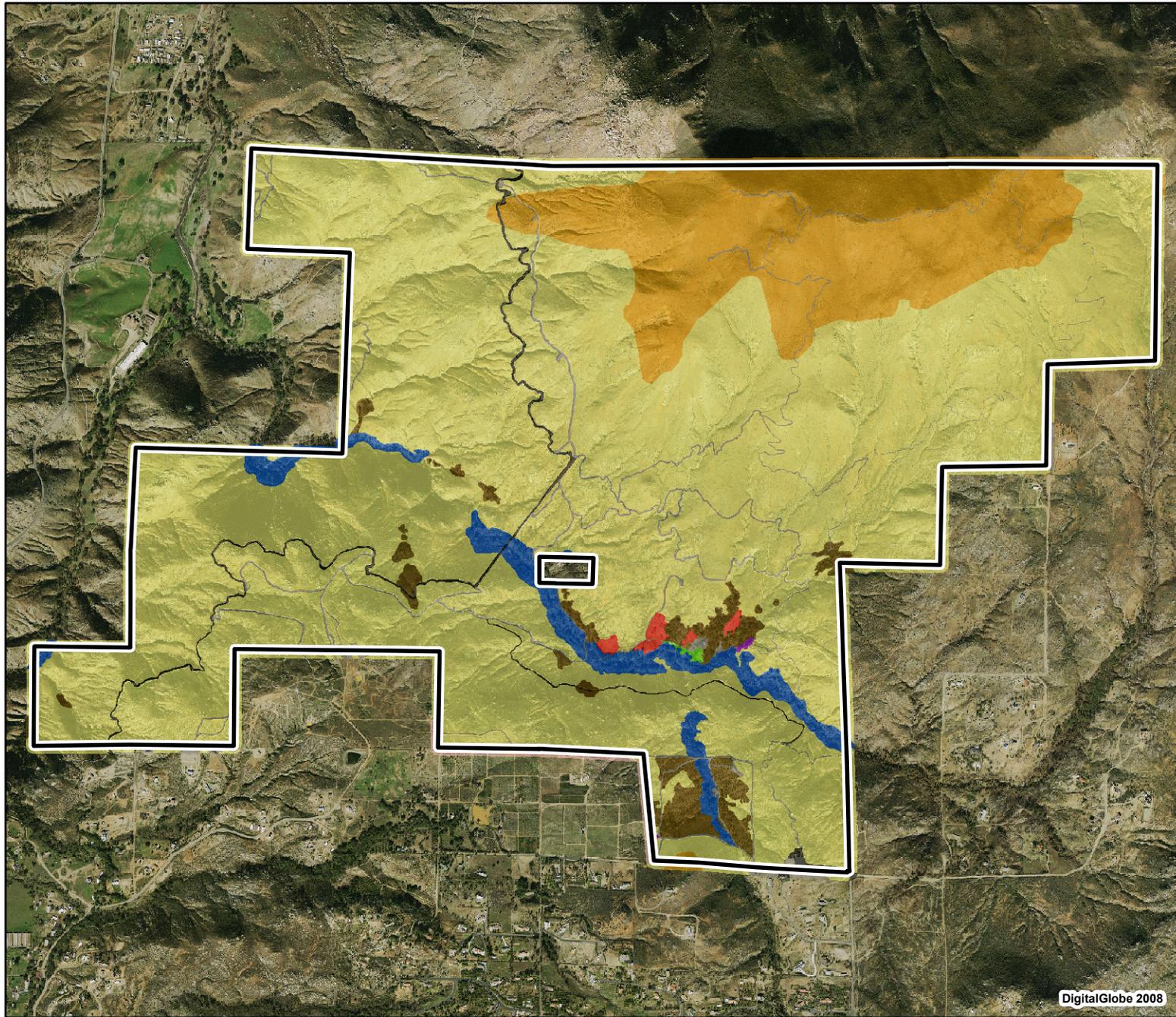
- Coastal Sage Scrub
- Southern Mixed Chaparral
- Mafic Southern Mixed Chaparral
- Coast Live Oak Woodland
- Southern Coast Live Oak Riparian Forest
- Nonnative Grassland
- Eucalyptus Woodland
- Disturbed Habitat
- Row Crops
- Urban/Developed

## Basemap Legend

- Hellhole Canyon Preserve Boundary



Feet



DigitalGlobe 2008

### Diegan Coastal Sage Scrub (Holland Code 32500)

Diegan coastal sage scrub (CSS) is an endemic, fire-adapted drought-deciduous community. CSS is typically low in stature and occurs on steep, xeric slopes or on clay soils that are slow to release stored water. Formerly widely distributed in the region, CSS has lost much of its historic range to residential development and agricultural conversion. CSS frequently intergrades with chaparral vegetation communities at higher elevations. Within the Preserve, CSS is moderately to highly disturbed and of marginal quality. Much of the CSS onsite intergrades with the surrounding chaparral communities; CSS covers approximately 5.0 acres on the Preserve.

Dominant species within the CSS community on the Preserve included California buckwheat (*Eriogonum fasciculatum* var. *foliolosum*), black sage (*Salvia mellifera*), and California sagebrush (*Artemisia californica*). Other CSS constituent species included white sage (*Salvia apiana*), laurel sumac (*Malosma laurina*), and our-lord's candle (*Hesperoyucca whipplei*). Among the species occurring within the CSS communities on the Preserve, black sage, laurel sumac, and California buckwheat were also observed co-occurring within the surrounding chaparral communities but were sub-dominants within those communities.

### Southern Mixed Chaparral (Holland Code 37120)

As described by Holland (1986), southern mixed chaparral is a dense, relatively short, shrub-dominated community widely distributed on arid landscapes in coastal southern California. Southern mixed chaparral is the dominant vegetation community on the Preserve. Present throughout most of the Preserve, southern mixed chaparral occurs on north- and south-facing slopes, ridges, and canyons and covers approximately 1,438.0 acres on the Preserve.

Southern mixed chaparral frequently intergrades with other shrub-dominated vegetation communities such as Diegan and Venturan coastal sage scrub. Mountain mahogany (*Cercocarpus minutiflorus*), Eastwood's manzanita (*Arctostaphylos glandulosa* ssp. *glandulosa*), mission manzanita (*Xylococcus bicolor*), chamise (*Adenostoma fasciculatum*), and lilac (*Ceanothus* spp.) are co-dominant in the southern mixed chaparral present on the Preserve. Other species characteristic of this association present within the Preserve include holly-leaved cherry (*Prunus ilicifolia*), scrub oak (*Quercus xacutidens*), big-berry manzanita (*Arctostaphylos glauca*), and hoary-leaved ceanothus (*Ceanothus crassifolius*). Common coastal sage scrub species such as laurel sumac, black sage (*Salvia mellifera*), and California buckwheat (*Eriogonum fasciculatum* var. *foliolosum*) are also present in this association onsite, but at sub-dominant levels.

### Mafic Southern Mixed Chaparral (Holland Code 37122)

The overall composition of mafic southern mixed chaparral is similar to southern mixed chaparral (37120), but is dominated by chamise and Cleveland sage (*Salvia clevelandii*). This vegetation community is found on mafic (gabbro), metavolcanic, or metasedimentary derived soils (Las Posas and Boomer soils) in the coastal region. These soils can have a very red or dark brown appearance. Mafic southern mixed chaparral is present in the northeast portion of the Preserve and covers approximately 274.7 acres.

The area that supports this vegetation community recently burned. Therefore, indicator species such as San Diego reedgrass (*Calamagrostis koelerioides*) may have been temporarily displaced. As the area recovers, these indicator plants may re-establish. However, Cleveland sage, chamise, and felt-leaved monardella (*Monardella hypoleuca* ssp. *lanata*), all indicator species of this vegetation community, were common on the gabbro soils of the Preserve. In addition, there is moderate potential for Parry's tetracoccus (*Tetracoccus dioicus*) and Gander's butterweed (*Packera ganderi*), two sensitive species found within this vegetation community.

### Non-Native Grasslands (42200)

Patches of non-native grasslands are present within the Preserve on the terraces above Hell Creek. The constituent species present within the non-native grasslands include a mixture of invasive annual grasses such as various bromes (*Bromus* spp.), oats (*Avena* spp.), and ryegrasses (*Lolium multiflorum*), and forbs such as short-pod mustard (*Hirschfeldia incana*), cheeseweed (*Malva parviflora*), tocalote (*Centaurea melitensis*), and red-stem filaree (*Erodium cicutarium*). Small to moderate amounts of native forbs such as telegraph weed (*Heterotheca grandiflora*), fascicled tarweed (*Deinandra fasciculata*), miniature lupine (*Lupinus bicolor*), and various bulb species such as wild onion (*Allium* spp.), common goldenstar (*Bloomeria crocea*), mariposa lily (*Calochortus* spp.) and wild hyacinth (*Dichelostemma capitatum*) are also present within non-native grassland communities within the Preserve. Approximately 0.9 acre of this community occurs on the Preserve.

### Southern Coast Live Oak Riparian Forest (Holland Code 61310)

Hell Creek, a perennial/intermittent stream, supports a substantial amount of mature/recovering riparian woodland habitat growing in association with its main channel. Southern coast live oak riparian forest is the dominant vegetation community comprising the riparian habitat along the banks of (surrounding) Hell Creek. This community covers approximately 50.7 acres on the Preserve.

Southern coast live oak riparian forest is a large, dense, closed-canopy riparian forest community dominated by coast live oak (*Quercus agrifolia* var. *agrifolia*). In addition to coast live oak, scattered western sycamore (*Platanus racemosa*), red

willow (*Salix laevigata*), and black willow (*Salix gooddingii*) trees and patches of invasive giant reed (*Arundo donax*) occur within this community but are sub-dominant components of the community. Understory species present within the southern coast live oak riparian forest communities in the Preserve include Douglas mugwort (*Artemisia douglasiana*), western poison oak (*Toxicodendron diversilobum*), cattails (*Typha domingensis*), rushes (*Juncus xiphioides*, *J. dubius*, and *J. arcticus* var. *balticus*), bulrushes (*Scirpus microcarpus* and *Schoenoplectus acutus* var. *occidentalis*) and nutsedges (*Cyperus eragrostis*). In addition, greater periwinkle (*Vinca major*), a non-native species, was an abundant species of the understory of this community in the Preserve.

#### Coast Live Oak Woodland (Holland Code 71160)

Coast live oak woodland is a large, dense, closed-canopy woodland community dominated by coast live oak (*Quercus agrifolia* var. *agrifolia*). Coast live oak woodland is characterized by poor understory development and low species diversity. Within the Preserve, the understory of coast live oak woodlands consists mostly of non-native grasses (*Bromus* spp., *Avena* spp., etc.) and forbs and open, unvegetated areas covered with a thick layer of leaf litter. Within the Preserve, coast live oak woodland occurs on or above the flood terraces of Hell Creek and within several smaller canyons above Hell Creek where water availability is more limited than within Hell Creek itself. Approximately 43.6 acres of this community occur on the Preserve.

#### Eucalyptus Woodland (Holland Code 11100)

As described by Holland (1986), eucalyptus woodland is typically characterized by dense monotypic stands of eucalyptus trees (*Eucalyptus* spp). Plants in this genus, imported primarily from Australia, were originally planted in groves throughout many regions of coastal California as a potential source of lumber and building materials for their use as windbreaks, and for their horticultural novelty. They have increased their cover through natural regeneration, particularly in moist areas sheltered from strong coastal winds. Gum trees naturalize readily in California and, where they form dense stands, tend to completely supplant native vegetation, greatly altering community structure and dynamics.

Within the Preserve, a small patch of eucalyptus woodland occurs as a planted windrow corridor along the southern central edge of the Preserve adjacent to a neighboring agricultural parcel. Approximately 0.5 acre of eucalyptus woodland composed of *Eucalyptus camaldulensis* occurs on the Preserve within this patch.

#### Disturbed Habitat (Holland Code 11300)

Disturbed habitat is any land on which the native vegetation has been significantly altered by agriculture, construction, or other land-clearing activities, and the species composition and site conditions are not characteristic of the disturbed phase of one

of the plant associations within the study region. Such habitat is typically found in vacant lots, roadsides, construction staging areas, or abandoned fields, and is dominated by non-native annual species and perennial broadleaf species. Mostly, disturbed habitat within the Preserve comprised well worn unvegetated trails. However disturbed habitat was also observed to be present on and around utility easements (e.g. telephone poles and power lines) and in areas reclaimed for erosion control. Disturbed habitat covers approximately 25.4 acres on the Preserve.

Dominant plant species observed within the disturbed areas of the Preserve included short-pod mustard (*Hirschfeldia incana*), sweet fennel (*Foeniculum vulgare*), pigweed (*Amaranthus albus*), common lambsquarters (*Chenopodium album*), Russian thistle (*Salsola tragus*), tree tobacco (*Nicotiana glauca*), African fountain grass (*Pennisetum setaceum*), totalote (*Centaurea melitensis*), and wild radish (*Raphanus sativus*). In addition, the disturbed habitat within the Preserve supported occasional mature eucalyptus (*Eucalyptus camaldulensis*) and cultivated avocado (*Persea americana*).

### Urban/Developed (Holland Code 12000)

Urban/Developed areas are found where habitat has been altered by human activities to a state beyond the potential for recovery to a natural state. In general, free standing structures and surrounding areas that are paved, armored, or landscaped are considered developed. Within the Preserve, developed areas include the foundations of two burnt homes and their associated outbuildings, paved and unpaved maintenance roads, driveways, parking and staging areas, and concrete-lined aqueducts and pipelines. Developed areas within the Preserve include discrete areas of ornamental landscaping around the burnt homes and homesteads. These areas include lawns, gardens, and non-native shade trees and ornamental shrubs planted by previous inhabitants including assorted eucalyptus trees (*Eucalyptus* spp.), acacia (*Acacia* spp.), oleander (*Nerium oleander*), Peruvian pepper (*Schinus molle*), and jade plant (*Crassula ovata*). Approximately 12.2 acres of Urban/Developed areas cover the Preserve.

## **3.2 Plant Species**

### **3.2.1 Plant Species Present**

Floristic inventories detected 337 plant species at the Preserve. The Biological Diversity Baseline Report (Appendix A) includes the complete list of all plant species observed during the surveys.

### **3.2.2 Rare, Threatened, or Endangered Plant Species Present**

The following section discusses special-status plant species observed within the Preserve. A special-status plant species is one listed by federal or state agencies as threatened or endangered; considered to be of special status by one or more special

interest groups, such as the California Native Plant Society (e.g., CNPS List 1, 2, 3, and 4 Plant Species); or is included on the County's Sensitive Plant list (Group A, B, C, or D Listed Plants).

Special-status plant species observed within the Preserve (Figure 8) consist of Brewer's calandrinia (*Calandrinia breweri*), Humboldt's lily (*Lilium humboldtii* ssp. *ocellatum*), Cleveland's bush monkey flower (*Mimulus clevelandii*), felt-leaved monardella (*Monardella hypoleuca* ssp. *lanata*), Fish's milkwort (*Polygala cornuta* var. *fishiae*), Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*), and Engelmann oak (*Quercus engelmannii*).

Graceful Tarplant (*Holocarpha virgata* ssp. *elongata*)  
*CNPS List 4, San Diego County Group D*

Graceful tarplant is typically found within non-native grasslands. This species is found within the non-native grasslands along the western portion of the Preserve.

Brewer's calandrinia (*Calandrinia breweri*)  
*CNPS List 4.2, San Diego County Group D*

In California, Brewer's calandrinia is found in San Diego, Los Angeles, San Bernardino, Contra Costa, Mendocino, Monterey, Mariposa, Marin, Napa, Santa Barbara, Santa Clara, Santa Cruz, San Luis Obispo, San Mateo, Sonoma, and Ventura counties (Reiser 1994). The species is a fire-follower typically reported in areas of recently burned chaparral and coastal sage scrub (Reiser 1994) on sandy or loamy soils (CNPS 2008). Brewer's calandrinia is apparently rare in Southern California and its populations are presumed to be declining due to loss of habitat along the coast (Reiser 1994). Approximately ten individuals were reported in the southwestern portion of the Preserve.

Humboldt's lily (*Lilium humboldtii* ssp. *ocellatum*)  
*CNPS List 4.2, San Diego County Group D*

Humboldt's lily occurs in San Diego, Los Angeles, Ventura, Santa Barbara, San Bernardino, Riverside, San Luis Obispo, and Orange counties and on Santa Cruz and Santa Rosa islands (Reiser 1994). This species is associated with riparian corridors in lower montane coniferous forest and coastal chaparral below 1,691 meters (5,500 ft) (RCIP 2005). The species typically occurs on lower stream benches, but can occur on shaded, dry slopes beneath dense, closed canopy within coniferous forests and cismontane oak woodlands (Boyd and Banks 1995, CNPS 2001). According to the CNPS (2008), the species occurs within chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and open riparian habitats between 30 and 1,800 meters (100-5,900 ft). Within San Diego County, this species grows along streamsides in lower montane coniferous forests and coastal chaparral (Reiser 1994). Populations are threatened by collection of

# Hellhole Canyon Preserve Baseline Surveys



## Legend

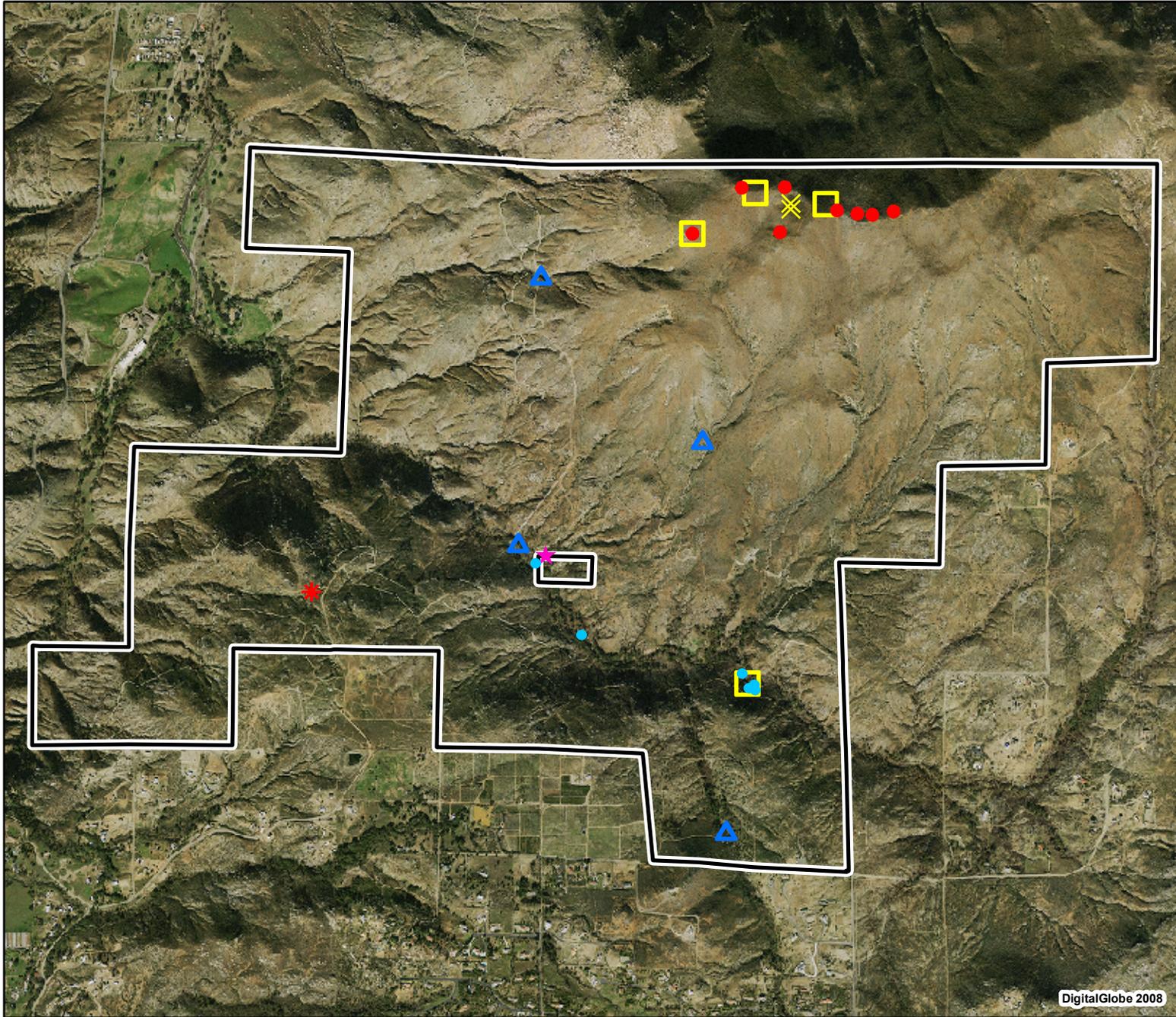
-  Brewer's Calandrinia
-  Cleveland's Bush Monkey Flower
-  Engelmann Oak
-  Felt-leaved Monardella
-  Fish's Milkwort
-  Humboldt's Lily
-  Robinson's Peppergrass

## Basemap Legend

-  Hellhole Canyon Preserve Boundary



Feet



DigitalGlobe 2008

showy flowers or bulbs (Reiser 1994). Within the Preserve, over 500 individuals were reported along Hell Creek.

Cleveland's bush monkey flower (*Mimulus clevelandii*)  
*CNPS List 4.2, San Diego County Group D*

Cleveland's bush monkey flower occurs in San Diego, Orange, and Riverside counties and in Baja California, Mexico in chaparral and lower montane coniferous forest habitats (Reiser 1994). In general, microhabitat consists of open locales in xeric chaparral dominated by chamise, with exposed rock nearby and shallow soils (Reiser 1994). According to the CNPS (2008) the species is known to occur between 815 and 2,000 meters (2,700-6,500 ft) in chaparral and cismontane woodlands and lower montane coniferous forests on open, gabbroic, rocky soils. Within Riverside County, the species is known to occur mostly above 914 m (3,000 ft) in chaparral and lower montane coniferous forests, especially on peaks and ridgelines (Boyd and Banks 1995), while within San Diego County, the species appears to strictly follow metavolcanic and gabbroic soils (Reiser 1996). This species is often found near the summits of mountain peaks and may have some limiting temperature requirements (Reiser 1994). Hundreds of individuals were recorded along the ridge in the northern portion of the Preserve.

Felt-leaved monardella (*Monardella hypoleuca* ssp. *lanata*)  
*CNPS List 1B.2, San Diego County Group A*

Felt-leaved monardella occurs in San Diego and Orange counties and in Baja California, Mexico (Reiser 1994). This perennial typically occurs in chaparral or cismontane woodland habitats between 300 and 1,575 meters (1,000-5,000 ft) (CNPS 2008) and often grows beneath mature stands of chamise in xeric situations (Reiser 1994). Although populations are presumed stable in San Diego County, the species is threatened by vehicles and all substantial populations should be protected (Reiser 1994, CNPS 2008). Over 200 individuals were reported from along the ridge in the northern portion of the Preserve.

Fish's milkwort (*Polygala cornuta* var. *fishiae*)  
*CNPS List 4.3, San Diego County Group D*

Fish's milkwort occurs in cismontane southern California and northwestern Baja California, Mexico (RCIP 2005). The species is known from records in San Diego, Orange, Los Angeles, Riverside, and Ventura counties and Baja California, Mexico (Reiser 1994). This species occurs at elevations between 100 and 1,000 meters (330-3,300 ft) (CNPS 2008) and is often associated with shaded areas within cismontane woodland and riparian woodlands with coast live oak, although it also occurs in xeric and mesic chaparral habitats (Reiser 1994, CNPS 2001, Munz 1974, Boyd and Banks 1995). The species can be missed during plant surveys and may be more widespread than suspected (Reiser 1994). Thirty-six individuals were

observed along the ridge in the northern portion of the Preserve and one individual was found along Hell Creek. This individual probably washed down from ridge.

Engelmann oak (*Quercus engelmannii*)

*CNPS List 4.2, San Diego County Group D, Draft North County MSCP Proposed Covered*

Engelmann oak occurs in San Diego, Orange, and Riverside counties, on Santa Catalina Island, and in Baja California, Mexico (Reiser 1994). In general, this species of oak grows in oak woodlands and southern mixed chaparral (Reiser 1994). More specifically, the species occurs in two types of oak woodland habitats within foothill landscapes; southern oak woodlands, where canopy covers from ten to fifty percent of the landscape; and riparian/oak woodlands, where there is a closed canopy of mixed hardwood species along canyon bottoms and watercourses (Scott 1990). The species is often associated with alluvial fans, interior valleys, and occasionally slopes with mesic aspect (Roberts 1995). Poor reproduction is an apparent problem with this species and overgrazing, herbivory, browsing from deer, and a need for specific weather conditions for seedling establishment exacerbate this issue (Reiser 1994). Within the Preserve, four individuals were reported from scattered locations.

Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*)

*CNPS List 1B.2, San Diego County Group A*

Robinson's pepper-grass occurs in San Diego, Riverside, Orange, Los Angeles, San Bernardino, and Santa Barbara counties, on Santa Cruz Island, and in Baja California, Mexico (Reiser 1994). Robinson's pepper-grass occurs in chaparral and coastal scrub habitats between 1 and 885 meters (3-3,000 ft) in elevation (CNPS 2008). This annual herb grows in openings in chaparral and coastal sage scrub, generally well away from the coast in Southern California in foothill landscapes. Typically sites where this species is observed are relatively dry, exposed locales, rather than beneath a shrub canopy or along creeks (Reiser 1994). Within the Preserve, one individual was collected west of the private homestead and east of the flume crossing over Hell Creek.

**3.2.3 Rare, Threatened, or Endangered Plant Species not Observed but with High Potential to Occur**

Gander's butterweed (*Packera ganderi*)

*CNPS List 1B.2, San Diego County Group A*

Suitable habitat and soils for this species is present along the mountain ridgelines.

Parry's tetracoccus (*Tetracoccus dioicus*)

CNPS List 1B.2, San Diego County Group A

Suitable habitat for this species is present along the mountain ridgelines.

Peninsular bear grass (*Nolina cismontana*)

CNPS List 1B.2, San Diego County Group A

Suitable habitat for this species is present along the mountain ridgelines.

Ramona horkelia (*Horkelia truncata*)

CNPS List 1B.3, San Diego County Group A

Suitable habitat and soils for this species is present along the mountain ridgelines.

San Diego sagewort (*Artemisia palmeri*)

CNPS List 4.2, San Diego County Group D

Suitable habitat on the Preserve includes wet areas along Hell Creek.

San Miguel savory (*Satureja chandleri*)

CNPS List 1B.2, San Diego County Group A

Suitable habitat on the Preserve for this species may be present on mountain ridges.

Southwest spiny rush (*Juncus acutus* var. *leopoldii*)

CNPS List 4.2, San Diego County Group D

Potential habitat on the Preserve for this species includes wet areas along Hell Creek.

### **3.2.4 Non-native and/or Invasive Plant Species**

California Invasive Plant Council (Cal-IPC) listed plants were identified during the field surveys. These invasive nonnative plants include: giant reed (*Arundo donax*), pampas grass (*Cortaderia selloana*), artichoke thistle (*Cynara cardunculus* ssp. *cardunculus*), eucalyptus (*Eucalyptus camaldulensis*), Brazilian pepper tree (*Schinus terebinthifolius*), and tamarisk (*Tamarix ramosissima*). These plants are shown in Figure 9.

# Hellhole Canyon Preserve Baseline Surveys



## Legend

### Target Invasive Species

- Artichoke
- Brazilian Pepper Tree
- Giant Reed
- Pampass Grass
- River Red Gum
- Tamarisk
- Other Invasive Species  
(including one or more of the following)  
African Cornflag  
African Fountain Grass  
Avocado  
Bamboo  
Belladonna Lily  
Blue-Eyed Cape-Marigold  
Garden Asparagus  
Greater Periwinkle  
Himalayan Blackberry  
Pennsylvania Blackberry  
Treasure Flower  
Tree Tobacco

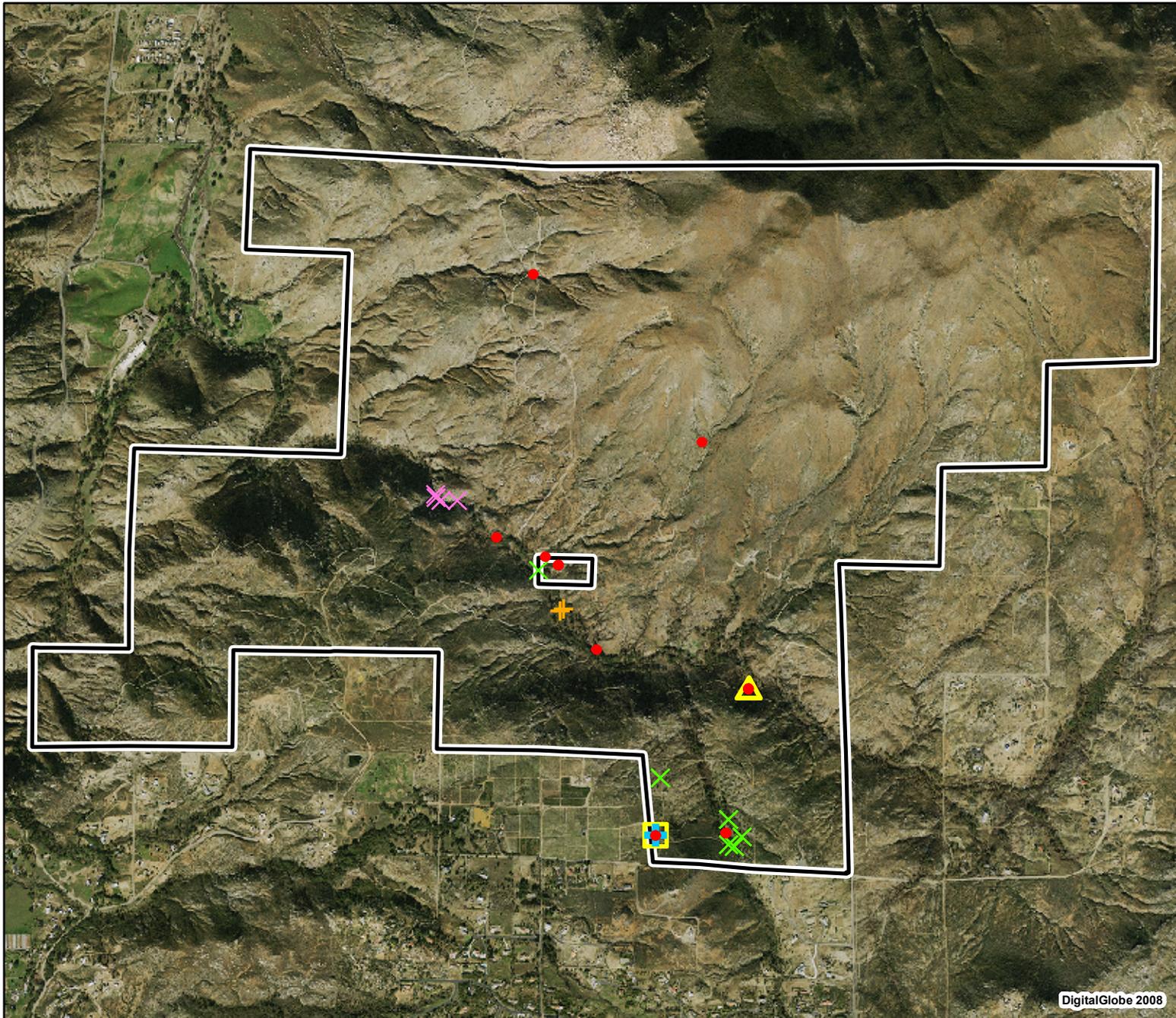
### Basemap Legend

- Hellhole Canyon Preserve Boundary



Feet

0 1,900



DigitalGlobe 2008

Cal-IPC ranks giant reed, pampas grass, and tamarisk as “high” alert species. Giant reed and pampas grass were found in the southern coast live oak riparian forest habitat within the Preserve. Tamarisk was found in southern mixed chaparral habitat on-site. These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

The Cal-IPC inventory categorizes artichoke thistle as having an overall rating of “moderate”. This species was found mainly in the southern coast live oak riparian forest habitat found in the southeastern portion of the Preserve. A “moderate” rating signifies species that have substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance.

Cal-IPC ranks eucalyptus and Brazilian pepper tree as “limited” alert species. These species were found within coast live oak woodland habitat in the southeastern area of the Preserve. These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

### **3.3 Wildlife Species**

#### **3.3.1 Wildlife Species Present**

##### Invertebrates

A complete list of invertebrate species identified on the Preserve below the level of family is included in the faunal list of the Baseline Biological Resources Evaluation (Appendix A). No special-status butterfly species or other invertebrate species were detected during the 2007 and 2008 surveys and no special-status invertebrate species have high potential to occur at the Preserve.

##### *Butterflies*

Sixteen butterfly species were detected within the Preserve. These species include: Funereal duskywing (*Erynnis funeralis*), large white skipper (*Heliopetes ericetorum*), silvery (southern) blue (*Glaucopsyche lygdamus australis*), Acmon blue (*Plebejus acmon acmon*), western elfin (*Incisalia augustinus iroides*), Bramble hairstreak (*Callophrys dumetorum dumetorum*), buckeye (*Junonia coenia*), painted lady (*Cynthia cardui*), west coast lady (*Cynthia annabella*), Anise swallowtail (*Papilio zelicaon*), western tiger swallowtail (*Papilio rutulus*), Common (Checkered) white (*Pieris protodice*), Sara orangetip (*Anthocharis sara sara*), California white (*Pieris*

*sisymbrii sisymbrii*), California dogface (*Colias eurydice*), and Behr's metalmark (*Apodemia mormo virgulti*).

### *Other Invertebrates*

No other invertebrate species were captured in the pitfall traps associated with the herpetological array or observed during other fieldwork.

### Amphibians

The array of pitfall traps captured one amphibian species during the 2008 sampling period at the Preserve - western toad (*Bufo boreas*). Amphibian species detected during aquatic surveys and arroyo toad surveys included Pacific treefrog (*Pseudacris regilla*), California treefrog (*Pseudacris cadaverina*), and western toad.

### Reptiles

During the 2008 sampling at the Preserve, eight reptile species were detected including: coast horned lizard (*Phrynosoma coronatum*), granite spiny lizard (*Sceloporus orcutti*), orange-throated whiptail (*Cnemidophorus hyperythrus*), side-blotched lizard (*Uta stansburiana*), southern alligator lizard (*Elgaria multicarinata*), western fence lizard (*Sceloporus occidentalis*), western skink (*Eumeces skiltonianus*), and western whiptail (*Cnemidophorus tigris*).

The eight snake species detected within the Preserve during the 2008 sampling period included: California whipsnake (*Masticophis lateralis*), Common kingsnake (*Lampropeltis getula*), Gopher snake (*Pituophis catenifer*), long-nosed snake (*Rhinocheilus lecontei*), ringneck snake (*Diadophis punctatus*), two-striped garter snake (*Thamnophis hammondi*), western patched-nosed snake (*Salvadora hexalepis*), and western rattlesnake (*Crotalus viridis*).

### Birds

In total, 76 bird species were detected within the Preserve during point count surveys in 2008. Point locations with the greatest number of observations and number of species observed were located in woodland habitat along or near Hell Creek, where high species diversity is expected. In contrast, locations with the fewest number of observations and number of species observed were located in areas of chaparral that burned in 2007 as well as in 2003. A complete list of avian species observed within the Preserve during the 2008 surveys is included in the faunal list of the Baseline Biological Resources Evaluation (Appendix A).

Species most frequently observed during point count surveys include the California Towhee (*Pipilo crissalis*), Lesser Goldfinch (*Carduelis psaltria*), and Spotted Towhee (*Pipilo maculatus*), all characteristic of southern California chaparral. In addition to these species, the Common Raven (*Corvus corax*) and Lazuli Bunting (*Passerina*

*amoena*), both of which respond positively to fire, were also observed at all point count locations. Species least frequently observed during point count surveys include 11 species observed only once: the American Robin (*Turdus migratorius*), Brewer's Blackbird (*Euphagus cyanocephalus*), Burrowing Owl (*Athene cunicularia*), Cassin's Vireo (*Vireo cassinii*), Cliff Swallow (*Petrochelidon pyrrhonota*), Downy Woodpecker (*Picoides pubescens*), Greater Roadrunner (*Geococcyx californianus*), Hermit Warbler (*Dendroica occidentalis*), Hooded Oriole (*Icterus cucullatus*), Lincoln's Sparrow (*Melospiza lincolni*), and Red-shouldered Hawk (*Buteo lineatus*). All of these species were also the least widely distributed species, being observed at one location. All are migrants or nonbreeding visitors to the Preserve, except for the roadrunner, an inconspicuous species occurring at low densities and affected negatively by fire. In addition, the Turkey Vulture (*Cathartes aura*) and Common Yellowthroat (*Geothlypis trichas*) were both observed at only one location.

Nocturnal surveys resulted in the detection of two additional species, the western Screech Owl (*Megascops kennicottii*) and Great Horned Owl (*Bubo virginianus*).

Three species characteristic of riparian woodland were noted during the 2008 surveys, the Downy Woodpecker (*Picoides pubescens*), Yellow Warbler (*Dendroica petechia*), and Common Yellowthroat (*Geothlypis trichas*). The Downy Woodpecker, of which only a single individual was noted on one survey, is probably only a sporadic visitor. But the Yellow Warbler and Common Yellowthroat were noted repeatedly, and singing territorially, so apparently a few pairs of each occupy the Preserve as breeding summer residents.

### Mammals

A complete list of mammal species observed within the Preserve during the 2008 surveys is included in the faunal list of the Baseline Biological Resources Evaluation (Appendix A).

#### *Small Mammals*

A total of 194 small mammal captures representing 10 species were recorded during three trapping sessions using 12" Sherman live traps. Of the 11 species captured using Sherman traps, the California mouse (*Peromyscus californicus*), deer mouse (*Peromyscus maniculatus*), and Dulzura kangaroo rat (*Dipodomys simulans*) were the most frequently captured species. In addition to these species, other captures included the brush mouse (*Peromyscus boylii*), cactus mouse (*Peromyscus eremicus*), California pocket mouse (*Chaetodipus californicus*), San Diego pocket mouse (*Chaetodipus fallax*), desert woodrat (*Neotoma lepida*), large-eared woodrat (*Neotoma macrotis*), and California ground squirrel (*Spermophilus beecheyi*).

One additional species, the broad-footed mole (*Scapanus latimanus occultus*), was visually detected during the first trapping session. Small mammal species were also captured during terrestrial herpetofauna pitfall sampling. A total of 27 small mammal

captures representing nine species were recorded during the pitfall sampling. Of these nine species, three species were captured only during pitfall sampling. These species include the western harvest mouse (*Reithrodontomys megalotis*), desert gray shrew (*Notiosorex crawfordi*), and Botta's pocket gopher (*Thomomys bottae*).

### *Medium and Large Mammals*

A total of nine medium and large mammals were detected in the Preserve during the 2008 surveys including: bobcat (*Lynx rufus*), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), spotted skunk (*Spilogale putorius phenax*), raccoon (*Procyon lotor*), southern mule deer (*Odocoileus hemionus fuliginata*), desert cottontail (*Sylvilagus audubonii*), domestic horse (*Equus caballus*), and domestic dog (*Canis lupus familiaris*).

### *Bats*

A total of 14 bat species were detected using both passive and active bat surveys. The most active bat species detected were the big brown bat (*Eptesicus fuscus*), pocketed free-tailed bat (*Nyctinomops femorosaccus*), and Yuma myotis (*Myotis yumanensis*). Mist-netting during active surveys resulted in the capture of two bat species (also detected with Anabats); the California myotis (*Myotis californicus*) and small-footed myotis (*Myotis ciliolabrum*). A complete list of bat species observed within the Preserve during the 2008 surveys is included in the faunal list of the Baseline Biological Resources Evaluation (Appendix A).

Seasonal trends in bat activity included a suite of species detected only during the summer surveys; the big brown bat, long-eared myotis (*Myotis evotis*), and western mastiff bat (*Eumops perotis*), and two species detected only during the winter surveys; the Townsend's big-eared bat and western yellow bat.

### **3.3.2 Rare, Threatened, or Endangered Wildlife Species Present**

This section discusses special-status wildlife species observed at the Preserve (Figures 10-13). A special-status wildlife species is one listed by federal or state agencies as threatened or endangered; is included on the County's Sensitive Animal List (Group 1 or 2 Species); or is covered under the MSCP. Twenty special-status wildlife species were detected at the Preserve. Each of these species is addressed below in more detail.

#### Coast Horned Lizard (*Phrynosoma coronatum*)

#### *State Species of Special Concern, San Diego County Group 2, Draft North County MSCP Proposed Covered Species*

The coast horned lizard occurs from northern California to the tip of Baja California, Mexico (SDNHM 2008) from sea level to approximately 8,000 feet (2,438 m). This

lizard occupies open habitats such as grasslands, coastal sage scrub, and chaparral, with loose soils. Horned lizards forage on the ground in open areas, often between shrubs and near ant nests (Morey 2000). They are also commonly found along dirt roads and trails. Current threats to the species include destruction of coastal habitat, introduction of non-native ant species, especially the Argentine ant (*Iridomyrmex humilis*), which displace its native ant food base, collection, and off-road activity.

Orange-throated Whiptail (*Cnemidophorus hyperythrus*)

*State Species of Special Concern, San Diego County Group 2, Draft North County MSCP Proposed Covered Species*

The orange-throated whiptail inhabits low-elevation coastal scrub, chamise-redshank chaparral, mixed chaparral, and valley-foothill hardwood habitats (Morey 2000). This species is restricted to the extreme southwest of California and northwest of Baja California Norte, Mexico (Stebbins 2003). In California, it is found on the west side of the Peninsular Ranges between sea level and 900 meters (3,000 ft), in Los Angeles, San Bernardino, Orange, Riverside and San Diego counties (Zeiner et al. 1988). It is still locally common in many areas where it remains. The principal threat to the orange-throated whiptail is degradation and loss of habitat, however it is also impacted by off-road vehicle activity, over-grazing by livestock, and predation by introduced predators (e.g., cats and dogs) (San Diego Herpetological Society 1980). A limiting factor to the species' range is the availability of its primary food item, the termite (*Reticulitermes Hesperus*).

Two-striped Garter Snake (*Thamnophis hammondi*)

*State Species of Special Concern, San Diego County Group 1*

The two-striped garter snake is distributed from central California to Baja California (SDNHM 2008). In southern California it occurs from the coast to the mountains and is usually found in riparian habitat in or near sources of freshwater, including streams, ponds, and lakes. Its preferred diet consists of small fish, tadpoles, frogs, toads, and insect larvae. However, small mammals and invertebrates such as leeches and earthworms are also taken (Fitch 1941, Nussbaum et al. 1983, Rathburn et al. 1993). The breeding season for this live-bearing species begins in April or May, and continues through the summer (SDNHM 2008). The species is now common only in eastern San Diego County and populations are threatened by elimination of habitat and predations by raptors and introduced species including bullfrogs, fishes, and feral pigs (Jennings and Hayes 1994). Within the Preserve, two striped garter snakes were captured in the central area.

# Hellhole Canyon Preserve Baseline Surveys



## Legend

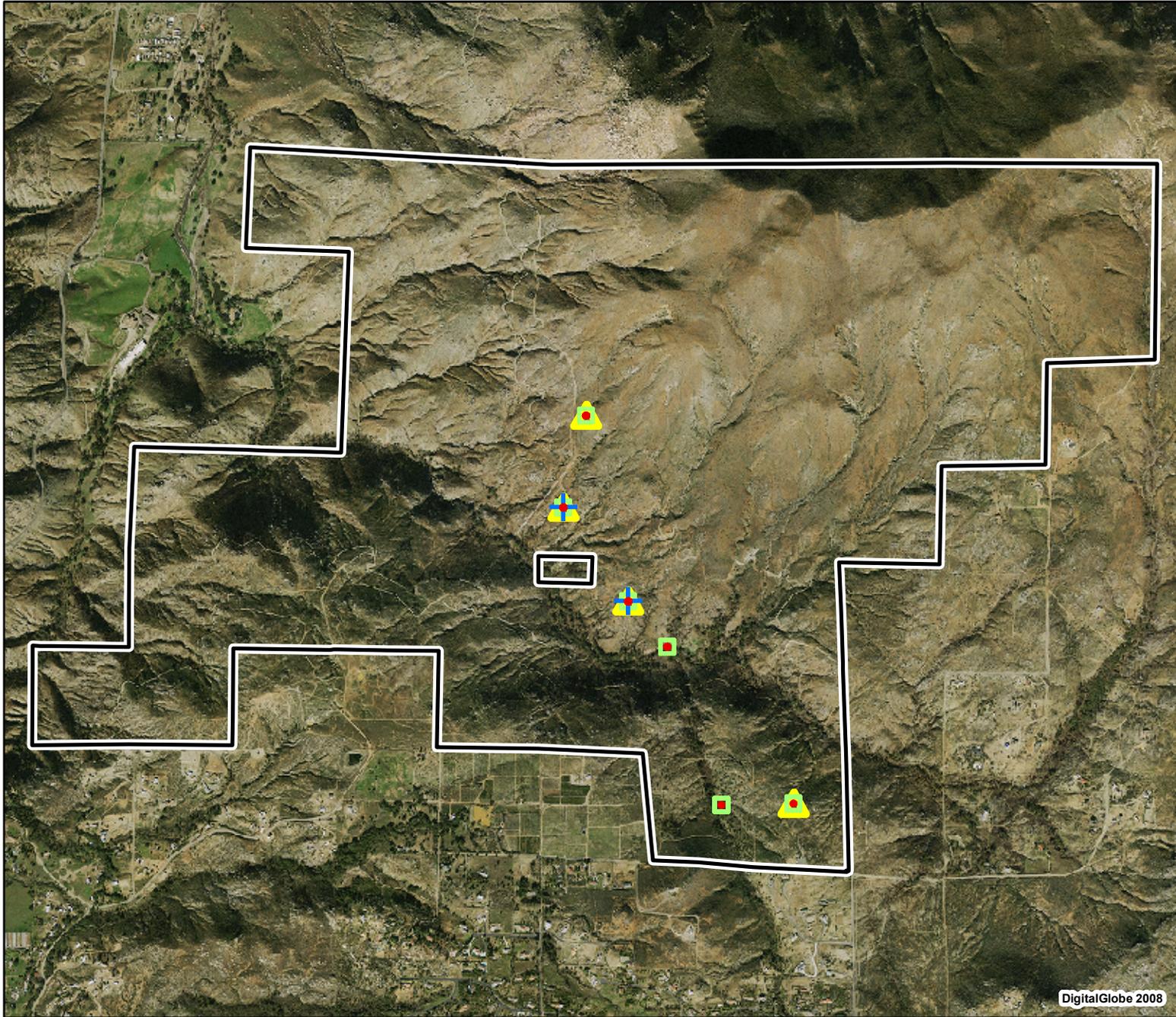
- Coast Horned Lizard
- Orange-Throated Whiptail
- Two-Striped Garter Snake
- Western Patched-Nosed Snake

## Basemap Legend

- Hellhole Canyon Preserve Boundary



Feet



DigitalGlobe 2008

Western Patch-nosed Snake (*Salvadora hexalepis*)

*State Species of Special Concern, San Diego County Group 2*

The western patch-nosed snake occurs in California from the northern Carrizo Plains in San Luis Obispo County, south through the coastal zone, south and west of the deserts, into coastal northern Baja California up to 7,000 feet (2,120 m) in elevation (Marlow 2005). It occurs in semi-arid brushy areas within chaparral, desert scrub, washes, and sandy flats and rocky areas (Marlow 2005). This species seems to require at least a low shrub structure of minimum density; it is not found in habitats lacking this habitat characteristic (Jennings and Hayes 1994). An opportunistic predator, it will prey on lizards (*Cnemidophorus* spp., *Coleonyx* spp.), small mammals (*Dipodomys* spp.), and the eggs of lizards and snakes (Stebbins 1985, Zeiner et al. 1988). It probably eats anything it can overpower (Stebbins 1954). This species is normally active in the spring and early summer, with the greatest activity occurring in May and June (Marlow 2005).

Bell's Sage Sparrow (*Amphispiza belli belli*)

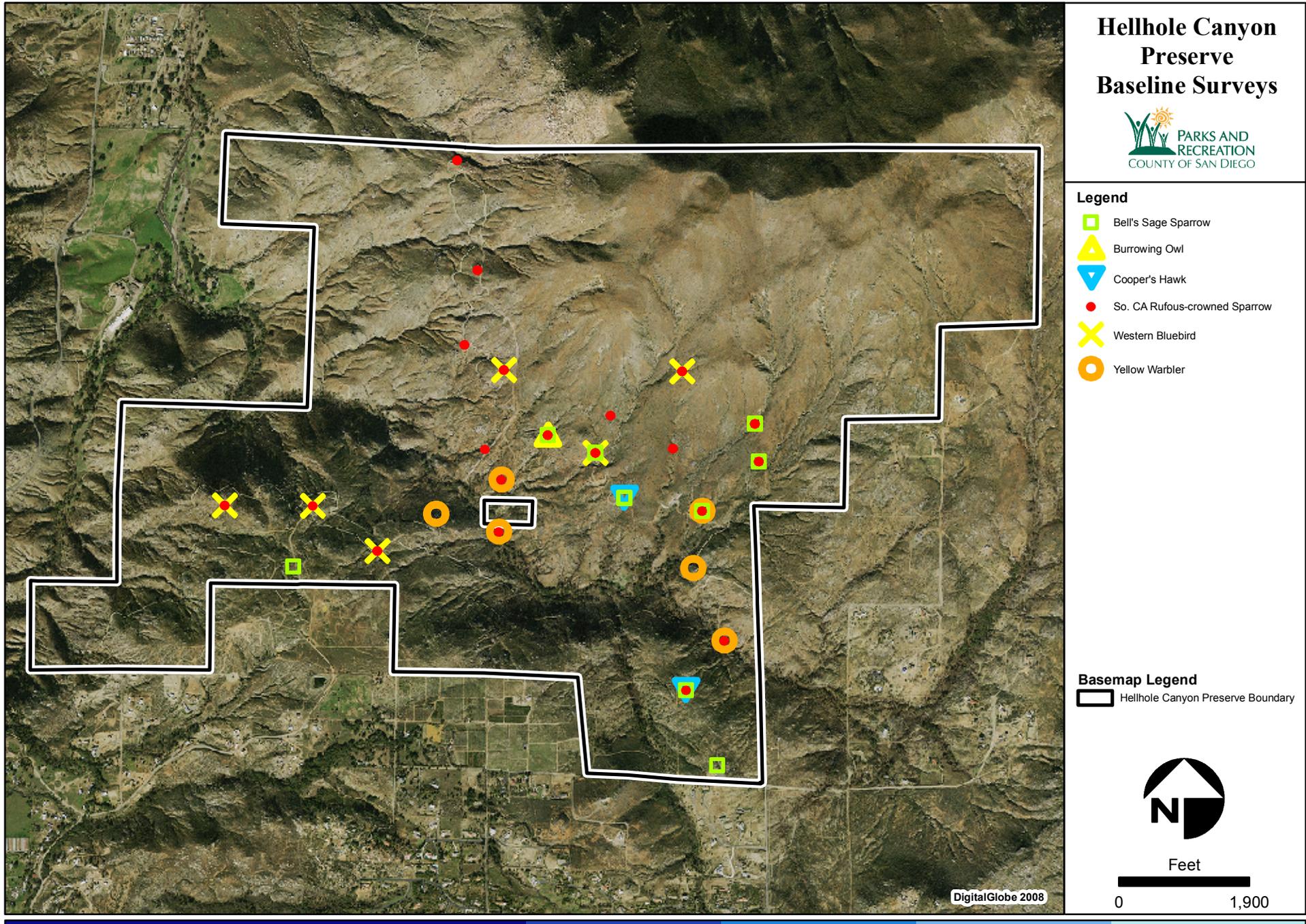
*State Watch List, San Diego County Group 1, Draft North County MSCP Proposed Covered Species*

The Bell's Sage Sparrow is distributed in arid areas of the western United States and Mexico. Bell's Sage Sparrow, a dark colored subspecies, occurs year round in the western two thirds of San Diego County. This subspecies tends to forage on the ground, and as such, prefers open coastal sage scrub or chaparral habitat. It is often found in areas that are recovering from fire. Breeding activity generally occurs from late March through June. Nest building occurs low down in the brush, and sometimes on the ground. The greatest threat to the Bell's Sage Sparrow is habitat fragmentation resulting from urban development. This subspecies may be the most sensitive shrubland bird to habitat fragmentation (Bolger et al. 1997, Lovio 1996).

Burrowing Owl (*Athene cunicularia*)

*State Species of Special Concern, San Diego County Group 1, Draft North County MSCP Proposed Covered Species*

The Burrowing Owl occurs as far north as southern Canada and as far east as the western edge of the Great Plains, with disjunct populations in Florida and the Caribbean (Haug et al. 1993). In San Diego, Burrowing Owls breed in five areas of the County (Unitt 2004). Burrowing Owls are found in annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation (Zarn 1974). Suitable owl habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface (California Burrowing Owl Consortium



1993). Burrows are the essential component of burrowing owl habitat: both natural and artificial burrows provide protection, shelter, and nests for burrowing owls (Henny and Blus 1981). Burrowing Owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but also may use man-made structures, such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement (California Burrowing Owl Consortium 1993). Burrowing Owls have been adversely affected by loss of lowland habitats and by the widespread use of pesticides to control ground squirrel populations (Stephenson and Calcarone 1999). Improper use of pesticides affects chick survivorship and dispersal (Winchell 1994). A single Burrowing Owl was observed at the point count station located in the central area of the Preserve.

Cooper's Hawk (*Accipiter cooperii*)

*State Watch List, San Diego County Group 1, Draft North County MSCP Proposed Covered Species*

The Cooper's Hawk is distributed throughout much of the United States from southern Canada to northern Mexico. It is a regular nesting species in San Diego County. This species has previously been closely associated with oak woodland, and the densely foliated crowns of the coast live oak remain a favored site for Cooper's Hawks to place their nests. Recently, however, Cooper's Hawks have adapted to the urban environment and often nest in eucalyptus trees. Additionally, they can be observed foraging in many types of upland and riparian habitats. Habitat loss, pesticide contamination, and human disturbance at the nest site limit this species population sizes (Remsen 1978).

Southern California Rufous-crowned Sparrow (*Aimophila ruficeps*)

*State Watch List, San Diego County Group 1, Draft North County MSCP Proposed Covered Species*

The southern California Rufous-crowned Sparrow is a common resident of scrub habitats of the coastal plain and foothills of southern California and Baja California, Mexico. It is locally common in open coastal sage scrub in San Diego County, and often occurs on slopes that are steep, sparsely vegetated, and rocky or recently burned. Urban development is the greatest threat to this species due to the loss, degradation, and fragmentation of coastal sage scrub habitat and associated edge effects.

Western Bluebird (*Sialia mexicana*)

*San Diego County Group 2, Draft North County MSCP Proposed Covered Species*

The Western Bluebird is a common cavity-nesting songbird of oak woodland and pine forests throughout the western United States. It breeds in open woodlands of

oaks, riparian deciduous trees, or conifers with herbaceous understory, and winters in a wide variety of open habitats at elevations below 1,200 meters (4,000 ft). Bluebirds breed from the eastern reaches of lowland coastal valleys such as Lake Hodges, along the San Diego River east of Santee, and drainages east of Otay Reservoir, up through the foothills and montane areas where suitable habitat occurs. This species is vulnerable to competition with more aggressive introduced species (e.g., European Starling (*Sturnus vulgaris*) and House Sparrow (*Passer domesticus*)) for scarce nesting cavities (McLaren 1963, Zeleny 1969, Patterson 1979). However, in San Diego County, this species appears to be extending its range, successfully colonizing urban areas and adapting to novel nest sites such as nest boxes and certain species of palms (Unitt 2004).

Yellow Warbler (*Dendroica petechia*)

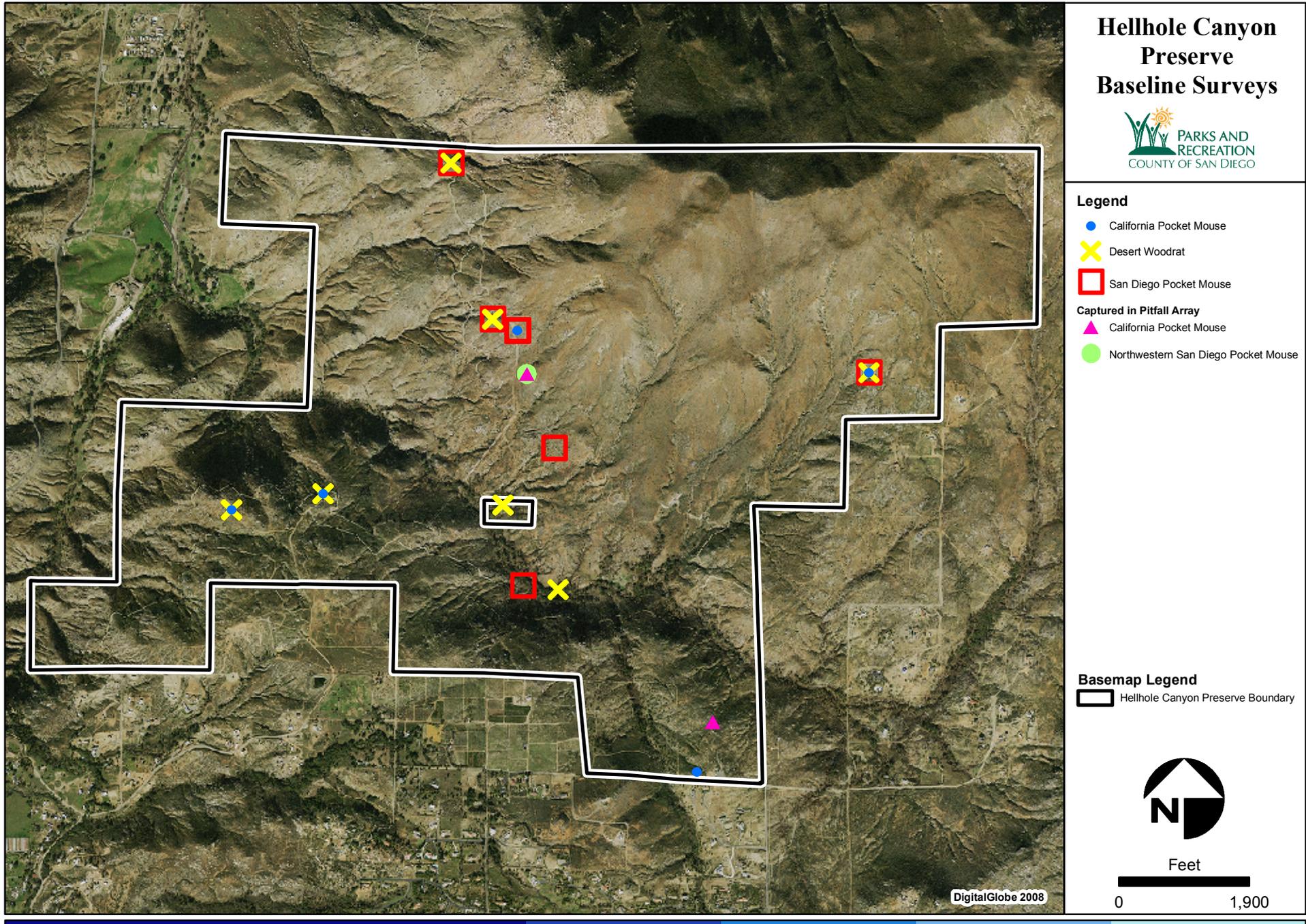
*State Species of Special Concern, San Diego County Group 2*

The Yellow Warbler breeds throughout most of San Diego County (Green 2005). In southern California, Yellow Warblers breed in riparian woodlands in the lowlands and foothill canyons (Garrett and Dunn 1981, Lehman 1994, Roberson and Tenney 1993, Unitt 2004). They typically occur in riparian forests that contain cottonwoods, sycamores, willows, or alders (Stephenson and Calcarone 1999). The breeding season of Yellow Warbler generally begins in May and can last to August. Available data show a strong tendency for breeding- and wintering-site fidelity over successive years (Lowther et al. 1999). Nest parasitism by Brown-headed Cowbirds has been strongly implicated as a cause of Yellow Warbler population declines in coastal lowland and foothill riparian areas of southern California (Garrett and Dunn 1981, Stephenson and Calcarone 1999, Unitt 2004).

California Pocket Mouse (*Chaetodipus californicus*)

*State Species of Special Concern, San Diego County Group 2*

The California pocket mouse is distributed from San Francisco Bay south to the border of Mexico, east to the edge of the Great Valley and from Auburn south along the foothills of the Sierra Nevada, and west across the Tehachapi Mountains to the coast (Brylski 2005). It is found in a variety of habitats year-round, including coastal scrub, chamise-redshank and montane chaparral, sagebrush, annual grassland, valley foothill hardwood, valley foothill hardwood-conifer, and montane hardwood habitats at elevations from sea level to 7,900 feet (2,400 m) (Brylski 2005). The species occurs in brushy areas but probably is attracted to grass-chaparral edge (Brylski 2005). Grazing of grassland by domestic stock eliminates cover necessary for predator avoidance (Brylski 2005).



Desert Woodrat (*Neotoma lepida*)

*State Status Species of Special Concern, San Diego County Group 2*

The desert woodrat occurs in coastal California from San Luis Obispo south through the Transverse and Peninsular Ranges into Baja California. This species commonly inhabits mixed chaparral, Joshua tree woodlands, pinyon-juniper woodlands, sagebrush, and desert habitats (Zeiner et al. 1990). Thompson (1982) observed desert woodrats actively avoiding open areas that did not provide adequate refuge sites. Nests are constructed with twigs, sticks, cactus parts, rocks and are usually built against a rock crevice, at the base of creosote or cactus, or in the lower branches of trees (Brylski 2005).

Northwestern San Diego Pocket Mouse (*Chaetodipus fallax*)

*State Species of Special Concern, San Diego County Group 2*

The northwestern San Diego pocket mouse occurs from the eastern San Gabriel Mountains in the interior to near San Onofre on the coast (Lackey 1996), and south into Baja California. It is found in coastal scrub, chamise-redshank chaparral, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper, and annual grassland habitats (Brylski 2005). The availability of shelter provided by rocky slopes or habitats may increase species abundance (Lackey 1996). The San Diego pocket mouse generally exhibits a strong microhabitat affinity for moderately gravelly and rocky substrates (Bleich 1973, Price and Waser 1984). San Diego pocket mouse appears to be sensitive to habitat fragmentation and degradation. Data collected by Bolger et al. (1997) suggests that isolated habitat patches must be at least 62 acres (25 ha) to 198 acres (80 ha) to sustain native rodent populations.

Southern Mule Deer (*Odocoileus hemionus fuliginata*)

*San Diego County Group 2, Draft North County MSCP Proposed Covered Species*

Southern mule deer are common across the western U.S. in a variety of habitats from forest edges to mountains and foothills (Whitaker 1996). Southern mule deer prefer edge habitats, rarely travel or forage far from water and are most active around dawn and dusk. Southern mule deer scat and track were observed throughout the Preserve.

Mountain Lion (*Puma concolor*)

*San Diego County Group 2, Draft North County MSCP Proposed Covered Species*

Mountain lions prefer rocky areas, cliffs, and ledges that provide cover within open woodlands and chaparral (Dudek 2000). Riparian areas also provide protective habitat connections for movement between fragmented habitats. This species is widespread in North and South America and occupies a broad variety of habitats

from the northern limit of the Canadian forests to Patagonia in South America. Populations of this species require large areas (at least 850 square miles) to sustain themselves (Dudek 2000). Habitat fragmentation, loss of large areas of undeveloped land, road kills, indiscriminate shootings, animal control measures, and loss of natural prey base have led to the decline of this species. Mountain lion was not directly observed during 2008 surveys. However, reports made by park rangers suggest the species is currently occupying the Preserve.

Pallid Bat (*Antrozous pallidus*)

*State Species of Special Concern, San Diego County Group 2*

The pallid bat is a locally common species of low elevations in California (Harris 2005). It occurs throughout California except for the high Sierra Nevada from Shasta to Kern counties, and the northwestern corner of the state from Del Norte and western Siskiyou counties to northern Mendocino County (Harris 2005). The pallid bat is a yearlong resident in most of the range (Harris 2005). Pallid bats are found in a variety of habitats, including rocky canyons, open farmland, scattered desert scrub, grassland, shrubland, woodland, and mixed conifer forest (Barbour and Davis 1967, Hermanson and O'Shea 1983, Orr 1954, Philpott 1997). The species will roost in rock crevices, mines, caves, tree hollows, and a variety of anthropogenic structures (Hermanson and O'Shea 1983). This bat is intolerant of roosts with temperatures in excess of 104°F (40°C) (Philpott 1997). The pallid bat is very sensitive to disturbance of roosting sites (Harris 2005). Within the Preserve, the pallid bat was detected along Hell Creek, in the eastern portion of the Preserve.

Pocketed Free-tailed Bat (*Nyctinomops femorosaccus*)

*State Species of Special Concern, San Diego County Group 2*

The pocketed free-tailed bat is rare in California and found in Riverside, San Diego, and Imperial counties (Harris 2005). Habitats frequently used by this species include pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oasis (Harris 2005). The pocketed free-tailed bat prefers rock crevices in cliffs as roosting sites (Harris 2005). The status of this species in California is poorly known, but it appears to be rare (Harris 2005). Within the Preserve, the pocketed free-tailed bat was detected along Hell Creek and in the northwestern portion of the Preserve.

Townsend's Big-eared Bat (*Corynorhinus townsendii*)

*State Species of Special Concern, San Diego County Group 2*

The Townsend's big-eared bat occurs throughout the western United States, including California, Nevada, Idaho, Oregon, and Washington, from near sea level to elevations well above 10,367 feet (3,160 m) (Nagorsen and Brigham 1993, Pearson

# Hellhole Canyon Preserve Baseline Surveys



## Legend

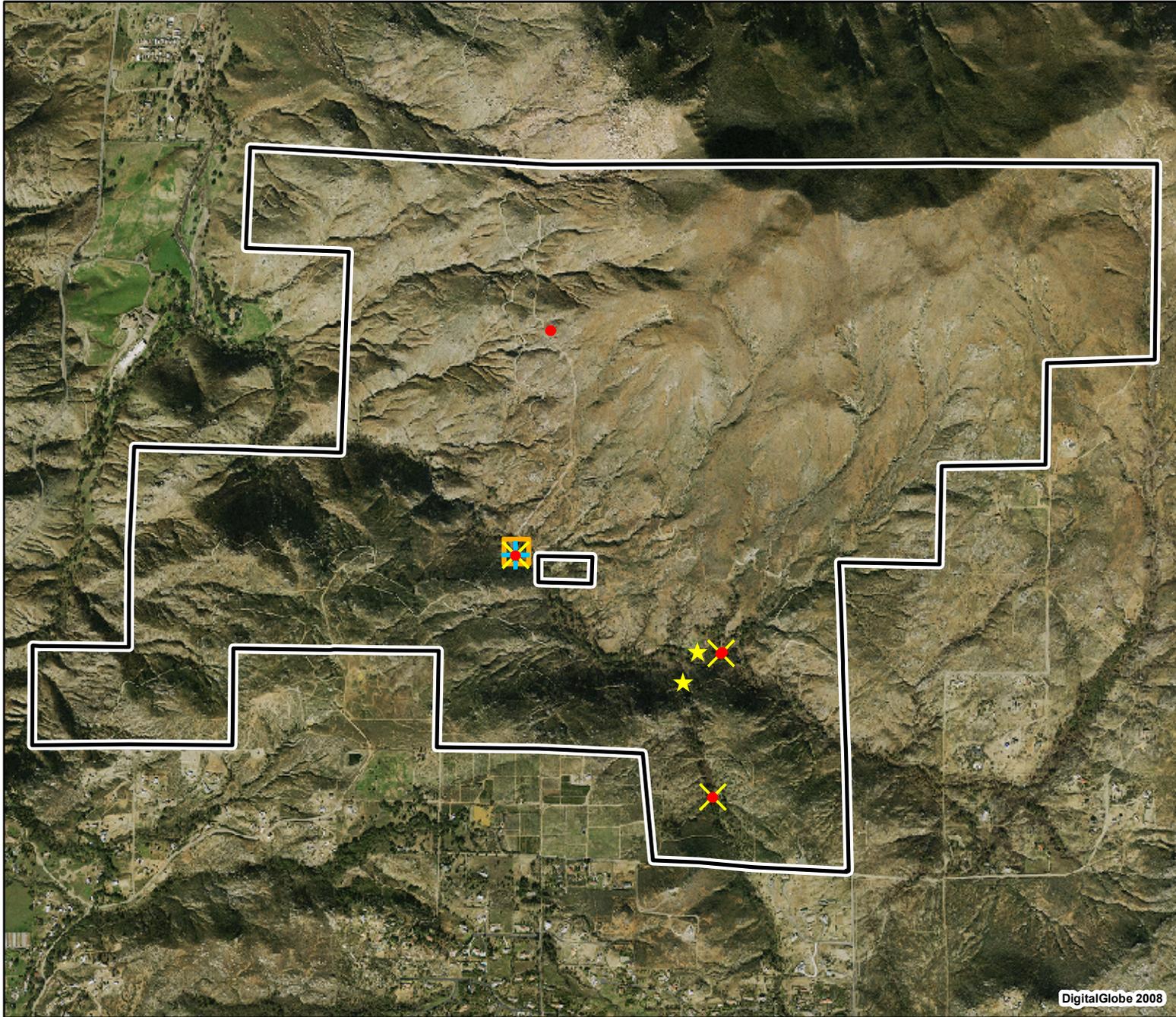
- ★ Pallid bat
- Pocketed free-tailed bat
- Townsend's big-eared bat
- ⊕ Western mastiff bat
- ✕ Western red bat

## Basemap Legend

- ▭ Hellhole Canyon Preserve Boundary



Feet



DigitalGlobe 2008

et al. 1952). In California, the details of its distribution are not well known (Harris 2005). The species is most abundant in mesic habitats (Harris 2005). The Townsend's big eared bat roosts in caves, mines, tunnels, buildings, or other human-made structures (Harris 2005). The species may use separate sites for night, day, hibernation, or maternity roosts (Harris 2005). A high degree of site fidelity (more than 80 percent) has been noted for this species (Humphrey and Kunz 1976, Pierson et al. 1999). This species is extremely sensitive to disturbance of roosting sites and a single visit may result in abandonment of the roost (Harris 2005). Within the Preserve, the Townsend's big-eared bat was detected along Hell Creek, near the flume crossing.

#### Western Mastiff Bat (*Eumops perotis*)

##### *State Species of Special Concern, San Diego County Group 2*

The western mastiff bat is primarily known from low to mid elevations in southern and central California southeast to Texas and south to central Mexico (Best et al. 1996). This species is a year-round resident in California (Philpott 1997). The species is found in desert scrub, chaparral, mixed conifer forest, giant sequoia forests, and montane meadows (Philpott 1997). It requires large bodies of flat water for drinking sites (USFS 2008). Day roosts are generally found in areas with rugged, rocky canyons and cliffs (Best et al. 1996). Western mastiff bat populations in California are believed to have undergone significant declines in recent years, due primarily to extensive loss of habitat by urbanization and widespread use of insecticides (Williams 1986). Other factors likely contributing to their decline include loss of large open water drinking sites, pest control operations in structures and activities that disturb or destroy cliff habitat (e.g. water impoundments, highway construction, quarry operations, recreational climbing) (Texas Parks and Wildlife 2003). Within the Preserve, the western mastiff bat was detected along Hell Creek, near the flume crossing.

#### Western Red Bat (*Lasiurus blossevillii*)

##### *State Species of Special Concern, San Diego County Group 2*

The western red bat occurs in western Canada, western United States, western Mexico, and Central and South America (Harvey et al. 1999). There is little information on the distribution and relative abundance of this species in southern California (Stephenson and Calcarone 1999). This bat is associated with large deciduous trees in riparian habitat and often occurs in streamside habitats dominated by cottonwood, oaks, sycamore, and walnut (Bolster 1998, Harvey et al. 1999). This species is primarily a solitary species that roosts in the foliage of trees and shrubs in habitats bordering forests, rivers, cultivated fields, and urban areas (Harvey et al. 1999). The western red bat forages over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands (Harris 2005). The species does not form colonies and is difficult to find and census

(USFS 2008). Within the Preserve, the western red bat was observed along Hell Creek and in the southeast portion of the Preserve.

### **3.3.3 Rare, Threatened or Endangered Wildlife with High Potential to Occur**

Additional information on the species listed below can be found in the Biological Diversity Baseline Report (Appendix A).

#### Harbison's Dun Skipper (*Euphyes vestris harbisoni*)

*Federal Species of Concern, San Diego County Group 1*

This species has a high potential to occur on-site since it was previously documented from the Preserve. Hell Creek provides suitable habitat for the species and supports the larval host plant San Diego sedge (*Carex spissa*).

#### Quino Checkerspot Butterfly (*Euphydryas editha quino*)

*Federally endangered, San Diego County Group 1*

This species has potential to be found within the Preserve. Larval host plants including dot-seed plantain (*Plantago erecta*), Coulter's snapdragon (*Antirrhinum coulterianum*), and purple owl's-clover (*Castilleja exserta* ssp. *exserta*) were observed during floristic surveys in 2008. No nectar plants were observed during these surveys.

#### Grasshopper Sparrow (*Ammodramus savannarum*)

*State Species of Special Concern, San Diego County Group 1*

This species has a high potential to occur on-site. During field work for the San Diego County bird atlas two grasshopper sparrows were noted on June 12, 1999 just south of the Preserve's parking lot on adjacent private land.

#### Ringtail (*Bassariscus astutus octavus*)

*State Fully Protected, San Diego County Group 2*

It is expected that this species occurs on the Preserve since the type locality (Hall 1981) is 2.2 miles northeast of the Preserve. At other occupied sites in San Diego County they are often found near vertical granitic cliff faces and within a few miles from a water source. Potential habitat is found in the north-central section of the Preserve.

### **3.3.4 Non-native and/or Invasive Wildlife Species**

The invasive, parasitic Brown-headed Cowbird (*Molothrus ater*) was detected primarily in the woodland along Hell Creek, where suitable hosts such as the song sparrow and yellow warbler were concentrated. Brown-headed Cowbirds are brood parasites and are known to parasitize more than 220 host species (Muehter 2008). Expansion of the species has resulted in range-wide declines in populations of susceptible songbirds, including the willow flycatcher, Bell's, Cassin's and Warbling Vireos, Blue-gray Gnatcatcher, and Yellow Warbler (Unitt 2004).

### **3.4 Overall Biological and Conservation Value**

Planning segments within the Draft Plan are identified either as core areas, linkages between core areas, or special areas. The Preserve lies within the Hellhole Canyon Core Area. Fifteen core areas were identified in the Draft MSCP study area. According to the Draft Plan, core areas were designated to assist with preserve assembly within the plan area. The Framework Resource Management Plan identifies the highest conservation priorities for each planning segment so that planners can prioritize resource protection where impacts are proposed or anticipated.

The Hellhole Canyon Core Area is adjacent to the Guejito Creek Core Area which connects to the Keys Creek Linkage.

To define the core and linkage areas, an extensive geographic information system database of vegetation communities, species locations, elevation, slope, soils, drainages, and other physical parameters were used to develop a habitat evaluation map for the study area. The habitat evaluation map ranks habitat areas as Very High, High, Moderate, or Low based on their potential to support priority coastal California gnatcatcher habitat, and wildlife corridors. According to the MSCP Habitat Evaluation Model, the majority of the habitat within the Preserve is rated as high value with the remainder ranging from low to very high in value.

Mafic southern mixed chaparral present in the northeastern portion of the Preserve is considered MSCP Tier I habitat and supports several special status plant species including Cleveland's bush monkey flower, felt-leaved monardella, and fish's milkwort. Diegan coastal sage scrub located in the southern area of the Preserve is considered MSCP Tier II habitat. The coastal sage scrub on-site is moderately to highly disturbed and of marginal quality. No special-status species were found in association with this habitat type. Patches of non-native grasslands, considered MSCP Tier III habitat, are present within the Preserve on the terraces above Hell Creek. No special-status species were found in association with this habitat type.

#### **3.4.1 Wildlife Linkages and Corridors**

Hellhole Canyon is an important component of a large regional linkage, specifically of the Santa Ana-Palomar wildlife corridor (South Coast Wildlands 2008). Although

it does not fall immediately within the mapped corridor, the Preserve is connected to that corridor via a group of connected public lands and largely undeveloped tribal lands.

The Preserve is crucial in providing linkage between Guejito Ranch and the San Luis Rey River Valley. The Preserve facilitates animal movement from Guejito Ranch north to Palomar Mountain, northwest toward Pala and Temecula (and ultimately the Santa Rosa Plateau), and east to Lake Henshaw. The Preserve borders Bureau of Land Management (BLM) lands that directly link to Guejito Ranch to the southeast. Guejito Ranch provides potential corridors south to San Pasqual Valley (and ultimately Lake Hodges), Ramona, Boden Canyon, Pamo Valley, and Black Mountain. The Cleveland National Forest is located to the east of the BLM lands and provides further connectivity to open space. Many of these lands are part of the Draft Plan preserve area and constitute high quality core habitats (K. Preston, unpublished data).

Most animals seek cover when moving across the landscape and, therefore, often seek out riparian areas as their preferred movement corridors. Hell Creek runs through the Preserve and provides an easily-traversed linkage between lands to the south and east and the San Luis Rey River Valley to the northwest. The creek's headwaters begin on the BLM lands to the east, flow west briefly through private lands east of the Preserve (Upper Hellhole) and then flow through the Preserve and the Brown parcel in Lower Hellhole Canyon. Hell Creek joins Paradise Creek just west of the Preserve and then flows north to join the San Luis Rey River at the Rincon Indian Reservation.

## **4.0 CULTURAL RESOURCES**

San Diego County is characterized by a rich and varied historical past. Cultural resources which reflect this history consist of archaeological remains, historic buildings, artifacts, photographs, oral histories, Native American memories and public documents. This RMP identifies the known cultural resources within Hellhole Canyon Preserve and describes areas of potential resources.

In 2008, an archaeological survey was completed for the Preserve in compliance with the California Environmental Quality Act (CEQA) and County environmental guidelines to assist in continued and future land use and resource protection planning. The results of this study can be found in the report titled *Management Plan for Archaeological Resources within the Hellhole Canyon Preserve, San Diego County*, dated October 2008, and is attached as Appendix B (Hector and Akyüz 2008). This Phase I inventory involved site records searches, literature reviews, Native American consultation, historic map checks, field survey, and resource documentation. The survey and inventory results were used in the preparation of this RMP.

### **4.1 Site History**

The 10,000-20,000 years of prehistory of the San Diego region can be divided into three periods: Early Prehistoric Period (San Dieguito tradition/complex); Archaic Period (Milling Stone Horizon, Encinitas tradition, La Jolla and Pauma complexes); and Late Prehistoric Period (Cuyamaca and San Luis Rey complexes). No Early Prehistoric Period sites were found in the Preserve. In the southern coastal region, the Archaic Period dates from circa 8,600 years B.P. to circa 1,300 years ago (Warren et al. 1998). During the Archaic Period, the La Jolla/Pauma complexes have been identified. These assemblages indicate that a relatively stable, sedentary, hunting and gathering complex, possibly associated with one people, was present in the coastal and immediately inland areas of San Diego County for more than 7,000 years. Based on currently existing information no resources appear to date to, or may represent complexes associated with, the Archaic Period.

During Late Prehistoric times, the Preserve would have been within the area commonly associated with the archaeologically defined Pauma complex (True 1970). Numerous Late Prehistoric Period sites, attributable to the Pauma complex have been identified within the Preserve.

Ethnographically, the Preserve is situated within the traditional territory of the prehistoric Shoshone people inhabiting the area at the time of European contact, the Luiseño. Six of the sites in the Preserve appear to date from this period; however, further investigation would be needed to confirm that the Preserve was only occupied by Native Americans during the Late Prehistoric Period. Shoshonean language-speaking (the Cupan/Takic branch of the Shoshonean group of the Uto-Aztecan language family) Luiseño (Puyumkowitchum/Ataxum) groups occupied the

San Diego, southern Orange, and southeastern Riverside counties through the Ethnohistoric period into the twenty-first century. They are linguistically and culturally related to the Gabrielino and the Cahuilla. The Preserve is within Luiseño territory.

The Luiseño inhabited what is now the Preserve; it may have provided a corridor between the area to the north and south. The San Luis Rey River provided many resources during prehistoric and ethnohistoric times, and many permanent settlements were maintained near the river. Access from the river valley to sites in the survey area could have been achieved by passing through the Preserve and Horsethief Canyon.

For more information on the Luiseno period occupations refer to Appendix B.

## **4.2 Native American Consultation**

ASM Affiliates Associate Archaeologist Michelle Dalope requested that the California Native American Heritage Commission (NAHC) search their files for any recorded Traditional Cultural Properties, burials, or Sacred Lands within one mile of the project survey area. The NAHC provided a list of Native American contacts; ASM Affiliates Associate Archaeologist Linda Akyüz notified the tribal representatives on the NAHC list. Responses from tribal members and correspondence between tribal members and Ms. Akyüz are located in the 2008 Hector and Akyüz report.

Native American Monitors Charlie Devers of the Pauma Yuima Band of Luiseño Indians and Luke Dixon of the Pauma Yuima Band of Luiseño Indians participated in the survey and served as consultants and monitors during the survey. Mr. Devers or Mr. Dixon was present during the entire survey. Carmen Lucas of the Kwaaymii Laguna Band accompanied ASM staff during the monitoring of herpetology trap placement. Ms. Lucas wrote a letter to Ms. Akyüz after Ms. Lucas surveyed and monitored for the pitfall array placement.

## **4.3 Cultural Resource Descriptions**

### **4.3.1 Prehistoric Archaeological Resources**

#### **Bedrock Milling Sites**

*CA-SDI-9685/P-37-009685*

This site had been recorded as Locus A that contained two mortars and Locus B that contained one mortar. We confirmed the two mortars at Locus A. Our survey found that three slicks were located on some boulders just west of Locus A and a green volcanic flake was located east of Locus A. We named the area with the three slicks Locus C. Locus B was found to have two mortars, not one. The one previously undiscovered mortar had been filled with dirt and leaves.

*CA-SDI-9686/P-37-009686*

This site had been recorded as bedrock with five slicks. We did not relocate the site.

*CA-SDI-11134/P-37-011134*

This site had been recorded as one slick on a large bedrock outcrop. It has been tested for significance and was deemed not significant under CEQA. The bedrock was located but the slick was not found. The site had been plotted north of a large (100m<sup>2</sup>) bedrock outcrop. The smaller bedrock outcrop that is cited in the record is assumed to be within this larger outcrop.

*CA-SDI-19058 P-37-025798*

This prehistoric bedrock milling site contains one slick, three ovals, two mortars, and 2 cupules. The bedrock was burnt and carbonized from the 2007 Poomacha Fire. Ashes filled the milling surfaces.

*CA-SDI-1906 P-37-0258000*

This prehistoric bedrock milling site contains one slick, three quartz flakes, and four Tizon Brown Ceramic sherds. One of these sherds was a rim sherd with a basket imprint on the inside.

Lithic Scatters

*CA-SDI-18592/P-37-029026*

The Friends of Hellhole Canyon recorded this lithic scatter. The original site record indicates that some artifacts had been collected but does not indicate testing. No report accompanied the site record. Our crew found the area of the site but did not see any lithic artifacts.

Isolates

*P-37-029803*

This pecked cobble isolate was located near P-37-025798/CA-SDI-19078.

*P-37-029804*

This quartz point isolate was a complete Cottonwood Triangular Point found on a slope.

### 4.3.2 Historic Sites

#### *P-37-025799/CA-SDI-19059*

This historic homestead site contains historic and modern foundations, stone walls and foundations, a cattle pond to west of foundations, chicken wire, fence posts, piping, and a road to site. It may represent the Sorenson/Brown/Pulver (APN 189-081-24) Property. The standing portions of the buildings appear to have been burned down.

#### *P-37-029802/Escondido Canal/San Luis Rey Flume*

This historic canal/flume was built in 1894 and has been carrying water since 1895. Associated features include stone shoring, the siphon, and affiliated roads. Elements continue outside of the Preserve. The canal reached from San Luis Rey River, through power station and tunnel (Rodriguez Mountain), through the Preserve down to Lake Wohlford/Lake Wohlford Dam (formerly Bear River Reservoir/Dam and Escondido Reservoir/Dam). The canal had been shored with wood and was also called the San Luis Rey Flume. All the wood is gone.

The canal/flume had gone around Rodriguez Mountain from the river and passed through a tunnel that was built in 1900. Evidence of where it went around the mountain to the north of the Preserve is outside the survey area. The canal portion that is recorded here is not the portion that went around the northern portion of Rodriguez Mountain. The wood from the original Escondido Canal and Flume has been replaced by a concrete canal and metal siphon. Some stone wall footing of what may be the original conveyance is apparent in the Preserve.

Much of the canal lies outside the Preserve, to the north and to the south. A trail that goes across the northern and southern portion of the Preserve may represent a portion of the previous flume, but a location change was not apparent in any of the primary documents. A 1964 aerial photograph does show a linear feature in the northern and southern portions of the project area. The current course of the canal, which includes the siphon, appears in this aerial and on a 1939 map (USGS 1939). A trail where this linear feature appears in the northern and southern portions of the project area is apparent on the ground today. An image in Schuyler (1901) shows the canal to run along the course of this trail.

Another account maintains that this trail, subsequently bulldozed by California Department of Forestry crews during the 2007 Poomacha Fire, represents the original course of the canal (Downey 2007). The change of course may have occurred in 1909 when the District rebuilt portions of the flume. From the maps and aerials, the course of the canal that lies outside the project area has remained the same. The 1939 USGS Palomar Mountain 15-minute quadrangle map shows a road where the southern trail lies now (USGS 1939). On the map, the road goes from a

fork of Hell Creek west to what is currently called Canal Road, which leads into San Pasqual Indian Reservation.

#### **4.4 Resource Significance**

The cultural resources located in the Preserve, while few in number, are varied in size, function, and significance. Six sites are prehistoric, two are historic, and two isolates were discovered. Of the prehistoric sites, five are milling features and one is a lithic scatter, which could not be relocated. Both isolates are prehistoric.

One site, CA- SDI- 11134, has been tested for significance in a previous project and was determined not to be significant under CEQA. The Preserve is within Luiseño ancestral land. Unique artifacts were identified and may reveal trade patterns and processes. Isolates P-37-029803 and P-37-029804 are considered not significant because they are isolates and not sites. The prehistoric archaeological sites within the Preserve (except for CA- SDI- 11134) appear to meet Criterion 1 of the County of San Diego RPO, Criteria 1, 2, 4, and 5 of the San Diego County Local Register of Historical Resources, Criteria 1 and 4 of the California Register of Historic Places, and Criteria A and D of the National Register of Historic Places.

Sites that should be considered significant are CA-SDI-9685, CA-SDI-9686, CA-SDI-18592, CA-SDI-19058, CA-SDI-19059, CA-SDI-19060, and P-37-029802. These sites may be associated with the traditional cultural landscape of the region and represent seasonal occupation and use of the canyon. Native Americans have also identified these areas as sensitive for their cultural values. As archaeological sites, the resources also contain information important to the prehistory of the San Diego region. The integrity of these resources is good since the existing trails do not appear to have caused impacts. Because further investigation is needed to make eligibility recommendations, these resources will be treated as eligible for the purposes of this project.

Historic resources such as the canal and the homestead appear to meet Criterion 1 of the County of San Diego RPO, Criteria 1, 2, and 4 of the San Diego County Local Register of Historical Resources, Criteria 1 and 4 of the California Register of Historic Places, and Criteria A and D of the National Register of Historic Places. They represent broad patterns of United States, California, and San Diego County History: the development of California agriculture and its need for irrigation and the homesteading days. Although the homesteads have been burned down, the foundations and remaining structures (such as ponds and tanks) may provide data for further research.

## **5.0 RESOURCE MANAGEMENT**

### **5.1 Management Goals and Objectives**

Management of the natural and cultural resources within the Preserve will be guided by the general goals and objectives of both the County and the MSCP.

#### **5.1.1 County-Specific**

County-specific goals and objectives used to guide the management of resources within the Preserve can be found in the County Strategic Plan, the DPR Strategic Plan, as well as the Valley Center Community Plan. The County's overall goal or mission, as indicated in the 2009-2014 Strategic Plan, is to provide the residents of San Diego County with superior County services in terms of quality, timeliness and value in order to improve the region's quality of life. The Strategic Plan for Parks and Recreation is closely aligned with the County's strategic initiatives.

The DPR Strategic Plan 2008-2013, outlines the department's priorities for accomplishing its mission over a five-year period. The overall goal or mission of DPR is to provide opportunities for high quality parks and recreation experiences and to preserve regionally significant natural and cultural resources. DPR makes this mission a reality through programs that create healthy communities, protect valuable natural and cultural resources, provide recreation opportunities, reduce crime and vandalism, and foster economic development.

In addition, the Valley Center Community Plan provides goals and policies which are designed to fit the specific or unique circumstances existing within this community. Goals provided in this plan seek to support a system of open space that is adequate to preserve the unique natural elements of the community, enhance recreational opportunities, conserve scenic resources and retain the rural community character. To this end, the plan provides policies and recommendations which are meant to guide the allocation of County resources towards prescribed outcomes consistent with the goals.

#### **5.1.2 MSCP-Related**

The MSCP Plan and the County's Draft Plan provide both general and preserve segment-specific goals and objectives. The Preserve is located east of the unincorporated community of Valley Center and, as discussed in Section 3.4, lies adjacent to Guejito Creek Core Area which connects to the Keys Creek Linkage. The overall MSCP goal is to maintain and enhance biological diversity in the region and conserve viable populations of endangered, threatened, and key sensitive species and their habitat, thereby preventing local extirpation and ultimate extinction. This is intended to minimize the need for future listings, while enabling economic growth in the region.

The Biological Goals of the Draft Plan include:

Develop a preserve system that will preserve ecosystem functions and values, maintain the range of natural biological communities and native species within the Plan area and contribute to the recovery of endangered, threatened, and sensitive species and their habitats.

### **5.1.3 Management Directives and Implementation Measures**

Based on the above management goals, recommended management directives have been identified. In accordance with the Draft Framework Management Plan, specific conservation actions that will be performed on preserve lands fall into three categories: land stewardship, adaptive management actions, and biological monitoring. In general, land stewardship consists of the activities necessary for maintaining the integrity (i.e., functional ecosystem and protected resources) of preserved lands. Adaptive management actions include activities that are designed to benefit specific ecological features (e.g., certain species, vegetation communities or ecological processes) based upon information that has been gained through casual observations or scientific monitoring. Biological monitoring refers to focused assessments of species or vegetation communities.

The Draft Plan specifies conservation goals for the Hellhole Canyon Core Area and the Preserve will be managed to meet those goals in accordance with this RMP.

The management directives provided in this RMP have been divided into five elements: A) Biological Resources, B) Vegetation Management, C) Public Use, Trails, and Recreation, D) Operations and Facility Maintenance, and E) Cultural Resources.

## **5.2 Biological Resources Element (A)**

### **5.2.1 Biological Monitoring**

Biological monitoring will be performed onsite to gather information that will assist DPR in making land management decisions to conform to the MSCP North County Plan goals and objectives, as well as DPR objectives. The biological monitoring that will occur will be designed to guide decisions at the individual preserve level. The first year of monitoring has been conducted (baseline surveys) and the results are included as Appendix A. Additional monitoring results will be incorporated into stand alone monitoring reports. These reports may recommend revisions to the management directives contained within this RMP.

Monitoring at the preserve scale is focused on obtaining information for management purposes, but can be useful for subregional and ecoregional monitoring assessment as well. DPR will monitor the status and trends of Covered Species (in accordance with the Framework Resource Management Plan) and collect data on key environmental resources within preserves to select, prioritize, and measure the effectiveness of management activities. In most instances, the array of threats or stressors on preserved habitats, their mechanisms of action, and the responses of the habitats and associated species are not completely understood at this time. Therefore, Area-Specific Management Directives must comprehensively address resource management issues for each preserve. Information collected within each preserve will be aggregated for analysis at the subregion and ecoregion scales.

The key to successful monitoring at the individual preserve level, such that data gathered is not duplicative and meets individual preserve level objectives, is close coordination with stakeholder groups that are performing subregional monitoring, sharing of data, future plans and schedules and keeping abreast of monitoring methods as they are developed. To ensure uniformity in the gathering and treatment of data, a (SANDAG) land management working group has been formed and will designate a land manager who will assist jurisdictions in coordinating monitoring programs, analyzing data, and providing other information and technical assistance. The DPR will work closely with this group.

Since the MSCP North County Plan has not been finalized at the time of this RMP, DPR will follow the monitoring requirements outlined for the covered species of the South County MSCP Subarea Plan. South County MSCP Subarea Plan covered species have been prioritized for monitoring by San Diego State University (SDSU) in the document *San Diego Multiple Species Conservation Program Covered Prioritization* (Regan et al., 2006). Subregional monitoring methods for the South County MSCP Subarea Plan have been developed for rare plants (McEachern et al., 2007) and animals (USFWS, 2008). These references will assist DPR in developing monitoring methods at the preserve level, as well as the management directives that are identified for specific species in this document.

### **Management Directive A.1 – Conduct habitat monitoring to ensure MSCP goals and DPR objective are met (*Priority 1*)**

***Implementation Measure A.1.1:*** DPR will conduct habitat monitoring at five-year intervals. Habitat monitoring will address both temporary and permanent habitat changes as well as habitat value. The main product of this monitoring will be a report which will include a discussion of monitoring objectives, monitoring methods to meet those objectives and an updated vegetation community map.

***Implementation Measure A.1.2:*** DPR will conduct general wildlife and rare plant surveys at five-year intervals utilizing and refining baseline monitoring methods to facilitate trend and distribution status analysis. This information will be included in the habitat monitoring report.

***Implementation Measure A.1.3:*** DPR will conduct monitoring for invasive plant species at five-year intervals to assess invasion or re-invasion by invasive nonnative plants within the Preserve. These surveys will focus on areas where invasive, non-native plants have been detected in the past, but also look for new occurrences in the Preserve.

### **Management Directive A.2 – Meet the corridor monitoring requirements of the MSCP (*Priority 2*)**

The Preserve is located within the Hellhole Canyon Core Area, which is adjacent to another core area which connects to a linkage. Additionally, Hell Creek located in the center of the Preserve serves as a wildlife corridor for local wildlife movement to the south and east and the San Luis Rey River Valley to the northwest. Scattered rural residential development is located to the south and east of the Preserve with public lands and undeveloped tribal lands to the north and west. Local movement across the Preserve is not impeded. Therefore, while corridor monitoring within the Preserve will take place at the preserve-level, it anticipated that it will provide data for better understanding movement on a regional scale.

***Implementation Measure A.2.1:*** DPR will conduct corridor monitoring at five-year intervals in conjunction with habitat monitoring and general wildlife and rare plant surveys (as described in implementation measures A.1.1 and A.1.2). The main product of this monitoring will be a report documenting the results of the current assessment of habitat linkage function including a list of focal species detected.

#### **5.2.2 MSCP Covered Species-Specific Monitoring and Management Conditions**

Not all species occurring within the Preserve are expected to require species-specific management. It is expected, rather, that other management directives and implementation measures outlined under the Biological Resources and Vegetation

Management elements should be sufficient to protect and manage optimal habitat conditions for most, if not all, species to maintain and/or thrive within the Preserve. However, there are some species listed as MSCP Covered Species in the South County MSCP Subarea Plan which require additional management measures, particularly if monitoring indicates that the general guidelines are not sufficient to maintain acceptable population levels. Table 3-5 of the Final South County MSCP Plan (City of San Diego, 1998) provides management and/or monitoring measures for specific MSCP species.

In addition, in the document *San Diego Multiple Species Conservation Program Covered Prioritization* (Regan et al., 2006), SDSU has prioritized the MSCP covered species for monitoring. The species were classified as Risk Group 1 (most endangered), Risk Group 2 (moderately endangered), and Risk Group 3 (less endangered). Next, the threats/risk factors facing the species were identified and ranked as high, moderate, or low degree of threat to the species. Only management conditions addressing high and moderate threats for Risk Group 1 species will be discussed in this RMP. One Risk Group 1 species is currently present on the Preserve.

### **Management Directive A.3 - Comply with applicable conditions of coverage for Draft North County MSCP Proposed Covered Species (*Priority 1*)**

***Implementation Measure A.3.1:*** The MSCP North County Plan has not been approved at present; however, DPR will implement the species-specific monitoring and management conditions as listed in Table 3-5 of the South County MSCP Plan and *San Diego Multiple Species Conservation Program Covered Prioritization* (Regan et al., 2006) for all proposed MSCP North County Plan Covered Species detected within the Preserve.

The conditions of coverage for those species currently known to occur in the Preserve are listed below followed by an explanation of how management activities in the Preserve will comply.

#### Engelmann oak (*Quercus engelmannii*)

Not listed under the South County MSCP Subarea Plan. Monitoring information for this species will be updated once the Draft MSCP Plan is approved.

#### Orange-Throated Whiptail (*Cnemidophorus hyperythrus beldingi*)

*Monitoring:* Table 3-5 - Site Specific, SDSU - Risk Group 3

*Management Conditions:* Table 3-5 states area-specific management directives must address edge effects.

Edge effects are addressed through implementation measure C.5.1 and multiple implementation measures under management directives D.6 and D.7.

Coast Horned Lizard (*Phrynosoma coronatum*)

*Monitoring:* Table 3-5 - Site Specific, SDSU - Risk Group 3

*Management Conditions:* Table 3-5 states area-specific management directives must include specific measures to maintain native ant species, discourage the Argentine ant, and protect against detrimental edge effects to this species.

No Argentine ants were observed within the Preserve and no landscaping on-site is proposed. Edge effects are addressed through implementation measure C.5.1 and multiple implementation measures under management directives D.6 and D.7.

Bell's Sage Sparrow (*Amphispiza belli belli*)

Not listed under the South County MSCP Subarea Plan. Monitoring information for this species will be updated once the Draft MSCP Plan is approved.

Burrowing Owl (*Athene cunicularia*)

*Monitoring:* Table 3-5 – Area Specific Management Directives, SDSU – Risk Group 1

*Management Conditions:* Table 3-5 states area-specific management directives must include enhancement of potential burrowing owl habitat and management for ground squirrels (excavator of burrowing owl burrows). Management plans must also include monitoring of nest sites to determine nesting success, predator control and establishing a 300-foot wide impact avoidance area around occupied burrows. SDSU identifies the following threats for burrowing owl: development encroachment and nonnative invasive plants. Table 3-5 directives will be met through implementation measure A.1.1. Edge effects are addressed through implementation measure C.5.1 and multiple implementation measures under management directives D.8 and D.9. Nonnative invasive plant species threats are addressed under implementation measure A.1.3 and management directives B.2 and B.3.

Cooper's Hawk (*Accipiter cooperii*)

*Monitoring:* Table 3-5 - Habitat Based, SDSU - Risk Group 3

*Management Conditions:* Table 3-5 states area-specific management directives must include 300-foot impact avoidance areas around active nests and minimization of disturbance in oak woodlands and oak riparian forests.

No nesting territories were observed within the Preserve during the 2008 surveys; however future detection will be addressed through general wildlife surveys (as described in implementation measure A.1.2). Although no future projects are anticipated, any proposed impacts will be conditioned to avoid nests and minimize disturbance to oak and riparian forests present on-site.

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

*Monitoring:* Table 3-5 - Habitat Based, SDSU - Risk Group 3

*Management Conditions:* Table 3-5 states area-specific management directives must include maintenance of dynamic processes, such as fire, to perpetuate some open phases of coastal sage scrub with herbaceous components.

Small areas of coastal sage scrub habitat occur within the southern area of the Preserve. This habitat will be maintained through vegetation management implementation measure B.4.3.

Western Bluebird (*Sialia mexicana*)

*Monitoring:* Table 3-5 - Habitat Based, SDSU - Excluded

*Management Conditions:* None

No nesting territories were observed within the Preserve during the 2008 surveys; however future detection will be addressed through general wildlife surveys (as described in implementation measure A.1.2).

Southern Mule Deer (*Odocoileus hemionus*)

*Monitoring:* Table 3-5 - Habitat Based and Corridor Sites, SDSU - Risk Group 3

*Management Conditions:* None

Mountain Lion (*Felis concolor*)

*Monitoring:* Table 3-5 – Habitat Based and Corridor Sites, SDSU – Risk Group 3

*Management Conditions:* None

### 5.2.3 Non-Native Invasive Wildlife Species Control

#### **Management Directive A.4 – Reduce, control, or where feasible eradicate invasive, non-native fauna known to be detrimental to native species and/or the local ecosystem (*Priority 2*)**

Invasive, non-native species detected within the Preserve during the 2008 surveys included Brown-headed Cowbirds. This species does not currently appear to be posing an immediate threat to native species and/or the local ecosystem; however, they have potential to out compete native species for valuable resources.

***Implementation Measure A.4.1:*** DPR will conduct surveys for the presence of invasive, non-native wildlife species of management concern, including Cowbirds, at five-year intervals in conjunction with habitat monitoring and general wildlife surveys (as described in implementation measures A.1.1 and A.1.2).

***Implementation Measure A.4.2:*** If invasive, non-native species are detected within the Preserve and detrimental effects of these species are noted, preparation and implementation of a trapping and removal program, or other means of humane control, will be initiated.

***Implementation Measure A.4.3:*** On a case-by-case basis, some limited trapping of non-native predators may be necessary at strategic locations, and where determined feasible to protect ground- and shrub-nesting birds, lizards, and other sensitive species from excessive predation. If implemented, the program would only be on a temporary basis and where significant problem has been identified and therefore needed to maintain balance of wildlife in Hellhole Canyon Preserve and the MSCP Preserve. The program would be operated in a humane manner, providing adequate shade and water, and checking all traps twice daily. Signage at access points and noticing of adjacent residents will inform people that trapping occurs, and how to retrieve and contain their pets.

***Implementation Measure A.4.4:*** DPR will institute an equestrian education program regarding the potential negative impacts to native ecosystems from the accumulation of non-point source pollutants (e.g., increased potential for occurrence of cowbirds) in staging areas and on frequently used trails. This could be accomplished through implementation of a signage program and interaction between rangers and trail users. See also implementation measure B.3.2.

**Implementation Measure A.4.5:** DPR will provide materials for clean up by equestrian users of staging areas to keep it free of non-point source pollutants that may attract cowbirds or other invasive, non-native species. See also implementation measure B.3.3.

## **5.2.4 Future Research**

The MSCP Preserve presents a rich array of research opportunities for the academic and professional communities, primarily in disciplines related to biology, ecology, and natural resources management, but also ranging to environmental design, sociology, and park use and administration. The County of San Diego encourages research within the MSCP Preserve in order to gain valuable information unavailable through other means.

There are a multitude of unanswered questions posed by the development of a multiple species and habitat system where little literature or previous research exists on the majority of species inhabiting the region. In addition, research on vegetation associations and habitats, natural regeneration, restoration, fragmentation, edge effects, genetics, viability, predation, wildlife movement, and much more, would be useful to provide information on the health and dynamics of an urbanized open space system as well as how to improve conditions.

### **Management Directive A.5 – Allow for future research opportunities for the Academic and Professional Scientific and Biologic Activities within the Preserve (Priority 2)**

**Implementation Measure A.5.1:** DPR will accept and review proposals for scientific research, monitoring, and habitat restoration and enhancement activities which are permitted within the MSCP Preserve. Proposed research activities will be subject to approval by DPR. All such activities must obtain any necessary permits and shall be consistent with this RMP. Additionally, any person conducting research of any kind within the Preserve shall obtain a Right-of-Entry Permit from DPR, which will outline the precautions to be taken to preserve and protect sensitive biological and cultural resources within the Preserve and require results of any research to be made available to DPR.

## **5.3 Vegetation Management Element (B)**

### **5.3.1 Habitat Restoration**

**Management Directive B.1 – Restore degraded habitats to protect and enhance populations of rare and sensitive species through stabilization of eroded lands and strategic revegetation (Priority 1)**

**Implementation Measure B.1.1:** DPR will assess and determine the need for restoration activities within the Preserve. The need for restoration activities will be determined based on the results of habitat monitoring (as described in implementation measure A.1.1 above) and trail maintenance activities (as described in implementation measure C.5.3 above). Any proposed restoration activities should utilize current, accepted techniques and avoid/minimize impacts to sensitive species or native habitats. Any proposed revegetation activities should use only local native species. No active restoration is currently needed. Passive restoration (recovery from fire) is ongoing. Also see implementation measure D.4.1.

**Implementation Measure B.1.2:** Park rangers will monitor the 2007 fire fighting bulldozed site in the east-central area of the Preserve that was seeded by park rangers in March 2008.

### **5.3.2 Non-Native Plant Species Removal and Control**

#### **Management Directive B.2 – Reduce, control, or where feasible eradicate invasive, non-native flora known to be detrimental to native species and/or the local ecosystem (Priority 1)**

As described in Section 3.2.4 above, giant reed, pampas grass, artichoke thistle, eucalyptus, Brazilian pepper tree, and tamarisk are found associated with Hell Creek and within the southwestern area of the Preserve. The invasive nonnative plants found in association with Hell Creek were most likely introduced by the previous residents of an old homestead on the Brown Property found in the south-central area of the Preserve. The presence of these invasive nonnative species has the potential to hinder southern coast live oak riparian forest and coast live oak woodland recovery from fire.

**Implementation Measure B.2.1:** DPR will implement a routine invasive non-native plant removal effort on the Preserve. This may include park ranger effort as part of routine maintenance as well as larger scale projects.

**Implementation Measure B.2.2:** DPR will coordinate with other agencies, non-profit organizations, and/or volunteer groups in order to seek funding and implement removal of giant reed, tamarisk, pampas grass, artichoke thistle, and other invasive non-native plants within the Preserve.

**Implementation Measure B.2.3:** DPR park rangers will routinely pull weeds or remove any non-native plant species in early stages of growth found along trails.

#### **Management Directive B.3 – Manage and minimize the expansion of invasive, non-native flora within the Preserve (Priority 2)**

**Implementation Measure B.3.1:** DPR will implement an educational program for Preserve visitors and adjacent residents in order to discourage introduction of invasive, non-native plants into the Preserve. Information provided will include identification of invasive nonnative plants harmful to the Preserve, and prevention methods. The program may also encourage residents to voluntarily remove invasive exotics from their landscaping. See also implementation measure D.8.1.

**Implementation Measure B.3.2:** DPR will implement an equestrian education program regarding the potential negative impacts to native ecosystems from the accumulation of non-point source pollutants (e.g., spread of non-native seeds) on frequently used trails. This could be accomplished through a signage program/brochures and interaction between rangers and trail users. Specific signage could state, "Don't Plant a Pest! Feeding horses weed-free feed for at least 72 hours prior to entry helps preserve our natural environment". See also implementation measure A.4.4.

### **5.3.3 Fire prevention, control, and management**

Current fire management activities in the Preserve include four fuel modification zones (Figure 6) described below:

- 1) 30-foot fuel modification zone on either side of the access road to the staging area;
- 2) 100-foot fuel modification zone along Preserve boundary adjacent to one private residence located south of Preserve amphitheater (this fuel modification zone on the Preserve provides the adjacent residence a 100-foot buffer as measured from the residential structure);
- 3) 30-foot fuel modification zone around perimeter of staging area; and,
- 4) Brush clearance around flume (maintained by the City of Escondido)

Adequate emergency access roads are found within the Preserve in the form of Canal Road that provides access to the western and central portion of the Preserve. The road ends at the northern border of the Preserve. Santee Lane provides access to the staging area. The northeastern area of the Preserve is only accessible by quads utilizing the multi-use trails.

### **Management Directive B.4 – Provide for necessary fire management activities that are sensitive to natural and cultural resources protection (Priority 1)**

**Implementation Measure B.4.1:** The County will maintain the established fuel modification zones on Preserve property adjacent to the existing residential structures that are within 100 feet of the Preserve property boundary and other

areas as described above. The intent of a fuel modification zone is to protect habitable structures adjacent to the Preserve from wildfires and/or protect the resources within the Preserve by absorbing some of the “edge effects” that might otherwise occur within the Preserve.

Management of fuel modification zones will adhere to CAL FIRE and Valley Center Fire Protection District requirements.

**Implementation Measure B.4.2:** The existing trails and dirt roads within the Preserve acting as access roads will be maintained annually to keep them fuel free. In addition, DPR will continue to coordinate with CAL FIRE and the Valley Center Fire Protection District to determine what improvements need to be made to make fire response feasible throughout the Preserve.

**Implementation Measure B.4.3:** Vegetation management is not a current need within the Preserve to address wildfire issues as vegetation is continuing to recover after the 2003 wildfires and the 2007 Poomacha Fire. The need for vegetation management will be assessed through implementation measure A.1.1, but may be assessed before the stated five-year interval to ensure that fire fighters know where to stage and where to situate bull dozed fire breaks in the future to avoid unnecessary erosion/habitat/cultural impacts. DPR will coordinate with CAL FIRE and/or the Valley Center Fire Protection District to assess the future need to develop an integrated Vegetation Management Plan that will allow environmental documentation for strategic fuels management to be conducted if, and when, needed. A Vegetation Management Plan will also identify likely locations for equipment staging areas and fire breaks, assisting fire fighting activities to avoid known cultural sites, if feasible.

## **5.4 Public Use, Trails, and Recreation Element (C)**

### **5.4.1 Public Access**

#### **Management Directive C.1 – Limit types of public uses to those that are appropriate for the site (*Priority 1*)**

**Implementation Measure C.1.1:** The following public uses are prohibited in the Preserve. Park rangers are responsible for enforcing these restrictions and may call the sheriff for legal enforcement, as appropriate.

- a. Off-road or cross-country vehicle and public off-highway recreational vehicle activity are considered incompatible uses in the MSCP preserve, and are therefore prohibited in the Preserve, except for law enforcement, Preserve management, and/or emergency purposes.
- b. Hunting or discharge of firearms is an incompatible use in the MSCP preserve, and is therefore prohibited in the Preserve, except for law enforcement, and/or emergency purposes.

- c. Poaching or collecting plant or animal species, archaeological or historical artifacts or fossils from the Preserve is generally prohibited; however, the County may authorize collecting upon approval for scientific research, revegetation or restoration purposes, or species recovery programs. In addition, impacts to historic features are prohibited except upon approval by the County.
- d. Fishing, swimming, and wading in rivers, streams, or creeks
- e. Homeless and itinerant worker camps
- f. Feeding wildlife
- g. Domestic animals, except horses and leashed dogs
- h. Smoking
- i. Campfires/Open Flames
- j. Off-trail biking, equestrian use, or hiking
- k. Littering

**Management Directive C.2 – Manage public access in sensitive biological and cultural resource areas within the Preserve (*Priority 1*)**

***Implementation Measure C.2.1:*** DPR has identified and mapped narrow endemics and critical populations, and all covered species populations in the Preserve so that these areas can be avoided and/or monitored. Updated information on sensitive species in relation to public access points will be obtained during general wildlife and rare plant surveys in conjunction with habitat monitoring (as described in implementation measures A.1.1 and A.1.2).

***Implementation Measure C.2.3:*** DPR will provide sufficient signage to clearly identify public access to the Preserve. Barriers such as vegetation, rocks/boulders or fencing may be necessary to protect highly sensitive areas. The appropriate types of barriers to be used will be determined based on location, setting and use. DPR will monitor new developments adjacent to the Preserve to enforce non-authorized trail use.

**Management Directive C.3 – Provide appropriate interpretive and educational materials (*Priority 2*)**

***Implementation Measure C.3.1:*** DPR will share outreach and educational information and notify the public of volunteer opportunities that advance the management, monitoring, and stewardship resources available, and objectives of this RMP. This information will be provided on the DPR website, [www.sdparks.org](http://www.sdparks.org).

***Implementation Measure C.3.2:*** Opportunities for educational trail-side signage and educational kiosks will be identified within the Preserve. DPR will install

three interpretive signs within the Preserve including: 1) a watershed sign where the trail crosses Hell Creek; 2) a biodiversity sign north of Hell Creek; and 3) a sign adjacent to the existing flume describing the history of the flume. In addition, signage provided at access points and on trails maps provides a form of education.

**Implementation Measure C.3.3:** When possible, park rangers assigned to this Preserve should organize and conduct interpretative walks or programs within the Preserve discussing biological and cultural resources. During these interpretative walks or programs the ranger should distribute the “Living Close to Nature” brochure. This brochure discusses how to live in harmony with wildlife. The interpretative walks and programs should be conducted in accordance with park ranger availability.

#### **5.4.2 Fencing and Gates**

Currently, gates are located in the following areas within the Preserve (Figure 9): 1) at the southeastern border of the Preserve where Santee Lane provides access to the staging area; 2) on the southern border of the Preserve west of the staging area; 3) at the western boundary of the Pulver property; and 4) on the southwestern border of the Preserve where Canal Road dead ends at the Preserve. A new gate will be installed within the Preserve on the Private Road north of Canal Road. A concrete split-rail fence is located around the perimeter of the staging area and a short distance of three-wire fence is located in the northeastern area of the Preserve to delineate the Preserve boundary from an adjacent private residence.

#### **Management Directive C.4 – Install and maintain fencing and gates within the Preserve (Priority 1)**

**Implementation Measure C.4.1:** Ranger staff will install fencing and/or gates at points of unauthorized public access as appropriate. Points of unauthorized access will be identified in conjunction with trail monitoring activities (as described in implementation measure C.5.1).

**Implementation Measure C.4.2:** Ranger staff will regularly inspect and maintain all fencing and gates within the Preserve. Fencing segments and gates will be repaired or replaced as necessary.

#### **5.4.3 Trail and Access Road Maintenance**

Currently, there is one road, Santee Lane, which provides access to the Preserve entrance and staging area. There is also a private residential road, Canal Road, which provides access to the southwestern boundary of the Preserve. In addition, there are approximately 13 miles for hiking and equestrian uses.

**Management Directive C.5 – Properly maintain public access roads, staging areas, and trails for user safety, to protect natural and cultural resources, and to provide high-quality user experiences (*Priority 1*)**

***Implementation Measure C.5.1:*** Ranger staff will monitor public access roads, staging area, and trails for degradation and off-trail access and use, and provide necessary repair/maintenance per the Community Trails Master Plan (County of San Diego 2005). See also implementation measure B.4.2.

***Implementation Measure C.5.2:*** If temporary closure of a trail is deemed necessary for maintenance or remediation, temporary closure actions will be accompanied by educational support, and public notification through signs and public meeting announcements. An implementation schedule should be written by DPR Operations staff when maintenance or remediation is deemed necessary.

The trail will be posted with signage that indicates temporary closure and the primary reason for the temporary closure (e.g., erosion issues, and sensitive biological resource impacts). Finally, signs should provide contact information for anyone wishing to provide input on trail use or gain additional information regarding temporary closure of trails. Temporary trail closures will also be posted on the DPR website, [www.sdparcs.org](http://www.sdparcs.org).

Once posted, the trails in need of maintenance should be blocked with A-frame barricades and/or caution tape. Enforcement of the temporary closure of a trail would require increased ranger patrols of these areas and investigations to determine if the barriers are effective.

***Implementation Measure C.5.3:*** DPR will restore degraded habitats and reduce detrimental edge effects through maintenance and stabilization of trails and strategic revegetation. Measures to counter the effects of trail erosion may include the use of stone or wood cross-joints and earthen berms (to promote sheet run-off) per the Community Trails Master Plan (County of San Diego 2005). See also implementation measure B.1.1.

***Implementation Measure C.5.4:*** If unauthorized trail formation is observed by ranger staff, those specific areas will be posted with clear signage reminding the public to remain on authorized trails. Also see management directive C.6 below.

#### **5.4.4 Signage and Lighting**

##### ***Signage***

**Management Directive C.6 – Develop, install, and maintain appropriate signage to effectively communicate important information to Preserve visitors (*Priority 1*)**

Signs educate, provide direction, and promote sensitive resources and enjoyment of natural areas. Types of signs within the Preserve may include those necessary to: protect sensitive biological and cultural resources (see A.4.4, B.3.2, and E.2.4); provide educational and interpretive information (see C.3.2 and E.3.1); explain rules of the Preserve (see C.1.2 and D.2.1); direct public access (see C.2.3 and C.5.4); and, provide Preserve operations information (see A.4.3 and C.5.2).

**Implementation Measure C.6.1:** Park ranger staff will regularly inspect and maintain all posted signs within the Preserve in good condition. Current posted signs include the following rules and regulations: Off-roading and ATV Vehicles Prohibited 41.130, Dogs on Leash At All Times 41.123(c) and No Open Flames. Signs shall be kept free from vandalism and will be repaired or replaced as necessary.

### ***Lighting***

Artificial lighting adversely impacts habitat value of the Preserve, particularly for nocturnal species. Therefore, lighting should not be permitted in the Preserve except where essential for safety associated with volunteer pad.

### **Management Directive C.7 – Provide appropriate security lighting in association with volunteer pad located in staging area (*Priority 2*)**

**Implementation Measure C.7.1:** Low pressure sodium illumination sources or low energy alternatives will be used within the Preserve associated with the volunteer pad. All existing lighting sources within the Preserve will be retrofitted with low pressure sodium illumination sources or low energy alternatives, as appropriate. These lighting sources will be directed away from the Preserve.

## **5.5 Operations and Facility Maintenance Element (D)**

### **5.5.1 Litter/Trash and Materials Storage**

### **Management Directive D.1 – Maintain a safe and healthy environment for Preserve users (*Priority 1*)**

**Implementation Measure D.1.1:** Trash receptacles will be provided and maintained at the main trail access. Trash receptacles should be designed to be secure from intrusion by wildlife species. Ranger staff will regularly empty trash receptacles at least once a week or more/less as deemed necessary.

**Implementation Measure D.1.2:** The permanent storage of hazardous and toxic materials within the Preserve will be prohibited. Any temporary storage must be in accordance with applicable regulations, and otherwise designed to minimize any potential impacts.

## **Management Directive D.2 – Publicize and enforce regulations regarding littering/dumping (*Priority 1*)**

***Implementation Measure D.2.1:*** Lists of regulations will be provided to Preserve users (e.g., posted on kiosks) clearly stating that littering within the Preserve is illegal, and will provide appropriate DPR contacts to report any littering observed.

***Implementation Measure D.2.2:*** Regulations regarding littering/dumping will be enforced by park rangers (County Code of Regulatory Ordinance Section 41.116). Penalties for littering and dumping will be imposed by law enforcement officers sufficient to prevent recurrence and reimburse costs to remove and dispose of debris, restore the area if needed, and pay for additional DPR staff time. Areas where dumping recurs will be evaluated for potential barrier placement. Additional monitoring and enforcement will be provided as needed.

### **5.5.2 Hydrological Management**

Native habitats in the MSCP Preserve have evolved, in part, on the distribution and flow characteristics of water. MSCP Preserve property should be managed to maintain existing natural drainages and watershed and to restore or minimize changes to natural hydrological processes. Proposed structures and activities should be evaluated for effects on hydraulics, and remedial actions should be taken as needed. Best Management Practices (BMPs) should be used both within and outside the preserve system to maintain water quality. Currently, Hell Creek is crossed twice, once associated with the trail system and the second crossing associated with a dirt access road. The crossing associated with the trail is unaided and the second crossing has a culvert installed.

## **Management Directive D.3 – Retain Hell Creek and its tributaries in their natural condition (*Priority 1*)**

***Implementation Measure D.3.1:*** Park rangers will monitor the two trail creek crossings at Hell Creek to ensure the Creek is not compromised by trail use.

## **Management Directive D.4 – Watershed education to promote water quality and water sustainability. (*Priority 2*)**

***Implementation Measure D.4.1:*** DPR will include a watershed interpretive sign where the trail crosses Hell Creek. See also implementation measure C.3.2.

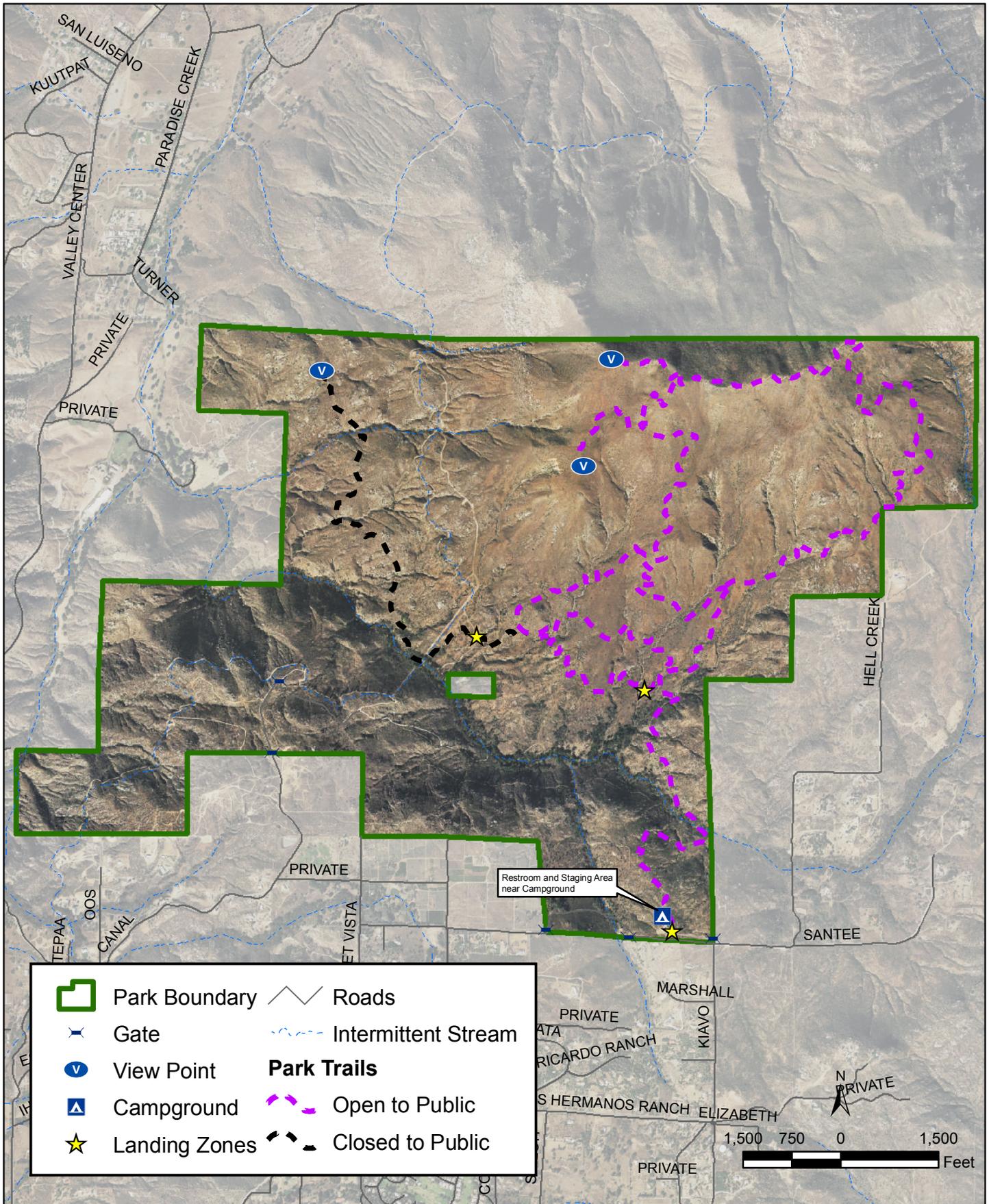
### **5.5.3 Emergency, Safety and Police Services**

The Framework Management Plan explains that the interface between current and future urban development and MSCP preserve areas requires increased coordination between the preserve managers and agencies responsible for public safety. The MSCP preserve system, including Hellhole Preserve, must

accommodate access for emergency response and fire control and management. In the event that entry into the Preserve by law enforcement agencies is needed in the routine performance of their duties, use of existing roads and trails should be encouraged. In emergencies where there is a direct threat to public safety, the law enforcement agency should contact DPR whenever feasible.

Law enforcement and fire control agencies, the National Guard, the U.S. Citizenship and Immigration Service (USCIS), the Border Patrol, and organizations and agencies that respond to natural disasters shall be permitted to perform their activities within any preserve system subject to all applicable requirements of state and federal law.

Three emergency helicopter landing zones are located within the Preserve (Figure 14). These locations include: 1) the staging area; 2) approximately 1.5 miles north of the staging area off of the trail; and 3) north of the in-holding within the Preserve.



**Figure 14**  
**Emergency Helicopter Landing Zones**  
**Hellhole Canyon Preserve**

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**Management Directive D.4 – Maintain or increase the ability of emergency response personnel to deal with emergencies within the Preserve or vicinity (Priority 1)**

**Implementation Measure D.4.1:** Law enforcement officials will be invited to access Preserve property as necessary to enforce the law. If it becomes apparent that extensive enforcement activities are necessary, DPR will coordinate with the applicable agencies to inform field personnel of how to minimize damage to particularly sensitive resources.

**Implementation Measure D.4.2:** All medical, rescue, and other emergency agencies will be allowed to access Preserve property to carry out operations necessary to protect the health, safety, and welfare of the public. Access issues are further discussed in implementation measure B.4.2.

**Management Directive D.5 – Provide for a safe recreational experience for Preserve visitors (Priority 1)**

**Implementation Measure D.5.1:** In the event of a natural disaster, such as a fire or flood, park ranger staff shall evacuate the Preserve and coordinate with the Emergency Operations Center. In addition, staff will coordinate with the local agency in charge of responding to the emergency and, if possible, assist where necessary.

**Implementation Measure D.5.2:** During an emergency situation, DPR will implement the Site Evacuation Plan for the Preserve. The Plan includes: description of Preserve; site contacts; plan activation; evacuations; Site Emergency Response Team; Area Emergency Response; and Emergency Procedures (e.g., Africanized Honey Bees, Earthquake, Evacuation, Fire, Light Search and Rescue Guidelines, Medical and First Aid Emergencies).

**Implementation Measure D.5.3:** DPR will close the Preserve during the month of August each year due to extreme temperatures. Closures will be posted on the DPR website, [www.sdparks.org](http://www.sdparks.org).

**5.5.4 Adjacency Management Issues**

As described in Section 2.4.2, there is currently limited development immediately contiguous to the Preserve. The establishment of the MSCP preserve system does not include regulatory authority on properties adjacent to the Preserve; however, the County will require adjacent property owners to follow guidelines when planning and implementing uses and activities that can be regulated when located immediately adjacent to the site.

**Management Directive D.6 – Coordinate with adjacent open space land managers (Priority 1)**

**Implementation Measure D.6.1:** DPR will coordinate with the Bureau of Land Management, San Pasqual Band of Diegueno Mission Indians and Rincon Band of Luiseno Mission Indians (in association with their contiguous open spaces) on an as-needed basis, if adjacency issues occur.

**Management Directive D.7 - Enforce Preserve boundaries (Priority 1)**

**Implementation Measure D.7.1:** DPR will enforce, prevent, and remove illegal intrusions into the Preserve (e.g., orchards, decks) on an annual basis, in addition to a complaint basis.

**Management Directive D.8 – Educate residents of surrounding areas regarding adjacency issues (Priority 2)**

**Implementation Measure D.8.1:** DPR will provide information on this RMP to residents adjacent to the Preserve to heighten environmental awareness, and inform residents of access, appropriate landscaping, construction or disturbance within the Preserve boundaries, pet intrusion, fire management, and other adjacency issues. This RMP will also be accessible on the DPR website and will thus be available to adjacent residents and to the general public.

**5.6 Cultural Resources Element (E)**

The goal of this section of the RMP is long-term preservation, public interpretation of the cultural resources, and interaction with the bands in whose traditional tribal territory this preserve exists.

**Management Directive E.1 – Identify, record, and assess the significance of cultural resources within the Preserve in areas over 20% slope (Priority 2)**

**Implementation Measure E.1.1:** Survey and inventory all Preserve lands over 20% slope for cultural resources. Cultural resources include historic structures, features, and landscaping, as well as historic and prehistoric archaeological sites, features, and artifacts. Inventories shall include a record search at the South Coastal Information Center, SDSU, and on-foot field survey, as well as pertinent archival and historical research.

Any cultural materials collected from the Preserve will be curated at a qualified curation facility. No removal or modification of cultural resources shall occur without written approval by the Director of Parks and Recreation.

**Implementation Measure E.1.2:** Assess each newly identified cultural site within the Preserve for eligibility as a Historical Landmark, and to the California Resources Historic Register/National Register of Historic Places.

**Management Directive E.2 – Preserve and protect significant cultural resources to ensure that sites are available for appropriate uses by present and future generations (*Priority 2*)**

**Implementation Measure E.2.1:** Threats to the cultural resources from natural (e.g., fire, erosion, floods) or human-caused events shall be identified, and impacts prevented, reduced, eliminated, or adverse effects mitigated. Threats could include movement of resources after a heavy rain/flood or due to erosion after a fire event. Fire suppression activities could also threaten resources. Avoidance or mitigation measures will be identified if impacts are caused by future projects within the Preserve.

**Implementation Measure E.2.2:** The condition and status of cultural resources shall be noted as part of routine monitoring activities conducted once a year and remedial measures shall be taken if damage is noted. Monitoring activities should also photo-document site conditions so that comparisons can be made over time. Any monitoring of the sites in the Preserve should follow the guidelines found in the County of San Diego *Report Format and Content Requirements, Cultural Resources: Archaeological and Historical Resources* (2007).

All site location information will be kept strictly confidential, and will be available only for qualified cultural resource staff and land managers. Site locations will not be shown on maps or divulged to the public.

**Implementation Measure E.2.3:** All management activities within the Preserve including, but not limited to, trail construction and maintenance, placement of fencing and gates, and restoration of habitat will take into consideration potential impacts to cultural resources and shall avoid adverse impacts to any cultural resources to the maximum extent possible. No ground disturbing activities will be allowed on or in any cultural resource site within the Preserve until the impacts have been assessed. For those sites already evaluated and determined not significant, no further action is required.

If avoidance of significant sites is not feasible, appropriate mitigation measures will be established. Removal or disturbance of cultural resources shall not occur prior to completion of an approved mitigation program, such as data recovery or recordation. Preservation in place is the preferred mitigation measure.

**Implementation Measure E.2.4:** Signs shall be posted at all trail heads and throughout the Preserve to notify users that sensitive cultural resources within the Preserve cannot be damaged and that removal of any archaeological material is prohibited by law. Protection and preservation of cultural resources will comply with

County of San Diego ordinances (Title 4; Public Property, Division 1; Parks and Beaches, Article 2, Section 41.113), and applicable state and federal laws, which will be enforced by park ranger staff. These signs shall be maintained as described below in implementation measure C.6.1.

The County will ensure that park ranger staff has sufficient training to actively protect archaeological sites from vandalism and other forms of human impact. If a Preserve user is suspected of vandalism to cultural resources, the appropriate law enforcement authorities shall be notified. More aggressive measures may be needed if vandalism and damage continue or increase.

**Management Directive E.3 – Promote the beneficial uses of cultural resources through interpretation and educational programs (*Priority 2*)**

***Implementation Measure E.3.1:*** Off-site, and when possible, on-site interpretive programs for Native American heritage, local and regional history, and prehistory will be developed for the Preserve. These may include lectures, walks, kiosks, signs, historic brochures, and displays, but will not include excavations, collecting of artifacts, or disclosure of confidential site locations unless an interpretive plan is developed and approved by the Director of Parks and Recreation. The plan will include supervision by a qualified archaeologist approved by the Director of Parks and Recreation. See also implementation measures C.3.1-3.

The previous canal/flume locations would make great trails, especially with appropriate historic signage. Many historic photographs showing the construction of the flume exist and those photographs should be incorporated into the interpretive signage.

**Management Directive E.4 – Honor Native American Heritage and promote Native American ceremonies, gathering, and cultural practices (*Priority 2*)**

***Implementation Measure E.4.1:*** Consultation with the Pala Band of Luiseño Indians shall be conducted frequently in order to identify appropriate management of pre-contact and ethnographic cultural resources. All tribes will be encouraged to participate in evaluation, recordation, protection and preservation of cultural resources.

***Implementation Measure E.4.2:*** The County will open the Preserve to traditional uses by the Pala Band of Luiseño Indians. All activities by Native Americans in the Preserve shall be conducted with a Right-of-Entry permit specifically designed for the Preserve.

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