

Carmel Mountain and Del Mar Mesa Preserves Resource Management Plan

Prepared for

City of San Diego
202 C Street, 5th Floor
San Diego, CA 92101
Contact: Betsy Miller

Prepared by

RECON Environmental, Inc.
1927 Fifth Avenue
San Diego, CA 92101-2358
P 619.308.9333 F 619.308.9334
RECON Number 3493-1B
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1.0 Introduction

1.1 Purpose of the Plan

This plan has been prepared to provide guidelines for the protection and maintenance of preserved natural open space on the Carmel Mountain Preserve and the Del Mar Mesa Preserve (Preserves) (Figures 1-1 and 1-2). The natural open space of the Preserves harbors extremely sensitive and depleted vegetation communities and species unique to the San Diego region. The primary resources to be protected on these Preserves are vernal pools; southern maritime chaparral; the continuity of habitat for wildlife movement and gene flow and the federally and state listed flora and fauna (particularly the short-leaved dudleya, *Dudleya blochmaniae* ssp. *brevifolia*).

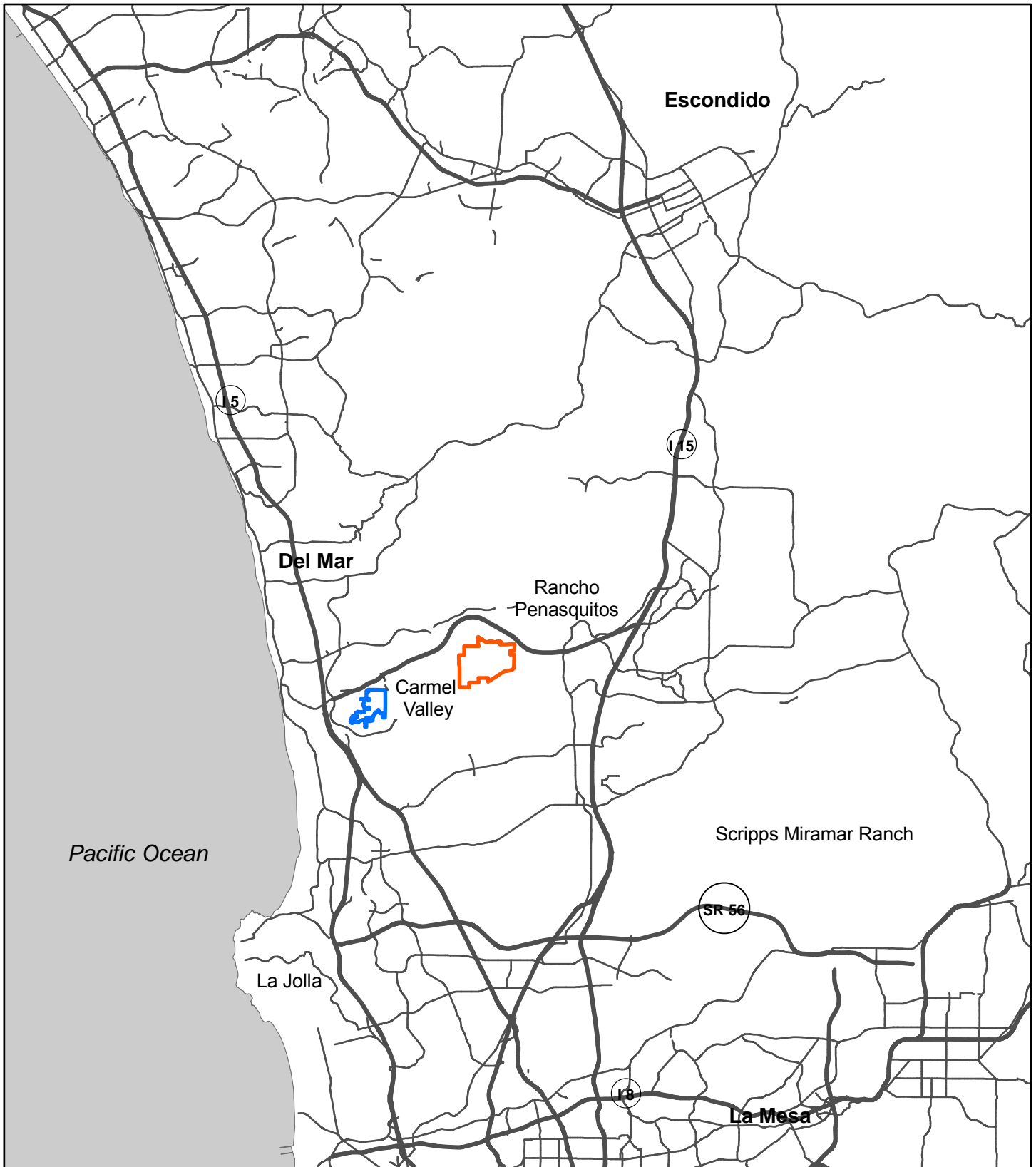
The Preserves also act to protect the quality of life for residents of San Diego County and the quality of the experience for visitors by adding to the feeling of openness and interaction with nature that San Diego fosters.

The City of San Diego Multiple Species Conservation Program (MSCP) provides a framework for preserving and protecting natural resources in the San Diego region. The City of San Diego (City) prepared a Subarea Plan under the MSCP to meet the requirements of the California Natural Communities Conservation Planning (NCCP) Act of 1992 [and the federal Endangered Species Act of 1973](#). The Carmel Mountain Preserve and Del Mar Mesa Preserve Resource Management Plan (RMP) describes the tasks that will ensure management and maintenance of the Preserves in accordance with the MSCP and the Subarea Plan.



1.2 Implementation of the Resource Management Plan

1.2.1 Management Approach

Management of the Preserves will be adaptive to allow management and monitoring tasks to be changed based on the results of studies and management tasks. Planning, acting, monitoring, and evaluating are the key elements in a continuous process where all the stakeholders interact. Communication and sharing information is the basis for adapting management and monitoring tasks to reflect what has been learned, thereby providing the best Preserve management based on the most up-to-date monitoring and evaluation methods.



Legend

-  Del Mar Mesa Preserve
-  Carmel Mountain Preserve

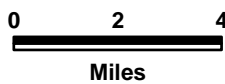
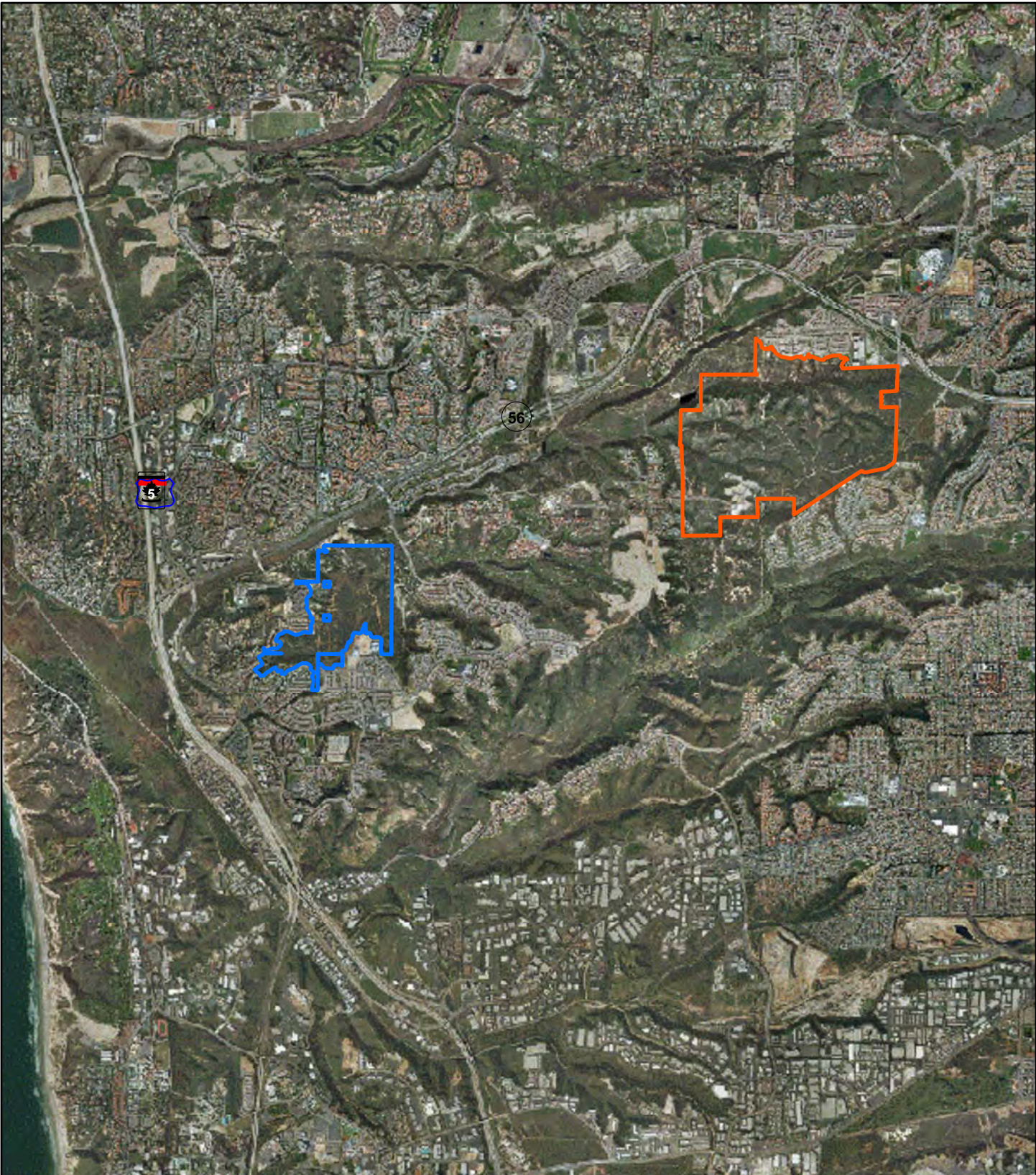




FIGURE 1-1
Regional Location of the Preserves



Legend

-  Del Mar Mesa Preserve
-  Carmel Mountain Preserve

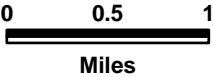


FIGURE 1-2
Vicinity of the Preserves

The broad goals of adaptive management are to:

- 1) Improve the quality of decisions;
- 2) Contribute to building long-term relations;
- 3) Incorporate citizens' ideas and knowledge in decisions, as appropriate; and
- 4) Learn, be innovative, and share results with others.

The adaptive management strategy is based upon a framework presented by Shindler et al. (1999).

Science and policy come together when developing natural resource management tasks. Natural resource managers develop implementable methods of complying with existing mandates for conserving natural resources. Often, policy moves faster than science, and the capacity of resource managers and scientists to provide information may require more time than policymakers are willing or able to accept (Clark et al. 1998). The natural resource managers for Carmel Mountain and Del Mar Mesa Preserves must rely on existing scientific information, or gather additional information quickly, so they can make sound decisions regarding ecosystem and sensitive species conservation.

1.2.2 Options for Managing the Preserves

The Preserves will be managed by a person or persons who have biological resource management experience. The Preserves can be managed in a number of different ways. In each of the alternative management designs described in this section, a management committee with representatives from each of the agencies, jurisdictions, and other property owners would be formed and would oversee the Habitat Manager. The Habitat Manager could be one person, one organization, or a committee.

1.2.2.1 One-Person Habitat Manager

One person could be the habitat manager of both Preserves, or, since the system of managing the two Preserves could be different, each Preserve could be managed by a separate person.

1.2.2.2 Management Committee

A Management Committee could be the Habitat Manager. The committee would meet regularly and decide on management strategies. Each landowning agency, jurisdiction, or organization would be responsible for implementing the management strategies on their own properties.

1.2.2.3 Memorandum of Agreement

A Memorandum of Agreement (MOA) could be developed among the responsible parties. A management committee of a agency, jurisdiction, and landowner representatives would be assembled to:

- a. Hire a Habitat Manager who would implement the management directives, or
- b. Assign one owner the primary responsibility to manage the Preserve(s) as the Habitat Manager under a cooperative agreement.

Each of these options would be directed and overseen by the management committee.

1.2.2.4 City of San Diego Open Space Manager

The management committee could defer to the City of San Diego to act as Habitat Manager of the Preserve(s) as part of their City of San Diego open space lands management program. Management would adhere to the MSCP requirements and the Carmel Mountain Preserve and Del Mar Mesa Preserve Management Plan. The City would coordinate all maintenance and management with funding from the City of San Diego open space management program and the other parties.

1.2.2.5 Non-profit Land Trust

The management committee could decide to assign the management of the Preserve(s) to a non-profit land trust who would be the Habitat Manager. The agencies, jurisdictions, and other land owning organizations would still oversee the management of their own lands to meet their own goals and requirements.

1.2.3 Volunteers

Volunteers could be recruited to assist in managing the preserves. Volunteers could patrol the Preserves, potentially through a Community Planning Group position that rotates yearly or other means, with training provided by Park Rangers. Volunteers could also monitor trail use, domestic pet trespassing, and invasive plant invasions. They could also be natural history interpreters and lead field trips.

1.3 History

A Public Scoping Meeting was held by the City of San Diego on February 27, 2001 to hear the issues of concern by agencies, jurisdictions, and public stakeholders. At the meeting, City staff described the intention of preparing a management plan for the Carmel Mountain and Del Mar

Mesa Preserves and each person in attendance identified the issues they thought should be addressed in the plan.

A list of attendees and the issues they introduced was prepared by the City (Appendix 1). The Resource Management Plan addresses these issues and others identified after the scoping meeting. Issues introduced fall into these categories:

- Multiple jurisdictions having different requirements
- Habitat restoration
- Open space protection enforcement
- Trails and access
- Natural resource protection
- Cultural resource protection
- Allowable recreational uses
- Private property access
- Format of the plan
- Funding for implementing the plan
- Fire management
- Education program
- Interim planning
- Management monitoring
- Adjacent development and other edge effects
- Threats to the natural and cultural resources
- Volunteer involvement
- Park design
- Public use
- Urban encroachment
- Easements
- Erosion and sedimentation
- Brush management
- Miscellaneous

2.0 Ownership and Applicable Management Plans

Carmel Mountain is owned by the City of San Diego with the exception of two private inholdings (Figure 2-1). Ownership of Del Mar Mesa is split among private land holders and four public land owners/managers: City of San Diego, County of San Diego (County), California Department of Fish and Wildlife (CDFW), and U.S. Fish and Wildlife Service (USFWS). Each of these entities has mandates that direct their management of open space preserves.

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Six parcels on Del Mar Mesa Preserve, totaling 159.0 acres, have been preserved for mitigation by 1) the Metropolitan Wastewater Department, 2) The Environmental Trust (owned/managed by the City following the bankruptcy of The Environmental Trust), 3) Mira Mesa Market Center, 4) Environmental Services, 5) the Deer Canyon Mitigation Bank, and 6) the SANDAG/CalTrans Environmental Mitigation Program (Figure 2-2). The City of San Diego Subarea Plan of the MSCP states that, if possible, the Del Mar Mesa area should be managed as a single unit rather than split into separate entities according to ownership (i.e., County, various City departments, easements). This RMP treats Del Mar Mesa as a single unit; however, each property owner is responsible for managing the property under their ownership until such time as an MOU for management is adopted.

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**TABLE 2-1
OWNERSHIP ON THE PRESERVES**

Owners	Carmel Mountain Preserve (Acres)	Del Mar Mesa Preserve (Acres)
City of San Diego	300.4	<u>707.0</u>
County of San Diego	-	<u>27.0</u>
CDFW	-	81.6
USFWS	-	75.4
Private	2.0	<u>89.0</u>
TOTAL	302.4	980.0

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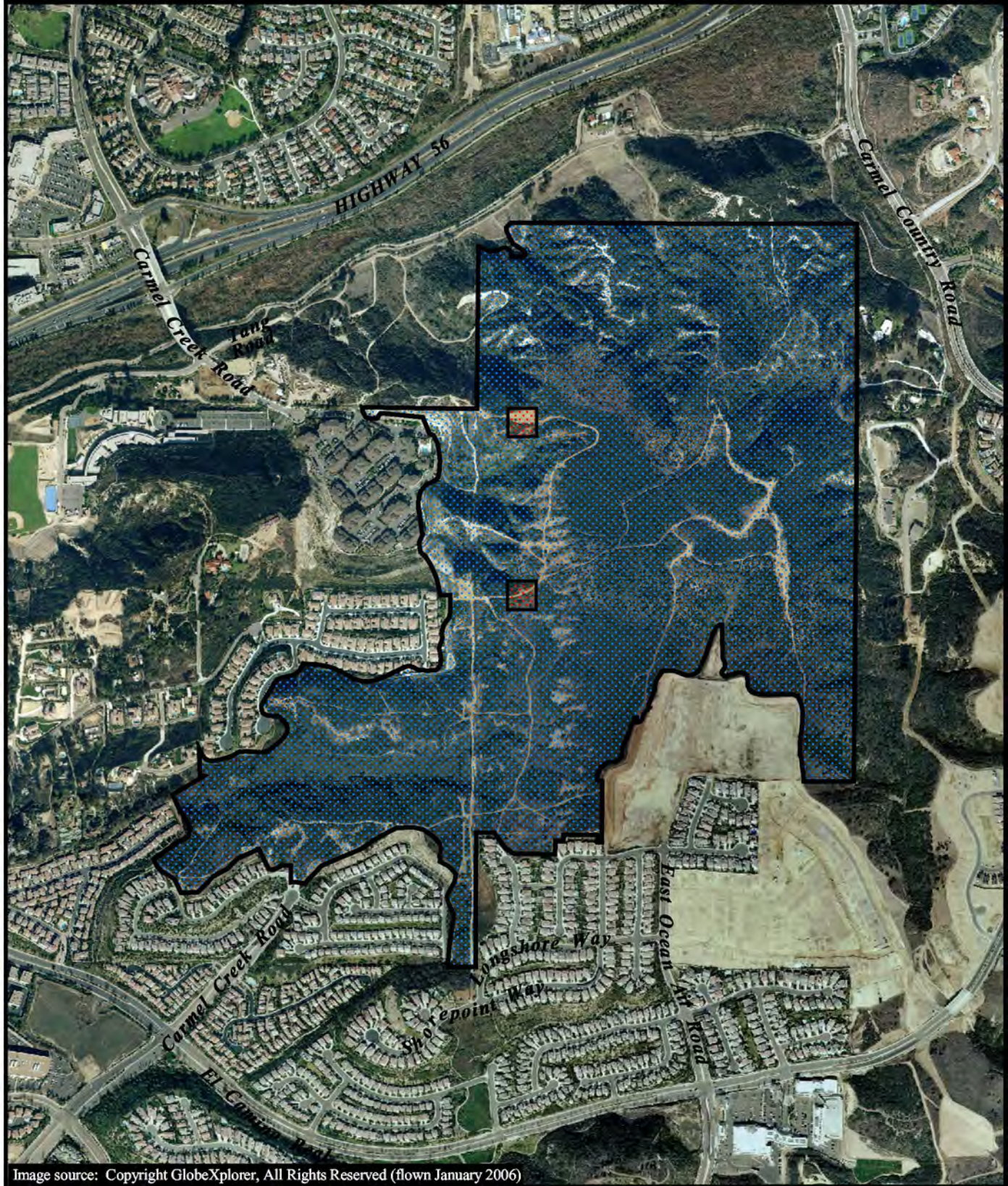
2.1 City of San Diego

2.1.1 Ownership

The City of San Diego owns 300.4 acres of the Carmel Mountain Preserve and 707.0 acres of the Del Mar Mesa Preserve.

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Carmel Mountain Preserve

Ownership



Private

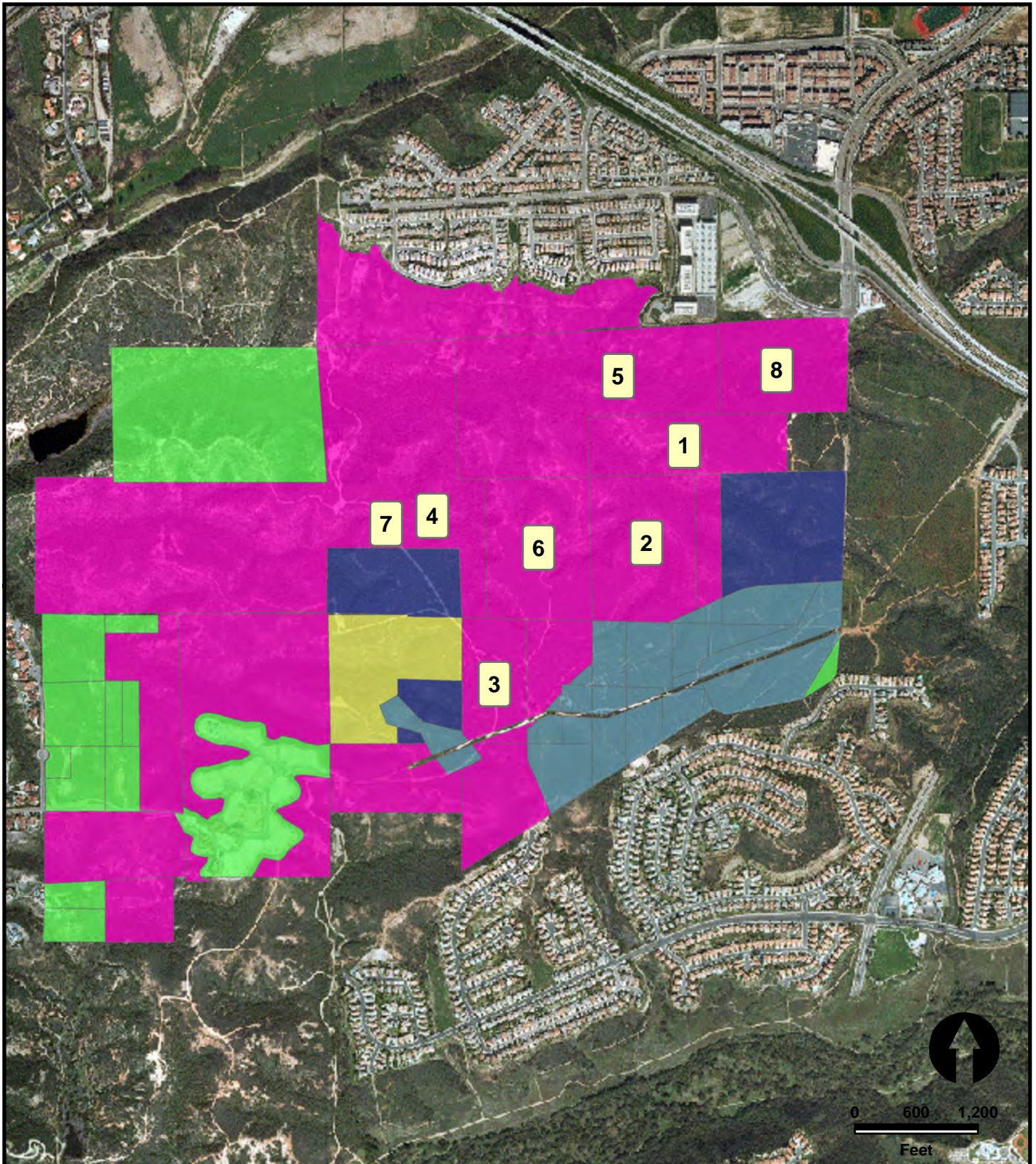


City of San Diego



FIGURE 2-1

Ownership on Carmel Mountain Preserve



Legend

Property Ownership

- CDFG Preserve
- City of San Diego
- County of San Diego
- Other Conserved Land
- Private Property
- USFWS NWR

Parcels Used for Mitigation

- 1 - Metropolitan Waste Water Division**
- 2 - The Environmental Trust**
- 3 - Mira Mesa MarketCenter**
- 4 - Environmental Services Department**
- 5 - Deer Canyon Mitigation Bank**
- 6 - TransNet Environmental Mitigation Program**

FIGURE 2-2
Ownership and Parcels
Used for Mitigation in the
Del Mar Mesa Preserve

2.1.2 Applicable Plans

The City of San Diego Subarea Plan of the MSCP is designed to identify lands that would conserve habitat for federal and state endangered, threatened, or sensitive species. Implementation strategies, preserve design, and management guidelines are also included in the MSCP. The City of San Diego prepared a subarea plan to guide implementation of the MSCP within its corporate boundaries. The City of San Diego adopted its MSCP Subarea Plan in March 1997.

The assessment of the sensitivity of vegetation communities and species follows the guidelines presented in the MSCP Subarea Plan and the City's [Land Development Code](#), including the Significance Determination Guidelines under the California Environmental Quality Act dated January 2012 and the Land Development Code, Biology Guidelines dated April 23, 2012. The Multi-Habitat Planning Area (MHPA) lands are those that have been included within the City's MSCP Subarea Plan for habitat conservation. These lands have been determined to provide the necessary habitat quality, quantity, and connectivity to sustain the unique biodiversity of the San Diego region. The MHPA lands are considered by the City to be sensitive biological resources.

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Under the MSCP Subarea Plan and the City's Land Development Code, Biology Guidelines (2012), upland vegetation communities have been divided into four tiers.

A total of 85 sensitive plant and wildlife species are considered to be adequately protected within MHPA lands. These sensitive species are MSCP-covered species and are included in the Incidental Take Authorization issued to the City by federal and state governments as part of the City's MSCP Subarea Plan Implementing Agreement.

There are 15 plants that are considered "narrow endemic species" based on their limited distributions in the region. These narrow endemics are sensitive biological resources. All 15 narrow endemic plants are also MSCP-covered species and some are state or federally listed as threatened or endangered species. The City's requirements for land management on Del Mar Mesa and Carmel Mountain Preserves under the MSCP Subarea Plan are given in Appendix 2.

In addition, the Carmel Valley Neighborhood 8A Specific Plan/Precise Plan provides land use policies for the Carmel Mountain Preserve, and the Del Mar Mesa Specific Plan provides land use policies for the Del Mar Mesa Preserve.

2.2 County of San Diego

2.2.1 Ownership

The County of San Diego owns 27.5 acres within Del Mar Mesa Preserve.

2.3. California Department of Fish and Wildlife

2.3.1 Ownership

CDFW owns 81.6 acres of land on Del Mar Mesa. In the fall of 1986, the California Department of Transportation (Caltrans) established a vernal pool preserve of 40 artificial pools and additional natural pools on the CDFW portion of Del Mar Mesa to mitigate for the loss of San Diego Mesa mint from the Highway 52 extension and Interstate 15 (I-15) construction (Black and Zedler 1998).

2.3.2 Applicable Plans

CDFW approved the MSCP in 1996, and the CDFW follows the MSCP guidelines for resource management.

2.4. USFWS – San Diego National Wildlife Refuge Complex

2.4.1 Ownership

The USFWS San Diego National Wildlife Refuge (SDNWR) owns 75.4 acres within the Del Mar Mesa Preserve.

2.4.2 Applicable Plans

The National Wildlife Refuge System Administration Act of 1966 was derived from Sections 4 and 5 of Public Law [P.L.] 89-669 (October 15, 1966; 80 Stat. 927), which constitutes an “organic act” for the refuge system. It was amended by P.L. 105-57, “The National Wildlife Refuge System Improvement Act of 1997.” The new law amends and builds upon the act of 1966 to ensure that the National Wildlife Refuge System is managed as a national system of related lands, waters, and interests for the protection and conservation of the nation’s wildlife resources.

The 1997 amendment gives guidance to the Secretary of the Interior for the overall management of the Refuge System. The Act's main components include:

- a strong and singular wildlife conservation mission for the Refuge System;
- a requirement that the Secretary of the Interior maintain integrity, diversity, and environmental health of the Refuge System;
- a new process for determining compatible uses of refuges;
- a recognition that wildlife-dependent recreational uses involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation, when determined to be compatible are legitimate and appropriate public uses of the Refuge System;
- that these compatible wildlife-dependent recreational uses are the priority general public uses of the Refuge System; and
- requirements for preparing comprehensive conservation plans.

USFWS has established that the mission of the Refuge System is "to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."

They have also established goals of the Refuge System, which are:

- 1) To preserve, restore, and enhance in their natural ecosystems when practical, all species of animals and plants that are endangered or threatened with becoming extinct;
- 2) To perpetuate the migratory bird resource;
- 3) To preserve a natural diversity and abundance of fauna and flora on refuge lands; and
- 4) To provide an understanding and appreciation of fish and wildlife ecology and our role in the environment and to provide refuge visitors with high-quality, safe, wholesome, and enjoyable recreational experiences oriented toward wildlife to the extent these activities are compatible with the purposes for which the refuge was established. Any specific management requirements must be managed in coordination with the Refuge System. If there is a conflict with the Refuge System regulations, those regulations of the Refuge must be implemented.

2.5 Private Landowners

2.5.1 Ownership

There are two acres of privately owned land currently on Carmel Mountain and 89 acres of privately owned land on Del Mar Mesa. Legal access to privately owned lands on Carmel Mountain and Del Mar Mesa must be maintained until the land is conserved or a written statement is received from the landowner stating that legal access to their property is no longer required.

Potential access for private property owners on Carmel Mountain can be provided through a gate on the western side of the future park site located south of the Preserve. The design of the park shall ensure that legal access to private property owners on Carmel Mountain is not prevented. A key to the gate will be provided to private property owners. Additional environmental review will be required for access and development of private lands on Carmel Mountain.

Access to private property on Del Mar Mesa can be obtained through existing SDG&E access roads (see Figure 9-2 in Chapter 9.0). Any restoration along or within private property access will not be conducted until the land is conserved or will be limited so it does not interfere with the private landowners' access rights. Additional environmental review will be required for access and development of private lands on Del Mar Mesa.

Privately owned lands within Carmel Mountain and Del Mar Mesa are not included within the preserves until such time as the land is conserved in perpetuity by the land owner or acquired by a public or non-profit agency for the purposes of conservation. **Any trails, habitat restoration, or other activities described in this plan will not be implemented until the land is conserved or written permission is obtained from the landowner.**

2.6 San Diego Gas & Electric

San Diego Gas & Electric (SDG&E) has an easement for power lines running north-south on the Carmel Mountain Preserve. The lands within their easements are covered by the SDG&E Subregional NCCP (USFWS Take Permit PRT 809637, December 18, 1995) and their implementing Agreement/California Endangered Species Act Memorandum of Understanding, which states that "implementation of the Subregional Plan is independent of other NCCP/HCP's and the Covered Species for which the Incidental Take is authorized under the Take Authorizations is not dependent upon the implementation of such plans." These documents cover a total of 110 plant and animal species. In addition, the NCCP Subregional Plan mitigation measures relating to vernal pools were clarified in an agreement with SDG&E, USFWS, and CDFW (May 26, 2004).

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Deleted: 2.5.2 Applicable Plans¶
The 33.0 acres on Del Mar Mesa that were set aside by individuals, agencies, and developers for protection of natural resources for future generations was owned by a non-profit organization, TET, which managed it; however, the organization has been dissolved. The City is currently considering acquiring the property. Management of the 33.0-acre Preserve was passive and entailed patrolling the area for trespassers, removing trash, and initiating an education program for the public to assist preserving and protecting the site. Maintenance activities were kept to a minimum unless a situation arose that required intervention. Quarterly maintenance and monitoring inspections resulted in annual reports prepared by June 1 of each year for the previous year's monitoring. ¶
A generalized management plan was used by TET to manage the 33.0 acres of private land; however, no site specific management plan has been developed. If the City of San Diego acquires the property, it will be managed according to this RMP. ¶

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3.0 Existing Conditions

3.1 Carmel Mountain Preserve

The resources on Carmel Mountain Preserve have been studied extensively for development projects and for scientific research. The results of the studies and surveys have been compiled and are presented in this chapter.

3.1.1 Physical Setting

Carmel Mountain Preserve is situated south of Highway 56 and east of Interstate 5 (I-5), between Carmel Creek and Carmel Country Roads. This area includes Carmel Mountain and facilitates an important wildlife corridor adjoining it to Peñasquitos Canyon and to the Los Peñasquitos Lagoon. Given that the region is in such a unique location, it provides for an important inland-coastal habitat linkage.

3.1.1.1 Topography

The topography of the Preserve (Figure 3-1) can be described as generally level coastal terraces that are slightly westward tilting. The central portion of the Preserve is a fairly level mesa, varying from 380 to 430 feet above sea level. Several small drainages dissect the margins of the mesas.

3.1.1.2 Geology

Carmel Mountain is composed of sedimentary rocks. The oldest strata exposed within the boundaries of the Carmel Mountain Preserve are Torrey Sandstone deposited during the mid-Eocene epoch, between 40 and 50 million years ago. The medium to coarse-grained sandstone is white to light brown and is mostly quartz, with a small amount of orthoclase. Concretions are caused by deposition of calcite and iron oxide cements that have dissolved and run down through the sandstone from higher layers of rock. Rainwater dissolves the cements from the sandstone and the rocks above it during wet times and deposits them during dry times. The Torrey Sandstone is thought to have been formed from an arch-shaped barrier beach. With a maximum thickness of about 180 feet, the Torrey Sandstone crops out around the base of Carmel Mountain, from approximately 100 mean sea level (MSL) to 300 MSL, and forms the small wind caves that can be seen on the eroded lower slopes of Carmel Mountain.

Above the Torrey Sandstone is a thin layer of the Scripps Formation, a pale yellowish-brown, medium-grained sandstone with occasional cobble-conglomerate inclusions. It was deposited after the Torrey Sandstone during the mid-Eocene epoch. The Scripps Formation is composed mostly of quartz and potassium feldspar and can be difficult to differentiate from the Torrey Sandstone, as it, too, is often stained by the iron rich solutions from rock layers above. It was originally deposited as thin layers of mud.

The Lindavista Formation is the hard red rock on top of the flat areas in the Preserve. It resists erosion more than the Torrey Sandstone under it so it acts as a cap rock, protecting the softer rock of the Torrey Sandstone and the Scripps Formation. The steep, red blocky sandstone cliffs near the mesa top of Carmel Mountain are formed in the Lindavista Formation. Its characteristic red color and resistance to erosion are caused by the iron oxide that cements the sand grains. When the Lindavista erodes, marbled concretions formed by cycles of solution and deposition like the larger concretions in the Torrey Sandstone are left on top of the rock. The lower edges of the Lindavista Formation on the mesa top of Carmel Mountain were formed from nearshore deposits, whereas, the very top of the mountain was formed from beach deposits.

3.1.1.3. Soils

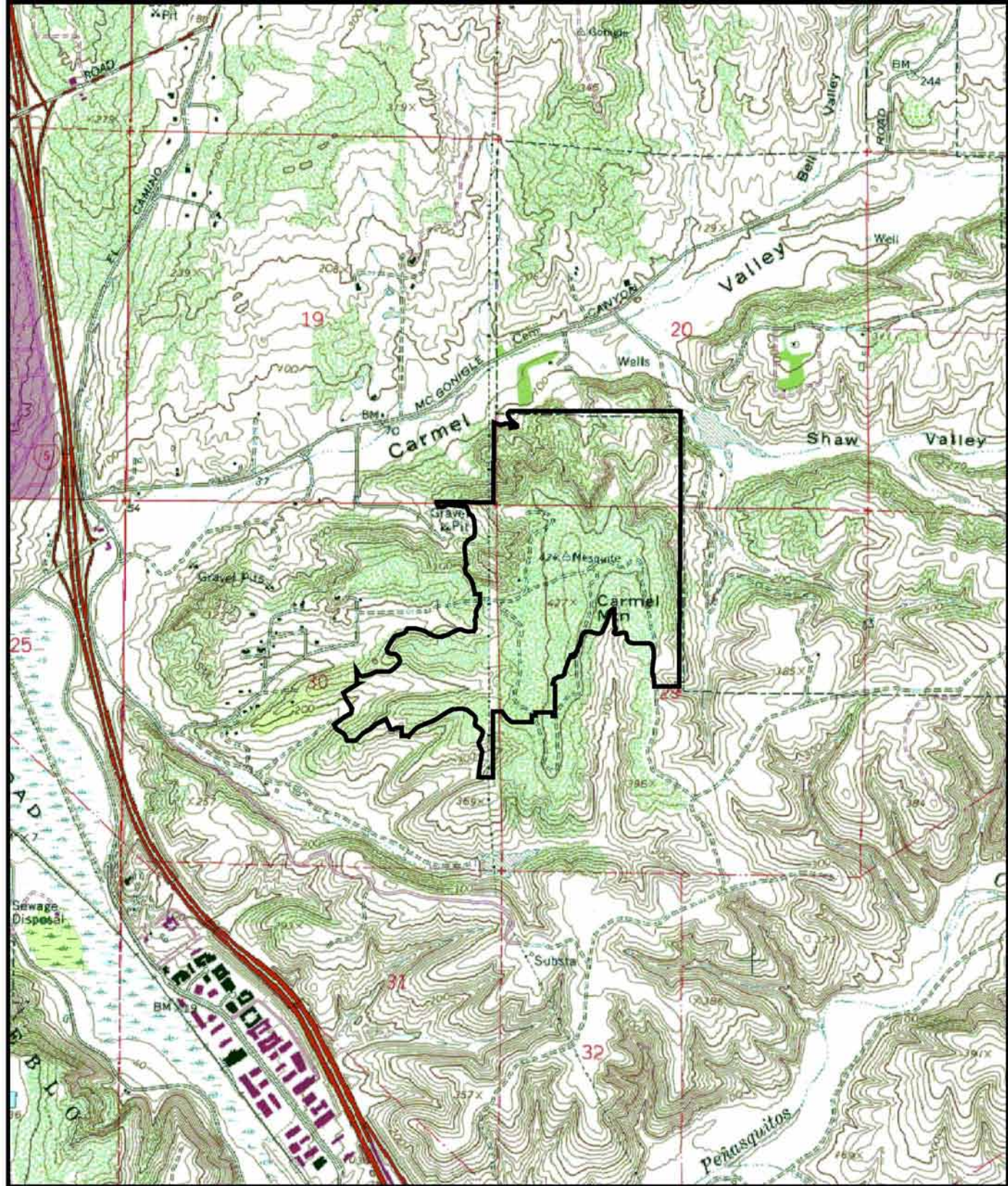
Soils mapped for the Preserve (Figure 3-2) by the U.S. Department of Agriculture (1973) are as follows:

Carlsbad Series (Carlsbad gravelly loamy sand, 5 to 9 percent slopes). This series consists of moderately well-drained to well-drained gravelly loamy sands that are moderately deep over a hardpan. Vegetation typically associated with this series includes chamise, black sage, laurel sumac, annual forbs, and grasses. The surface layer is typically 21 inches thick.

Carlsbad gravelly loamy sand (5 to 9 percent slopes) occurs in the south-central to mid-central portions of the Preserve. This soil type has moderately good drainage, with permeability moderately rapid above the hardpan and very slow in the pan. Water-holding capacity is between 4.0 and 4.5 inches. Runoff is slow to medium, and erosion hazard is slight to moderate.

Corralitos Series (Corralitos loamy sand 5 to 9 percent slopes, 9 to 15 percent slopes). The Corralitos series consists of somewhat extensively drained, very deep loamy sand formed in alluvium and derived from marine sandstone. These soils are typically found in narrow valleys and on small alluvial fans. Vegetation is typically red brome, ripgut brome, California buckwheat, and shrubs.

Corralitos loamy sand (5 to 9 percent slopes) occurs on the Preserve in a small patch on the northeast corner. This is a moderately sloping soil. Runoff is slow to



Map Source: USGS 7.5 minute topographic map series,
Del Mar quadrangle

 Carmel Mountain Preserve

FIGURE 3-1

**Topography of
Carmel Mountain Preserve**



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0 Feet 2660

medium, and the erosion hazard is slight. This soil type is similar to Corralitos loamy sand, 9 to 15 percent slopes.

Corralitos loamy sand (9 to 15 percent slopes) is a strongly sloping soil that occurs in narrow valleys; slopes are somewhat concave and average 12 percent. Permeability is rapid and fertility is medium. Water-holding capacity ranges from 3.7 to 5 inches, with medium runoff and moderate erosion hazard.

Gaviota Series (Gaviota fine sandy loam, 30 to 50 percent slopes). The Gaviota series is marked by well-drained, shallow, fine sandy loams that formed in material weathered from marine sandstone. These soils are on uplands and have slopes of 9 to 50 percent. Vegetation is primarily chamise, cactus, scrub oak, laurel sumac, California buckwheat, annual grasses, and forbs.

Gaviota fine sandy loam (30 to 50 percent slopes) occurs on the southeastern side of the Preserve. This is a steep soil around 9 to 18 inches deep over the underlying hardpan. Runoff is rapid, with a high erosion hazard.

Loamy alluvial land-Huerhuero complex (9 to 50 percent slopes, severely eroded). Loamy alluvial sand consists of somewhat poorly drained, very deep, dark brown to black silt loams and sandy loams. This type of sand is usually found on old coastal ridges, ranging from strong sloping to steep, severely eroded soils and alluvial fill along drainages. The elevation ranges from sea level to roughly 500 feet. Huerhuero and Carlsbad soils are generally severely eroded. Sparse coastal chaparral grows on these soils. This complex occurs on the southwestern, south-central, and northeastern portions of the Preserve.

Redding Series (Redding gravelly loam, 2 to 9 percent slopes). The Redding series consists of well-drained, undulating to steep gravelly loams that have a gravelly clay subsoil and a hardpan. These soils formed in old mixed cobbly and gravelly alluvium. Vegetation typically associated with this series includes chamise, California buckwheat, laurel sumac, scrub oak, and annual forbs and grasses. The surface layer is typically yellowish-brown and light brown, with medium and strongly acidic gravelly loam about 15 inches thick. The subsoil is yellowish-red and red, of very strong acid gravelly clay loam and gravelly clay.

The Redding gravelly loam, is an undulating to gently rolling soil, with an average slope of 3 percent. The topography consists of low, broad mounds, which are locally known as mima mounds. This soil occurs on the southeastern portion of the Preserve.

Terrace Escarpments. Terrace escarpments consist of steep to very steep escarpments and escarpment-like landscapes, which occur on nearly even fronts of terraces or alluvial fans. In most places, 4 to 10 inches of loamy or gravelly soil overlay soft marine sandstone, shale, or gravelly sediments. Vegetation may consist of sparse cover of brush and annual forbs and grasses on south-facing slopes while fairly dense cover may reside on north-facing slopes. Terrace escarpments occur on the north-central portion of the Preserve.

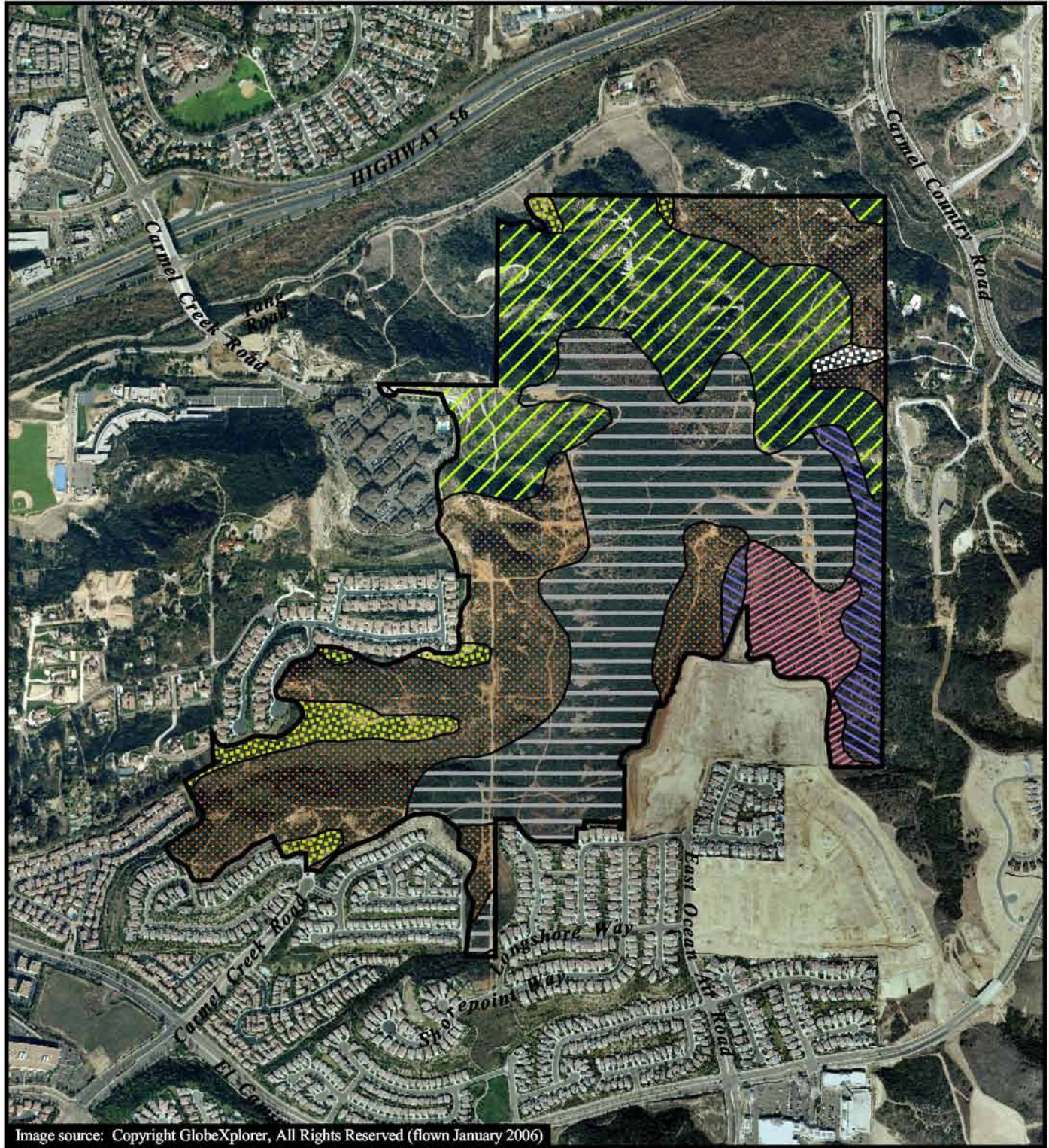


Image source: Copyright GlobeXplorer, All Rights Reserved (flown January 2006)



Carmel Mountain Preserve

Soil Types








-  Carlsbad gravelly loamy sand, 5 to 9 percent slopes
-  Corralitos loamy sand, 5 to 9 percent slopes
-  Corralitos loamy sand, 9 to 15 percent slopes
-  Gaviota fine sandy loam, 30 to 50 percent slopes
-  Loamy alluvial land-Huerhuero complex, 9 to 50 percent slopes, severely eroded
-  Redding gravelly loam, 2 to 9 percent slopes
-  Terrace escarpments



FIGURE 3-2

Soils on Carmel Mountain Preserve

3.1.2 Biological Resources

3.1.2.1 Vegetation Communities

Four vegetation communities as classified by Holland (1986) are present within the area: southern maritime chaparral, Diegan coastal sage scrub, vernal pool, and mesic meadow (Figure 3-3). Roads, cleared areas, sand extraction pits, and other disturbed areas, which total 21.7 acres, are mapped as disturbed. Plant species known to occur on the Preserve are listed in Appendix 3a.

Southern Maritime Chaparral. Southern maritime chaparral covers 247.8 acres of the Preserve. This is a low, fairly open vegetation community, typically dominated by wart-stemmed ceanothus (*Ceanothus verrucosus*) and Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*). This community occurs on weathered sands in the coastal fog belt and appears to depend on fire for reproduction of many species (Holland 1986).



Photograph 3-1. Southern Maritime Chaparral on the Terrace Slopes of Carmel Mountain

Dominant shrubs on-site include chamise (*Adenostoma fasciculatum*), lemonadeberry (*Rhus integrifolia*), mission manzanita (*Xylococcus bicolor*), and Nuttall's scrub oak (*Quercus dumosa*). Characteristic southern maritime chaparral indicator plant species, including Del Mar manzanita, wart-stemmed ceanothus, summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*), sea dahlia (*Coreopsis maritima*), and Torrey pine (*Pinus torreyana* ssp. *torreyana*), are also present.





The vegetation varies in structure and composition with slope and soil characteristics. Vegetation emerging after a 1986 fire in chaparral on part of the mesatop included post-fire specialist plants, such as large-flowered phacelia (*Phacelia grandiflora*), western dichondra (*Dichondra occidentalis*), and golden eardrops (*Dicentra chrysantha*) (RECON1994). Non-native weedy species were absent in this post-fire community, an indicator of the relatively undisturbed nature of the site.

Diegan Coastal Sage Scrub. Diegan coastal sage scrub is composed of low, soft-woody subshrubs that grow actively in the winter and early spring. Diegan coastal sage scrub often occurs on sites with limited soil moisture, such as steep, dry slopes or on clay soils that release water slowly. Dominant plants are California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), and white sage (*Salvia apiana*) (Holland 1986).

Diegan coastal sage scrub is the second-most abundant community on-site, occupying 26.2 acres, primarily along south-facing slopes in the large canyon, at the southeastern base of Carmel Mountain, and in chaparral openings on the west side of the mountain.



Vegetation Communities (RECON, 1996)

-  Diegan coastal sage scrub
-  Southern maritime chaparral
-  Mesic meadow, seeps and *Selaginella*
-  Disturbed



-  Burn area (1990's)
-  Burn area (1986)



FIGURE 3-3
Vegetation on Carmel Mountain Preserve

Coyote bush (*Baccharis pilularis*) and broom baccharis (*Baccharis sarothroides*) are commonly present within the canyon bottom on the southwestern portion of the Preserve. Other dominant species on-site are California sagebrush, California buckwheat, common encelia (*Encelia californica*), and black sage (*Salvia mellifera*).

Mesic Meadow and/or Seeps. Mesic meadow is similar in vegetation composition to montane meadows and freshwater seeps. Soil in the mesic meadows is moist only during the rainy season, and is dry during summer months. On Carmel Mountain Preserve, areas that can best be described as mesic meadows and seeps are dominated by mariposa rush (*Juncus dubius*) and blue-eyed grass (*Sisyrinchium bellum*). These mesic meadows and seeps transition into an herbaceous community dominated by ashy spike-moss (*Selaginella cinerascens*). Shooting stars (*Dodecatheon clevelandii*), dot-seed plantain (*Plantago erecta*), popcorn flower (*Plagiobothrys* spp.), wavy-leaved soap plant (*Chlorogalum parviflorum*) are also present. These areas also contain vernal pools with typical plant species, including toad rush (*Juncus bufonius*), grass poly (*Lythrum hyssopifolia*), and woolly marbles (*Psilocarpus brevissimus*) (RECON Deleted: *tenellus* 1994).

3.1.2.2 Vernal Pools

Vernal pools occur in the central and southern portion of the Carmel Mountain Preserve, east of the SDG&E easement (City of San Diego 1998, 2004) (Figure 3-4). These vernal pools are disturbed to varying degrees; those within dirt roads and trails have little vegetation, others are scattered among the chaparral shrubs and have both native and invasive exotic species. Several sensitive plant and animal species also occur within these disturbed vernal pools.



Photograph 3-2. Vernal Pool on Carmel Mountain, 2005

During the 2002 and 2003 seasons, City staff conducted an inventory of all the vernal pools within the City's jurisdiction. The vernal pool inventory was funded by the U.S. Fish and Wildlife Service and was created to provide a current, accurate account of all vernal pools and rare vernal pool plants and animals in the City of San Diego. Baseline data collection by City staff included identification of all vernal pool plant and animal species present in each pool. Species that characterize vernal pools (indicator species), which were observed in the vernal pools on the Carmel Mountain Preserve (City of San Diego 2004) include:

Plants

Water star-wort

Callitriche marginata

Stonecrop

Crassula aquatica

Quillwort

Isoetes howellii

Flowering quillwort

Lilaea scilloides

Plantain

Plantago elongata

Short woolly marbles

*Psilocarphus brevissimus*Fairy Shrimp*Branchinecta* spp.

San Diego fairy shrimp

Branchinecta sandiegonensis

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In addition, two amphibians were observed in some of the pool basins: Western spadefoot (*Spea hammondi*) and Pacific treefrog (*Pseudacris regilla*).

3.1.2.3 Wildlife

Carmel Mountain Preserve supports diverse wildlife species, including at least 11 mammal, 51 bird, 4 reptile, 1 amphibian, and 1 invertebrate species. The diversity of animals observed and expected to occur in this area is typical of relatively undisturbed native habitat in coastal San Diego County and include California ground squirrel (*Spermophilus beecheyi*), southern pocket gopher (*Thomomys umbrinus*), woodrats (*Neotoma* spp.), brush rabbits (*Sylvilagus bachmani*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), southern mule deer (*Odocoileus hemionus fuliginata*), red-tailed hawks (*Buteo jamaicensis*), California quail (*Callipepla californica californica*), mourning doves (*Zenaidura macroura marginella*), Anna's hummingbirds (*Calypte anna*), California towhees (*Pipilo crissalis*), western fence lizard (*Sceloporus occidentalis*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), red diamond rattlesnake (*Crotalus ruber*), and San Diego fairy shrimp (*Branchinecta sandiegonensis*). Wildlife species that have been observed at Carmel Mountain Preserve are listed in Appendix 3b.

3.1.2.4 Sensitive Biological Resources

The assessment of the sensitivity of vegetation communities and species follows the guidelines presented in the MSCP Subarea Plan. The MHPA lands are those that have been included within the City's MSCP Subarea Plan for habitat conservation. These lands have been

determined to provide the necessary habitat quality, quantity, and connectivity to sustain the unique biological diversity of the San Diego region. The MHPA lands are considered by the City to be a sensitive biological resource.

A total of 85 sensitive plant and wildlife species are considered to be adequately protected within MHPA lands. These sensitive species are MSCP-covered species and are included in the Incidental Take Authorization issued to the City by federal and state governments as part of the City's MSCP Subarea Plan. There are 15 plants that are considered "narrow endemic species" based on their limited distributions in the region. These narrow endemics are sensitive biological resources. All 15 narrow endemic plants are also MSCP-covered species and some are state or federally listed as threatened or endangered species.

All species listed by state or federal agencies as rare, threatened, or endangered or proposed for listing are considered sensitive biological resources. The habitat that supports a listed species or a narrow endemic species is also a sensitive biological resource.

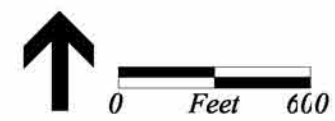
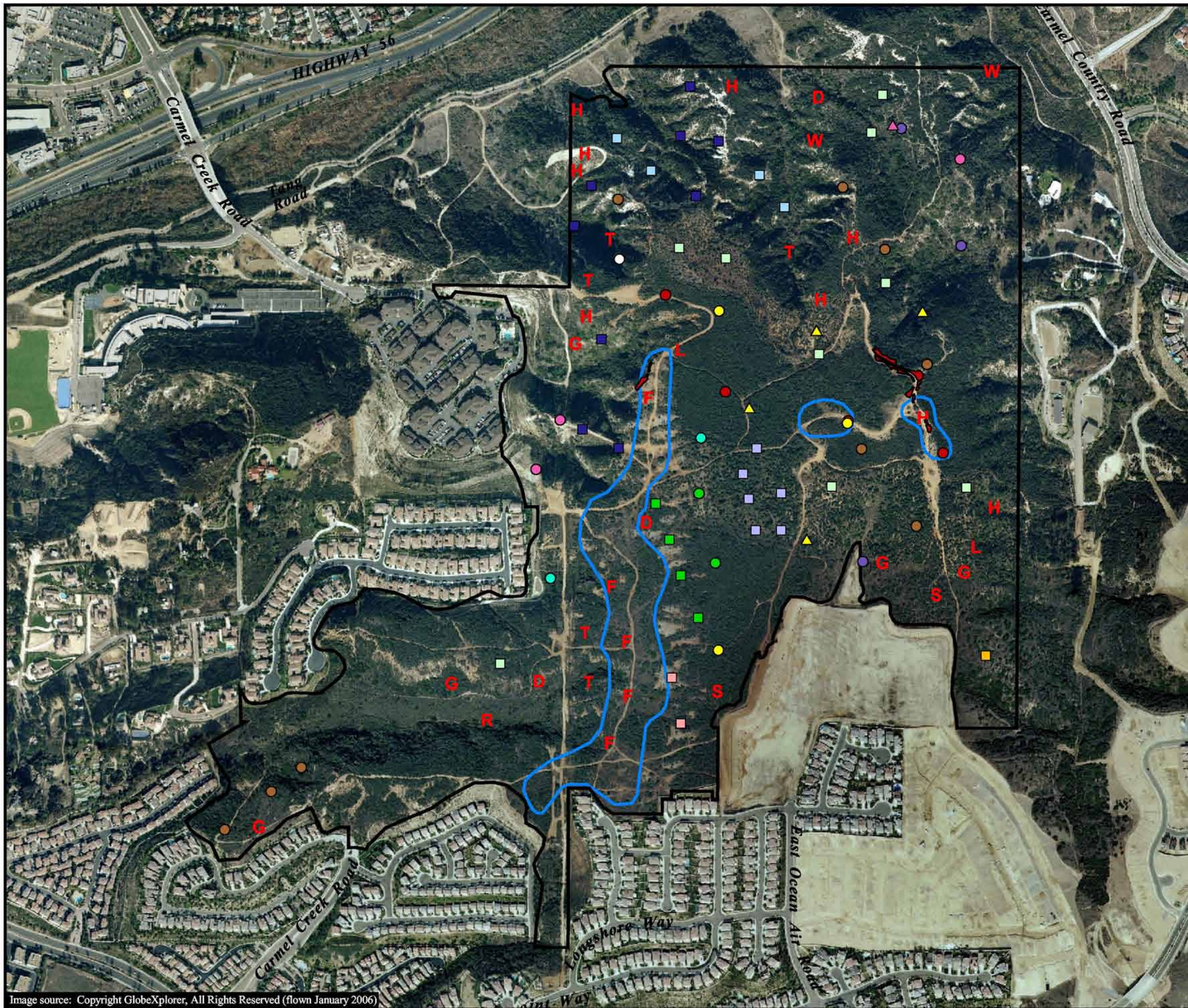
Species that are not MSCP-covered species, but are on Lists 1B or 2 of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2001), California fully protected species, and California species of special concern are also considered sensitive. Impacts to these species, if considered significant, may require mitigation according to California Environmental Quality Act (CEQA) guidelines.


Assessments for the potential occurrence of sensitive species are based upon known ranges, habitat preferences for the species, species occurrence records from the Natural Diversity Data Base (NDDDB), and species occurrence records from other sites in the vicinity of the Preserve. Locations of sensitive species that have been observed at Carmel Mountain during various surveys are shown on Figure 3-4. Some locations where sensitive species were observed during past surveys were not mapped when the species was encountered.

a. Sensitive Plant Species on the Carmel Mountain Preserve


Sensitive plant species that have been observed on Carmel Mountain Preserve are listed in Appendix 3c. Appendix 4 is the complete list of species covered by the MSCP Subarea Plan.



















Those species that have been observed or detected on Carmel Mountain and that are covered by the MSCP Subarea Plan are described below and have specific management directives prescribed in Section 7.3.1, Resource Management, Enhancement and Restoration Guidelines.



 Carmel Mountain Preserve

Vernal Pools
 (This map shows general location of vernal pools. See Chapter 8 for detailed vernal pool mapping.)

 Source: City of San Diego, revised in part by RECON (2001/2002)

- Sensitive Plants**
- Adolphia californica*
 Source: Recon
 - Arctostaphylos glandulosa* ssp. *crassifolia*
 Source: Dudek
 Source: MSCP
 - Brodiaea orcuttii*
 Source: Recon
 Source: MSCP
 - Calandrinia maritima*
 Source: Recon
 - Ceanothus verrucosus*
 Source: Dudek
 Source: MSCP
 - Coreopsis maritima*
 Source: Recon
 - Lessingia filaginifolia* var. *filaginifolia*
 Source: MSCP
 - Dichondra occidentalis*
 Source: Recon
 - Dudleya brevifolia*
 Source: MSCP
 Source: City of San Diego
 - Ferocactus viridescens*
 Source: MSCP
 - Muilla clevelandii*
 Source: MSCP
 - Ophioglossum californicum*
 Source: Recon
 - Pinus torreyana* ssp. *torreyana*
 Source: MSCP
 - Selaginella cinerascens*
 Source: Recon

- Sensitive Animals**
- Source: City of San Diego (NDDDB)
 - G** Coastal California gnatcatcher
 - Source: MSCP
 - W** Belding's orangethroat whiptail
 - H** San Diego horned lizard
 - D** Southern mule deer
 - L** Mountain lion
 - Source: Recon
 - S** Bell's sage sparrow
 - F** San Diego fairy shrimp
 - R** Southern California rufous-crowned sparrow
 - T** Western spadefoot toad

FIGURE 3-4
Sensitive Species on Carmel Mountain Preserve

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They are:

- Del Mar manzanita
Arctostaphylos glandulosa var. *crassifolia*
- Orcutt's brodiaea
Brodiaea orcuttii
- Wart-stemmed ceanothus
Ceanothus verrucosus
- Del Mar sand aster
Lessingia filaginifolia var. *filaginifolia* (= *Corethrogyne filaginifolia* var. *incana*)
- Short-leaved dudleya
Dudleya blochmaniae ssp. *brevifolia*
- Coast barrel cactus
Ferocactus viridescens
- San Diego goldenstar
Bloomeria clevelandii
- Torrey pine
Pinus torreyana

One federally endangered plant species, Del Mar manzanita, and one state endangered plant species, short-leaved dudleya, are present on-site.

Additional species on the CNPS List 1B and 2, and considered eligible for state listing by CDFW and considered CEQA-significant, have been identified on-site:

- California adolphia
Adolphia californica
- Summer holly
Comarostaphylis diversifolia ssp. *diversifolia*
- Sea dahlia
Coreopsis maritima
- San Diego goldenstar
Bloomeria clevelandii
- Nuttall's scrub oak
Quercus dumosa

Three other plant species considered by CNPS to have limited distribution (List 4 species) are also found on-site:

- Western dichondra
Dichondra occidentalis
- Seaside calandrinia
Calandrinia maritima
- California adder's-tongue fern
Ophioglossum californicum

Sensitive plant species that are not covered by the MSCP Subarea Plan are described in Appendix 3d. Several other sensitive plant species that have not been observed on Carmel Mountain Preserve could occur there and may be found during future monitoring and studies.

Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*). Del Mar manzanita is federally listed as an endangered species (USFWS 1996) as well as a covered species under the MSCP Subarea Plan. This shrub is in the heath family (Ericaceae), and can be distinguished from the common Eastwood manzanita (*A. glandulosa* ssp. *glandulosa*) by its shorter stature (to four feet) and by leaf and bract characters. This subspecies occurs in southern maritime chaparral on sandstone terraces and bluffs in central coastal San Diego, and in northern coastal Baja California, Mexico. Urban expansion and clearing for agriculture have been responsible for most of the loss of this species. Del Mar manzanita is scattered throughout southern maritime chaparral on Carmel Mountain Preserve, and along the north side and southwest portion of Carmel Mountain.

Orcutt's brodiaea (*Brodiaea orcuttii*). Orcutt's brodiaea is a CNPS List 1B species. Orcutt's brodiaea is considered sensitive and is a MSCP-covered species. It is found only in San Diego, Riverside, and Orange Counties and in Baja California, Mexico. This herbaceous perennial in the lily family (Liliaceae) sprouts from corms. Its preferred habitat in San Diego County is vernal moist grasslands, mima mound topography, vernal pools edges, and occasionally along stream banks. It is known to occur in clay, and sometimes serpentine, soils including Stockpen gravelly loam on Otay Mesa and Redding gravelly loam on Mira Mesa (Reiser 2001). This species occurs in seasonal wetlands on Carmel Mountain Preserve, including meadows and vernal pools.



Photograph 3-3. Wart-stemmed Ceanothus

Wart-stemmed Ceanothus (*Ceanothus verrucosus*). Wart-stemmed ceanothus is in the buckthorn, or Rhamnaceae, family. It is conditionally covered under the MSCP Subarea Plan, and a CNPS List 2 species. This large evergreen shrub occurs along coastal San Diego County and northern Baja California, Mexico (Reiser 2001). Wart-stemmed ceanothus is found as a component of southern mixed chaparral or southern maritime chaparral communities (Holland 1986). This species produces clusters of small white lilac-like flowers that appear between January and April. The small thick leaves and corky "warts" on the stem are characteristic of the species (Munz 1974). This plant is threatened by loss of habitat to development. Wart-stemmed ceanothus is common on Carmel Mountain Preserve, where hundreds of these shrubs are present in the southern maritime chaparral.

Short-leaved dudleya (*Dudleya blochmaniae* ssp. *brevifolia* = [*Dudleya brevifolia*]). Short-leaved dudleya is a perennial succulent plant species that is found in small disjunct populations in San Diego County (Moran 1951; Munz 1974; Hickman 1993). It occurs on Torrey sandstone in Carlsbad gravelly loam sand (Reiser 2001) in the vicinity of Del Mar and La Jolla. Short-leaved dudleya is a state listed endangered species as well as being covered by the MSCP Subarea Plan. It is listed as endangered by the State of California,

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Photograph 3-4. Short-leaved Dudleya Blooming at Carmel Mountain, Spring 2001



Photograph 3-5. Short-leaved Dudleya Flowers were Dense in Spring 2001

This tiny perennial succulent herb in the stonecrop family (Crassulaceae) is restricted to only five locations in the Del Mar and La Jolla areas in San Diego County. It is found on Carlsbad gravelly loam derived from Torrey sandstone in open areas of chaparral or Torrey pine forest. Ashy spike-moss is one of the few plants that occurs with it in these openings. Small iron-bearing concretions are present in the soil where short-leaved dudleya has been found (Reiser 2001). Short-leaved dudleya can be distinguished from the less rare Blochman’s dudleya (*D. blochmaniae* ssp. *blochmaniae*) by its smaller spoon-shaped leaf of about 7–15 millimeters long, and from variegated dudleya (*D. variegata*) by its white, rather than yellow, flowers. Three sub-populations occur within the Preserve.

The City of San Diego monitors the populations of short-leaved dudleya on Carmel Mountain every year as required by the MSCP Subarea Plan. Based on the results of monitoring, the number of individual plants on Carmel Mountain could be higher than 1 23,200, the highest number of plants estimated during the monitoring.

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The number of plants counted represents only those corms that sprouted in that year; not all corms underground sprout every year. The number of plants that are visible each year varies depending on weather; wetter years produce more, and drier years fewer. Therefore, the number of plants at a particular location in a particular year is only a portion of the number that are actually there.

During the fifteen years that the plants have been monitored, the lowest number of plants was in 2002, when the rainfall was the lowest. In 2005, the highest number of plants was counted and it was the highest rainfall year.

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Results for plants that could be observed during the MSCP monitoring are:

<u>Year</u>	<u>Number of Plants</u>	<u>Rainfall (inches)</u>
1999	27,317	6.5
2000	23,487	5.7
2001	66,637	8.6
2002	1,446	3.0
2003	111,313	10.4
2004	18,907	4.2
2005	123,200	22.81
<u>2006</u>	<u>260</u>	<u>6.04</u>
<u>2007</u>	<u>no data</u>	<u>2.18</u>
<u>2008</u>	<u>4900</u>	<u>7.25</u>
<u>2009</u>	<u>2538</u>	<u>9.15</u>
<u>2010</u>	<u>3799</u>	<u>10.57</u>
<u>2011</u>	<u>26673</u>	<u>12.6</u>
<u>2012</u>	<u>14892</u>	<u>8.03</u>
<u>2013</u>	<u>9663</u>	<u>6.55</u>
<u>2014</u>	<u>1460</u>	<u>5.01</u>

Coast barrel cactus (*Ferocactus viridescens*). Coast barrel cactus is a CNPS List 2 species and an MSCP-covered species. This perennial stem succulent in the cactus family (Cactaceae) ranges coastally from San Diego County southward into northern Baja California, Mexico. The preferred habitat for coast barrel cactus is in Diegan coastal sage scrub, particularly around rock outcrops or in cobbles on warm dry slopes with a southerly exposure. It is associated with Stockpen gravelly clay loam, Miguel-Exchequer rocky silt loam, and Redding gravelly loam soils (Reiser 2001). This species is found associated with rock outcrops and open areas on the Preserve. Coast barrel cactus is threatened by urbanization, crushing by vehicles, and horticultural collecting.

Del Mar sand aster (*Lessingia filaginifolia* var. *filaginifolia* [= *Corethrogyne filaginifolia* var. *linifolia*]). Del Mar sand aster is a CNPS List 1B species, with the highest rating for rarity, endangerment, and limited distribution (3-3-3) and is covered by the MSCP Subarea Plan. This perennial herb with gray-green leaves is a member of the sunflower family (Asteraceae) and has violet ray flowers and yellow disk flowers that appear in summer. Del Mar sand aster is found in open coastal sage scrub and southern maritime chaparral on weathered sandstone-derived soils. It is endemic to San Diego County from Batiquitos Lagoon in Carlsbad, south to Del Mar Mesa, Carmel Mountain, and Torrey Pines State Park. Del Mar sand aster is present in Diegan coastal sage scrub adjacent to existing trails along the western and southwest portions of the Preserve. The City of San Diego conducted a baseline survey in 2001 for this species.

San Diego golden-star (*Bloomeria clevelandii*). San Diego golden-star is a member of the plant family Liliaceae. This herbaceous perennial is an MSCP-covered species and is on List 1B of the CNPS *Inventory of Rare and Endangered Vascular Plants*. San Diego golden-star is found only in southwestern San Diego County and northern Baja California, Mexico, where it

occurs on clay soils in coastal sage scrub, chaparral, and grassland habitats (Munz 1974). It is a perennial bulb threatened by loss, degradation, and conversion of habitat. One population has been documented on the Carmel Mountain Preserve.

Torrey pine (*Pinus torreyana*). Torrey pine is a CNPS List 1B species and is covered by the MSCP Subarea Plan. Torrey pine is a tall, five-needled tree in the pine family (Pinaceae). Its range is restricted to the foggy coastal region near Del Mar in San Diego County, where the more moist climate and regular temperatures allow the pine to persist. Torrey pines grow on sandstone bluffs in the chaparral and pine forest (Reiser 2001) on Huerhuero soils, Terrace escarpments, and Corralitos loamy sand. Healthy populations occur at both the southern and northern portion of Torrey Pines State Reserve, with peripheral populations on nearby private lands. Torrey pine has been widely planted in the area. All trees outside of historically documented groves and under 200 years of age are likely introduced (Reiser 2001). Seedlings have generated from planted trees on the northwestern slope of Carmel Mountain.

b. Sensitive Animal Species on the Carmel Mountain Preserve

Sensitive wildlife species that are known to occur on Carmel Mountain are listed in Appendix 3e. Those that are covered by the MSCP Subarea Plan are described below; those not covered are described in Appendix 3d. A complete list of the species covered by the MSCP Subarea Plan is provided in Appendix 4. The covered species have specific management treatments prescribed in Section 7.3.1. They are:

- San Diego fairy shrimp
Branchinecta sandiegonensis
- Belding's orange-throated whiptail
Aspidoscelis hyperthra beldingi
- San Diego horned lizard
Phrynosoma coronatum blainvillii
- Northern harrier
Circus cyaneus
- Cooper's hawk
Accipiter cooperi
- Western burrowing owl
Athene cunicularia hypugaea
- California gnatcatcher
Polioptila californica californica
- Southern California rufous-crowned sparrow
Aimophila ruficeps canescens
- Mountain lion
Felis concolor
- Southern mule deer
Odocoileus hemionus fuliginata

The following species are covered by the MSCP Subarea Plan:

i. Invertebrates

San Diego fairy shrimp (*Branchinecta sandiegonensis*). The San Diego fairy shrimp is federally listed as endangered and was covered as a “no take” species by the City of San Diego’s MSCP Subarea Plan; however, the City relinquished federal coverage for vernal pool associated species following the Brewster lawsuit. A vernal pool HCP that includes coverage for San Diego fairy shrimp has been drafted and would provide “take” coverage for this species if adopted. This species is restricted to vernal pools in coastal southern California and south to northwestern Baja California, Mexico (USFWS 2000). The life cycle of fairy shrimp is relatively simple, with larvae hatching out of resting eggs after being covered with water for a prescribed period of time, developing into adults, and mating and laying eggs before the pool dries. The development time is influenced both by the water temperature and the species-specific responses to environmental cues. San Diego fairy shrimp are found in vernal pools that are generally less than 30 centimeters deep. This species takes between three and eight days to hatch, and development to the adult stage takes between seven and 20 days. They are generally found in pools without other fairy shrimp but have been found with versatile fairy shrimp (*Branchinecta lindahli*) and Riverside fairy shrimp (*Streptocephalus woottoni*). San Diego fairy shrimp have been identified in vernal pools along existing trails in the southern portion of the Preserve.

ii. Reptiles



Photograph 3-6. San Diego Horned Lizard

San Diego horned lizard (*Phrynosoma coronatum blainvillii*). The San Diego horned lizard is a CDFW species of special concern and an approved MSCP covered species (species management directives are in Chapter 9.0). This lizard ranges from coastal southern California to the desert foothills and into Baja California, Mexico. It is often associated with coastal sage scrub, especially areas of level to gently sloping ground with well-drained loose or sandy soil (Mills 1991). This animal usually avoids dense

vegetation, preferring 20 to 40 percent bare ground in its habitat. Populations along the coast and inland have been severely reduced by loss of habitat. Where it can be found, the San Diego horned lizard can be locally abundant, with densities near 20 adults per acre. They are largely dependent on harvester ants for food, which contributes to about half their diet. Adults are active from late March to late August; young are active from August to November or December. This species has been detected throughout the Preserve in chaparral and coastal sage scrub.

Belding’s orange-throated whiptail (*Cnemidophorus hyperythrus beldingi*). The Belding’s orange-throated whiptail is a CDFW species of special concern and an MSCP-covered species

(species management directives are in Chapter 9.0). This species ranges from southwestern San Bernardino County to the tip of Baja California, Mexico, in areas of low, scattered brush and grass with loose sandy loam soils. It can be found in open coastal sage scrub, chaparral, washes, streamsides, and other sandy areas with rocks, patches of brush, and rocky hillsides (Stebbins 1985). The orangethroat whiptail feeds primarily on subterranean termites. It is active during the spring and summer months and hibernates during the fall and winter. Adult orange-throated whiptails generally hibernate from late July or early August until late April. The immature whiptail has a shorter inactivity period, usually hibernating from December through March. Hibernation sites are on soft, well-drained slopes with southern exposure and little or no vegetation cover, and road cuts tend to be suitable. The orange-throated whiptail has declined within its range as a result of habitat loss and fragmentation (McGurty 1980). This species is anticipated to occur in various parts of the Preserve. It has been detected on the northern portion of the Preserve.

iii. Birds

Northern harrier (*Circus cyaneus*). Northern harriers are a CDFW species of special concern, and nesting sites are considered sensitive by CDFW. This raptor is also an MSCP-covered species (species management directives are in Section 7.3.1). This species is a fairly common winter visitor and a formerly widespread breeder throughout California. The northern harrier hovers close to the ground while foraging in grasslands, agricultural fields, and coastal marshes. The northern harrier nests on the ground, with the nest concealed by marsh plants or other dense vegetation, in marshes and also on grasslands, in fields, or in areas of sparse shrubs (Unitt 2004; Zeiner et al. 1990). This species has been nearly eliminated as a nesting species in southern California because of disturbance and loss of suitable habitat (Small 1994). The local breeding population undoubtedly varies much with rainfall and the abundance of prey, and in San Diego County, was estimated in 2004 to be 25–75 pairs (Unitt 2004).

Cooper's hawk (*Accipiter cooperi*). The Cooper's hawk is an MSCP-covered species (species management directives are in Section 7.3.1); however, some local ornithologist's feel they are not adequately conserved (Unitt 2004). Cooper's hawks range throughout most of the United States (National Geographic Society 1983). In San Diego County, they are widespread over the coastal slope wherever there are stands of trees. They traditionally nest in oak woodlands and sometimes in riparian habitats, but also will use eucalyptus trees (Unitt 1984). During the bird atlas project (Unitt 2004) observers found twice as many nests in eucalyptus as in oaks. Cooper's hawks nest high in trees but beneath the canopy. The Cooper's hawk is most numerous in lowland and foothill canyons and in the urban areas of the city of San Diego (Unitt 2004), where it forages primarily on songbirds but is also known to eat small mammals (National Geographic Society 1983). The breeding habitat on Carmel Mountain Preserve is marginal for Cooper's hawks; however, there is a low to moderate potential for Cooper's hawk to forage within the Preserve.

Western burrowing owl (*Athene cunicularia hypugaea*). The western burrowing owl is a CDFW species of special concern, and an MSCP-covered species (species management

directives are in Section 7.3.1). This species is primarily restricted to the western United States and Mexico (National Geographic Society 1983). Once common throughout coastal San Diego County, the burrowing owl is now an uncommon and declining resident. It ranged throughout the coastal lowlands in grasslands, agricultural areas, and coastal dunes (Unitt 1984); however, its range is now greatly restricted (Unitt 2004). The burrowing owl appears to have been extirpated from the vicinity of the Carmel Mountain Preserve. The bird atlas study (Unitt 2004) did not report burrowing owls along the coast between North Island Naval Air Station and Camp Pendleton Marine Corps Station, and none were observed on the Carmel Mountain Preserve during surveys in 2001 for this management plan. It was found on Carmel Mountain during 1994 surveys (RECON 1994). The burrowing owl is nocturnal and perches during daylight at the entrance to its burrow or on low posts. Loss of habitat to urbanization, proliferation of terrestrial predators, and high mortality from collisions with cars has greatly reduced the population of burrowing owls in San Diego County.

Coastal California gnatcatcher (*Poliophtila californica californica*). The coastal California gnatcatcher is federally listed as threatened, a CDFW species of special concern, and an MSCP-covered species (species management directives are in Section 7.3.1). This resident species occurs below the 2,400-foot elevation level, with 90 percent of the birds at locations below 1,000 feet. The San Diego County population exceeds 2,000 pairs, with fires in 1996 and 2003 temporarily reducing the carrying capacity of several of the habitat cores for this species (Unitt 2004). Wildfires of October 2003 affected four percent of the known coastal California gnatcatcher occurrences, 16 percent of its designated critical habitat, and 28 percent of the USFWS model for suitable habitat (Bond and Bradley 2004, as cited in Unitt 2004).

Coastal California gnatcatchers occur in the coastal slopes of southern California from Ventura County and the Los Angeles basin south to Baja California, Mexico (Atwood 1980; Jones and Ramirez 1995). It breeds only in coastal sage scrub vegetation preferring patches dominated by California sagebrush and flat-top buckwheat and avoiding those dominated by sage, laurel sumac, and lemonadeberry (Weaver 1998a, as cited in Unitt 2004). A breeding pair's territory ranges from less than 1 hectare along the coast to over 9 hectares farther inland, and is about 80 percent larger during the non-breeding season (Unitt 2004). During dry months, the species will forage in adjacent riparian areas. The coastal California gnatcatcher population in southern California has been reduced through loss of habitat to urban and agricultural development of the coastal slopes. Nest predation by various animals and brood parasitism by brown-headed cowbirds (*Molothrus ater*) is also reducing the population (Atwood 1980; Unitt 1984 and 2004). This species was documented in Diegan coastal sage scrub and southern maritime chaparral habitat on the Preserve during surveys in 1994 (RECON 1994).

Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*). The southern California rufous-crowned sparrow is a CDFW species of special concern and an MSCP-covered species (see Section 7.3.1 for species management directives). This resident bird ranges throughout coastal southern California, from Santa Barbara County south to San Diego County and into northwestern Baja California, Mexico (Grinnell and Miller 1944). Nests

are most often made on the ground at the base of bunchgrasses or low shrubs. Generally they begin nesting during the third week of March, with a few pairs starting earlier or later (Unitt 2004). Habitat affiliations are coastal sage scrub, chaparral, and adjacent grassy areas (Unitt 1984). The birds remain in their established territories for life, with juveniles probably dispersing only a few miles from where they were hatched (Unitt 2004). Insects are the primary food item of this species. Urbanization has decreased the amount of habitat suitable for southern California rufous-crowned sparrows. This species was documented during surveys in 1994, in southern maritime chaparral and Diegan coastal sage scrub (RECON 1994).



Legend




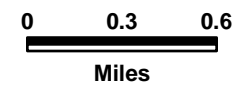
-  Wildlife Corridor
-  Del Mar Mesa Preserve
-  Carmel Mountain Preserve

FIGURE 3-5
Wildlife Corridors



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iv. Mammals

Mountain lion (*Felis concolor*). The mountain lion is a California fully protected species, and an MSCP-covered species (species management directives are in Section 7.3.1). The mountain lion has shown dramatic decline in southern California. Mountain lions are widespread but uncommon in California, ranging from sea level to alpine meadows. Mountain lions are most abundant in riparian and bushy habitats, as long as southern mule deer (their primary food source) are present. Home ranges for adult animals range from 8 to 40 square kilometers; males maintain larger ranges than do females. Population numbers appear to be on the increase in California (Zeiner et al. 1990), but the main threat is human development, which leads to fragmentation of the habitat. As the habitat is fragmented, the movement of the lions is restricted, which increases the association with humans (Zeiner et al. 1990). Mountain lions have been observed in the Preserve but its current status is not known.

Southern mule deer (*Odocoileus hemionus fuliginata*). The southern mule deer is an MSCP-covered species (species management directives are in Section 7.3.1). Southern mule deer inhabit a variety of vegetation communities, including coastal sage scrub, chaparral, grassland, woodland, and riparian systems. Distribution extends from Baja California, Mexico, into portions of San Diego, Orange, Imperial and West Riverside Counties. Mule deer primarily forage upon herbaceous plants, but will also eat various shrubs and trees (National Audubon Society 1996). Southern mule deer were observed on the Preserve during surveys and the population is presumed to be stable.

3.1.2.5 Wildlife Corridors

The Carmel Mountain area provides a link for the movement of animals between inland natural areas, such as the Los Peñasquitos Canyon Preserve, and the coastal natural area of Torrey Pines Reserve (Figure 3-5).

3.1.3 Cultural Resources

This section provides a background of the cultural resources within the Preserves, and defines requirements and provides procedures for compliance with federal and state laws that apply to the Carmel Mountain and Del Mar Mesa Preserves. This plan will be used by the Preserves' Habitat Manager in making decisions regarding the management of cultural resources and historic properties.

3.1.3.1 Cultural Setting

a. Prehistoric Period

The area of the county occupied by the Preserves has a long and rich history of archaeological investigation. Malcolm Rogers, an early pioneer of archaeological survey, site documentation, and testing, concentrated his work in the southern California deserts and coast. Rogers, from the San Diego Museum of Man, recorded numerous local sites during the 1920s. He subsequently presented a cultural scenario for prehistoric people who created these sites. Rogers suggested that these people were nomadic gatherers who subsisted mainly on shellfish collected from beaches and around lagoons, and made stone tools which might best be described as "crude" (Rogers 1929).

Based on the proximity of these sites to the community of La Jolla, Rogers named this the La Jolla complex, or tradition, and the name has remained. It is interesting to note that Rogers hypothesized that the La Jolla complex was the oldest archaeological tradition in the region, primarily because of what he interpreted to be simple stone artifacts. This is now known to be incorrect. The La Jolla complex, as identified by Rogers, has been reliably radiocarbon dated between 8,000–2,000 years before the present (B.P.). The cultural materials identified as belonging to this tradition have been found in sites with radiocarbon dates as much as 8,500 years B.P.

Since the early proposition by Rogers that the La Jolla tradition was the most ancient of the archaeological manifestations in the San Diego region, clarification has been provided by the discovery of older materials and the recognition that the "crude" quality of the La Jolla artifacts is not a sound basis for a basal chronological placement. Later in his life, Rogers made it quite clear that his original thinking on this matter was in error.

The earliest archaeological materials in the county are attributed to a tradition, or phase, that is known as the San Dieguito. This phase, which begins in the county by about 9,500 years B.P., is a southern California reflection of a more ancient Folsom/Clovis tradition of large game and aquatic resource use concentrated around what are now desert areas and the Great Basin pluvial lakes of the late Pleistocene epoch (Moratto 1984). Artifacts of this period are generally described as stone bifaces, lanceolate projectiles, crescentics, and a variety of scrapers and choppers. Late in the tradition, pressure flaking was introduced. The site assemblages tend to be found as surface scatters or shallow deposits on ridge tops and overlooking the Pacific

Ocean, leading to a characterization of these people as nomadic hunters. Pleistocene megafauna began a decline, ultimately resulting in their extinction during the same time period as the first evidence of prehistoric human occupation begins in southern California (circa 10,000 B.P.). Thus, an economy based on large game hunting may have been practiced here for no more than 1,000 years. This may explain the relative scarcity of San Dieguito artifacts in the county. On-going research suggests that these people supplemented hunted foods and raw materials with gathered or foraged materials to a greater extent than was once portrayed. Sites of this ancient time are relatively unusual and often appear to have been disturbed or “contaminated” by archaeological materials from the subsequent traditions, the La Jolla and Kumeyaay.

Radiocarbon dating of two sites in western San Diego County, the Harris site and Rancho Park West, indicates that beginning circa 8,000 years B.P., the San Dieguito tradition was replaced by the La Jolla tradition, which held sway for roughly 6,000 years. There is considerable debate as to whether the San Dieguito people continued to occupy the county, or if they abandoned this area when the La Jolla tradition people arrived (Moriarty 1967; Kaldenberg 1982; Gallegos and Carrico 1984; Wallace 1978). Extinction of large game and the conversion to an already incipient maritime and floral resource orientation seems the simplest explanation of in situ culture change.

Stone tools of the La Jolla period appear to be “crude” compared with the San Dieguito holdings in items. Stone artifacts dating to the La Jolla phase sites do not reflect the variety of types and quality of craftsmanship that is represented in the San Dieguito tradition. There appears to be more expedient selection of raw material. Rather than searching out basalts and fine-grained meta-volcanics, the La Jolla tradition people seemed content to use the more readily available river cobbles. This type of rock is not well suited to fine working, and many of the tools appear to have been created and used expediently as a need for a cutting or scraping edge arose. Fine craftsmanship is lacking in the lithic tools of this period, and there is little to suggest that stone working was anything but a means to an end. The La Jolla phase tools are often made from cobble-based core stones with unifacial and bifacial edge damage from scraping and battering. While there is obvious edge preparation, the removal of flakes from these tools is through hard hammer percussion, resulting in undulating and imprecise edges.

In contrast to San Dieguito sites, La Jolla phase sites tend to yield ground stone implements, predominantly manos, and slab or basin metates. The settlement pattern is also distinctive. Sites are found both inland and along the coastal margin, with concentrations in major drainages where plant resources could be processed and around the estuaries or lagoons. These sites often reflect a depth of cultural deposit that is not found at sites of the preceding phase, and at coastal locations, shellfish refuse accumulations are common. This is consistent with the economic adaptation of the La Jolla-era peoples. Exploitation of marine and seed resources requires a very different tool kit than that of hunting large game. Further, one would expect a very different social and cultural system to evolve out of these different adaptive strategies.

By circa 2,000 years B.P., Yuman-speaking people were present in the Gila/Colorado River drainage. Within a short time, some of these groups had migrated further west and entered Imperial and San Diego Counties, bringing changes in subsistence patterns, technology, and customs. The Yuman-speaking people are the ancestors of the ethnohistorically known Kumeyaay (also referred to in earlier literature as Diegueño due to their association with the San Diego Mission). Archaeological findings identify a number of changes resulting from this contact. Artifacts associated with this tradition include ceramics; small, finely worked triangular projectile points; bedrock milling equipment, in particular pestles and mortars; and scrapers. One of the most distinctive markers of contact with desert groups is the introduction of ceramic technology. However, there is some evidence that the original Yuman speakers who entered the county 2,000 years B.P. did not use pottery and that the ceramic tradition was introduced as late as 1,000 years B.P. (Clevenger and Schultze 1995).

Yuman traditions of plant processing are also distinctive. These activities included grinding on bedrock surfaces, creating deep “conical” depressions on bedrock surfaces, and stone bowls. In addition to the mano and metate implements that were already present, the Yuman assemblage includes pestles and deeper and narrower mortars or bowls and the extensive use of bedrock outcroppings as processing areas. In this period, mortuary customs were also changed from flexed inhumation to cremation.

b. Historic Period

Spanish colonization of Alta California began in 1769 with the migration of Spanish and Mexican troops, religious personnel, and civilians into the San Diego region. The landing for the sea-going portion of this excursion was the San Diego Bay, with a landfall near the area that is identified as Old Town. This group was followed by an overland expedition and a settlement was established at the location that is now within Presidio Park. Within a few years, the sacred and military elements of the colonial forces were separated and the mission portion of this early settlement was moved to the east, in Mission Valley, where the settlement was named Mission San Diego de Alcalá. The siting of this mission was on a large Native American village, which is known from ethnographic sources as Nipaguay.

Spanish colonial activities throughout Alta California affected all of the aboriginal groups from the coast, where initial contact took place, to the inland areas. The Mexican period (1822–1848) saw the continued displacement and disruption of traditional lifeways primarily through the expansion of the land grant program and development of extensive rancho holdings.

Granting of statehood and the gold rush brought many changes for California generally and for San Diego County specifically. By the late 1800s, development in the county was well under way with the beginnings of a recognizable downtown San Diego area and the gradual development of a number of outlying communities, many of which were established around previously defined ranchos and land grants.

The area directly around the two Preserves was not included in any of the rancho land grants in either the Spanish or Mexican periods. Carmel Valley to the north was the site of an open-range sheep ranch established in the 1770s by a retired soldier from the San Diego Presidio. This soldier, named Cordero, built an adobe dwelling in the valley, roughly located just east of I-5 and south of Carmel Valley Road. Cordero lived there until his death, and for a time both McGonigle Valley and Carmel Valley were referred to as "Cordero" (Northrup 1989).

Don Jose Antonio de Jesus Serrano built a second adobe in Carmel Valley (Northrup 1989). Although there are no structures dating to the Spanish or Mexican periods in the Preserve areas or immediate vicinity, it is likely that cattle and sheep, especially the Cordero flocks from the north, grazed the Carmel Mountain Preserve lands.

Rancho de los Peñasquitos, granted to Francisco Maria Ruiz in 1823, is located east of the Carmel Mountain Preserve and forms the southern border of the Del Mar Mesa Preserve. Los Peñasquitos was the first private land grant of the Mexican period in San Diego County. In 1836 Ruiz, who had no spouse or descendants, deeded the ranch to Francisco Maria Alvarado. George Alanzo Johnson, was given one-half interest in the rancho in 1862, when he married into the Alvarado family. Johnson moved in and made considerable improvements to the rancho in the next 20 years. J. S. Taylor acquired the rancho in the early 1880s, remodeling the ranch house and continuing to run cattle. The rancho's subsequent owners made some alterations and additions, using the ranch house as a bunkhouse. In 1974 the County of San Diego purchased 193.0 acres, including the Johnson Taylor ranch house complex, as part of a proposed Los Peñasquitos Regional Park.

Ranching was the main occupation of the residents in this part of the county from the late nineteenth through the early twentieth century. The largest ranch in the vicinity of the Carmel Mountain Preserve was owned by the George McGonigle family, for which McGonigle Canyon is named. In 1899, the McGonigles sold over 1,000 acres of land to the Sisters of Mercy, a Catholic order of nuns associated with Mercy Hospital. Structures were built and the sisters cultivated the surrounding land. The farms supplied vegetables and dairy products to Mercy Hospital (Mikesell 1988). The sisters named the property Mount Carmel Ranch, from which the valley took its modern name Carmel Valley.

Another family, the Knechtels, moved to the Carmel Mountain area from Nebraska in the 1890s. The original Knechtel homestead, now recorded and designated CA-SDI-11724H, is located in the northeast corner of the Carmel Mountain Preserve. Anton Knechtel occupied the homestead from 1889 to 1903. He was buried on his farm, the grave being located approximately 100 meters north of the farm site, on a ridge. Although no structures still stand at the farm site, foundations and piles of wood remain, and his grave remains in good condition. The Knechtel family continued to dry farm beans on various tracts of land in Carmel Valley through the late 1980s.

3.1.3.2 Cultural Resources Found on Carmel Mountain

Literature and site records for recorded cultural resources on the Preserve were reviewed in 2001 (Price and Cheever 2002). Archival information from the South Coastal Information Center and the San Diego Museum of Man show previously recorded prehistoric and historic sites.

Cultural resources work within the last 10 years in the Neighborhood 8A Specific Plan area resulted in comprehensive surveying for cultural resources, and significance testing of a number of sites (City of San Diego 1998). A total of 27 prehistoric and historic archaeological sites are recorded on the Carmel Mountain Preserve (Table 3-1).

These recorded sites are generally sparse stone artifact scatters and special activity sites extending along the entire north and east margin of Carmel Mountain. The majority of these sites are characterized by small amounts of stone flakes and chipping waste, which are a byproduct of testing cobbles for suitable tool production material. The cobbles originate from the La Jolla geologic formation, eroding out along the edges of Carmel Mountain and the adjacent mesas. The sites often have a small amount of ground stone and/or a few stone tools in addition to the flakes. Sites containing such artifacts are considered special activity sites, with short term or single episode use, and are difficult to ascribe to a specific prehistoric group.

Possible hearths made of cobbles are present in some of the sites in the Preserve. A number of these features have been excavated, and moderate amounts of ground stone tool fragments have been found in association. In other cases, these cobble features are not directly associated with other types of artifacts and may represent individual events or features for specialized activities. These possible activities are described in the Carmel Valley EIR, Section 5.9 (City of San Diego 1998).

Prehistoric sites with such cobble features and wider range of artifact tool types indicate a more intensive or longer-term usage than light artifact scatters. CA-SDI-4904 is a large site on the Preserve that contains several such cobble features and a variety of stone artifacts. Testing in 1992 found a subsurface deposit, and analysis of artifacts recovered led to a conclusion that the site was primarily used for bulk seed processing (Eighmey 1994). Buckwheat, lemonadeberry, sages, manzanita, and native grasses grew on Carmel Mountain, and Native Americans used their seeds.

Two historic sites are recorded on the Carmel Mountain Preserve, the homestead of Anton Knechtel, and the gravesite of Anton Knechtel. The homestead consists of the remains of a wood structure, concrete cisterns and pad, historic trash scatter, and a grove of eucalyptus trees planted to shade the structure. The gravesite consists of the headstone and a picket fence surrounding it.

**TABLE 3-1
PREVIOUSLY RECORDED CULTURAL RESOURCES ON CARMEL MOUNTAIN PRESERVE**

CA-SDI-	SDM-W-	Site Description	Site Recorded	Reference
	379	Listed as destroyed during a field survey in 1990 by SRS		Whitney-Desautels 1993
4904	2174	Lithics, milling, and cobble features, tested by Eighmey 1993, significant		Eighmey 1994a
11726		150+ debitage, 15 FLA*, tested by Eighmey in 1993, significant		Eighmey 1994b
11724H	4449	Historic homestead site, tested by Eighmey 1993, significant		Eighmey 1994b
11728		Lithic scatter, manos, determined not significant, Eighmey 1993		Eighmey 1994b
11729	4453	3 loci, debitage, fla, chipping sta., determined not significant by Eighmey 1993		Eighmey 1994b
11730		Flaking station, 15 debitage, 3 cores, not relocated in 1993		Eighmey 1994b
11731		Lithic quarry and reduction, tested by Eighmey in 1993, not significant		Eighmey 1994b
11732		Lithic quarry, tested by Eighmey in 1993, not significant		Eighmey 1994b
11733		Light lithic scatter, tested by Eighmey 1993, not significant		Eighmey 1994b
11734		Light lithic scatter, tested by Eighmey 1993, not significant		Eighmey 1994b
10218	3614	Artifact scatter, 2 loci. Locus A tested by Cheever in 1992, locus B tested in 1992, both not significant		Cheever 1992; Gallegos 1992
11700		Light lithic scatter, cobble hearth	Pignolo 3/90	
11701		Camp, 2 hearths, debitage, 2 cores	Pignolo 3/90	
11702		Light lithic scatter, 2 cores, 15+ debitage	Pignolo 3/90	
11725		Camp, flas, manos, cobble hearth, determined not significant, Eighmey 1993		Eighmey 1994b
11727		Flaking station, 25+ debitage, not relocated by Eighmey 1993		Eighmey 1994b
11696		Hearths, FLAs, ground stone, shell	Pignolo 3/90	
11697	4461	Light lithic scatter, 5+ core tools, 5+ debitage	Pignolo 3/90	
11698	4462	Light lithic scatter, 2 cores, 5+ debitage	Pignolo 3/90	
11699	4463	Historic grave and marker, picket fence	Pignolo 3/90	
9089	378/379	Small shell midden, mano fragments, fire -affected rock, inaccurate mapping, may be outside project, mitigated by SRS in 1993		Whitney-Desautels 1993
4905	2175	Series of isolates, mitigated in 1978 by Norwood		Norwood 1978
11695	4459	Cobble hearth, 1 core, 3 debitage	Pignolo 3/90	
14523		Lithic scatter, 3 loci, cores, debitage, 2 mano fragments, mitigated in 1997 by Wade		Wade 1997
12939		Light lithic scatter, mitigated in 1992 by Saunders		Saunders 1992

*FLA = Flaked lithic artifact

Of the 27 recorded sites on the Carmel Mountain Preserve, 14 prehistoric sites and the Knechtel homestead have been identified and evaluated for importance (under CEQA guidelines). Three of the 14 sites evaluated are considered important under CEQA criteria, and the remaining 11 sites were determined not to be important resources. Four previously identified sites (SDM-W-379, CA-SDI-11727, -11729, and -11730) were not relocated during surveys in 2001 (Price and Cheever 2002). This may be the result of incorrect mapping during recording, or incorrect identification of natural material as prehistoric artifacts or vice versa during a survey.

3.1.4 Land Use and Recreation

Land within the Carmel Mountain Preserve boundaries is owned by the City of San Diego except for two private inholdings (see Figure 2-1). The City lands and the private inholdings are undeveloped, so that all land within the Preserve boundaries functions as a natural open space.

A 150-foot-wide SDG&E easement encompassing about eight acres runs north to south along the western side of the Carmel Mountain Preserve. The easement accommodates 138-kilovolt and 230-kilovolt high-tension overhead transmission lines, a 30-inch high-pressure gas line, 10- and 16-inch fuel lines, and associated access roads. SDG&E maintains the easement.

Other than SDG&E activities, the land within the Preserve boundaries is used for passive recreation, such as hiking, horseback riding, and mountain biking. Trails for these activities are narrow footpaths, SDG&E easement access roads, and wide trails historically used by vehicles and other visitors. Figures 3-6a and 3-6b show the existing trail system within the Preserve boundaries. Trails range in width from a few feet to approximately 15 feet, and the width can be highly variable on any one trail. The trails tend to widen into larger open areas where users cut corners at trail intersections. Many of these intersections are mostly bare ground, non-native grasses or carpets of *Selaginella* growth, with few or no shrubs. At some intersections, shortcut trails have impacted surrounding vegetation. In many locations, vernal pool depressions are found alongside and within the roadways that function as trails.

SDG&E easement roads and single-track trails provide authorized vehicle and trail access to the Preserve. The SDG&E easement roads can be accessed at two locations. One is at the northwest corner of the Preserve from Carmel Creek Road, which ends within The Pinnacle at Carmel Creek apartment complex. The other existing vehicle access point for the SDG&E easement road is from the intersection of Longshore Way and Shorepoint Way. In addition to the SDG&E access points, single-track trail access points have been formed at various areas along the edges of the housing developments surrounding the Preserve.

The existing Carmel Mountain Preserve trail system is connected to the Los Peñasquitos Canyon Preserve trail system by the SDG&E service road that is a hiking, biking and horseback riding trail in Los Peñasquitos Canyon. A single-track trail for hiking and horseback riding, just west of the service road, also connects the trail systems between the two preserves.



 Carmel Mountain Preserve
  SDG&E access roads

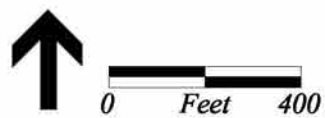


FIGURE 3-6a
Existing SDG&E Access Roads
on Carmel Mountain Preserve
(Map 1)

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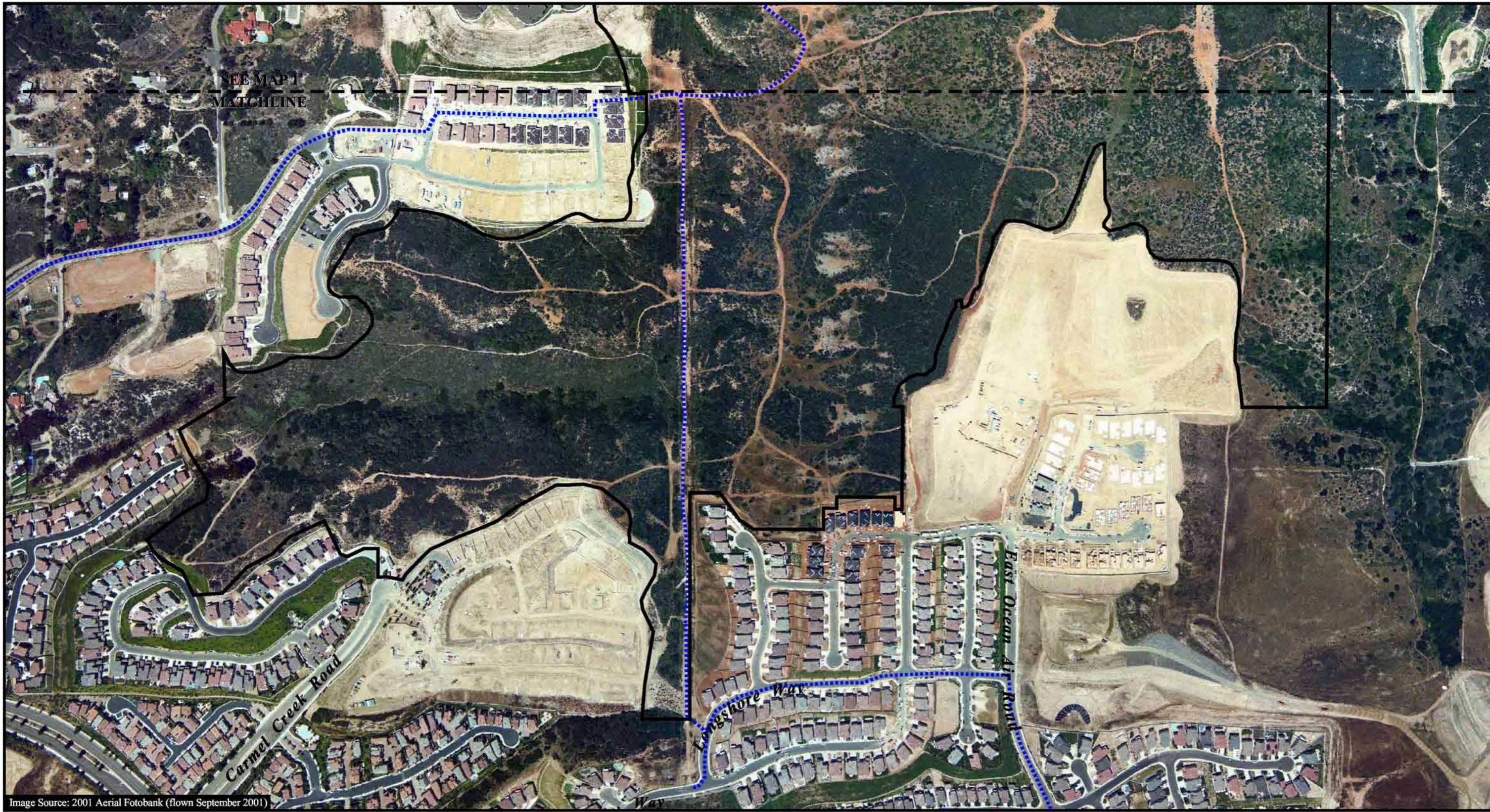


Image Source: 2001 Aerial Fotobank (flown September 2001)



Carmel Mountain Preserve



SDG&E access roads



0 Feet 400

FIGURE 3-6b

Existing SDG&E Access Roads
on Carmel Mountain Preserve
(Map 2)

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3.2 Del Mar Mesa Preserve

Several biological resource studies have been conducted on Del Mar Mesa for various parcels that have been considered for potential development or mitigation (Dudek & Associates 1996; City of San Diego 1996; Zedler 1989; Greenwood and Abbott 1980). These studies contribute to the bank of knowledge about the biological resources on the Del Mar Mesa Preserve and are summarized in this chapter. Because the extent of vernal pools is extremely depleted in the San Diego region, they are an important resource to understand and protect on the Del Mar Mesa Preserve. The geology study by Greenwood and Abbott on Del Mar Mesa has also been summarized.

3.2.1 Physical Setting

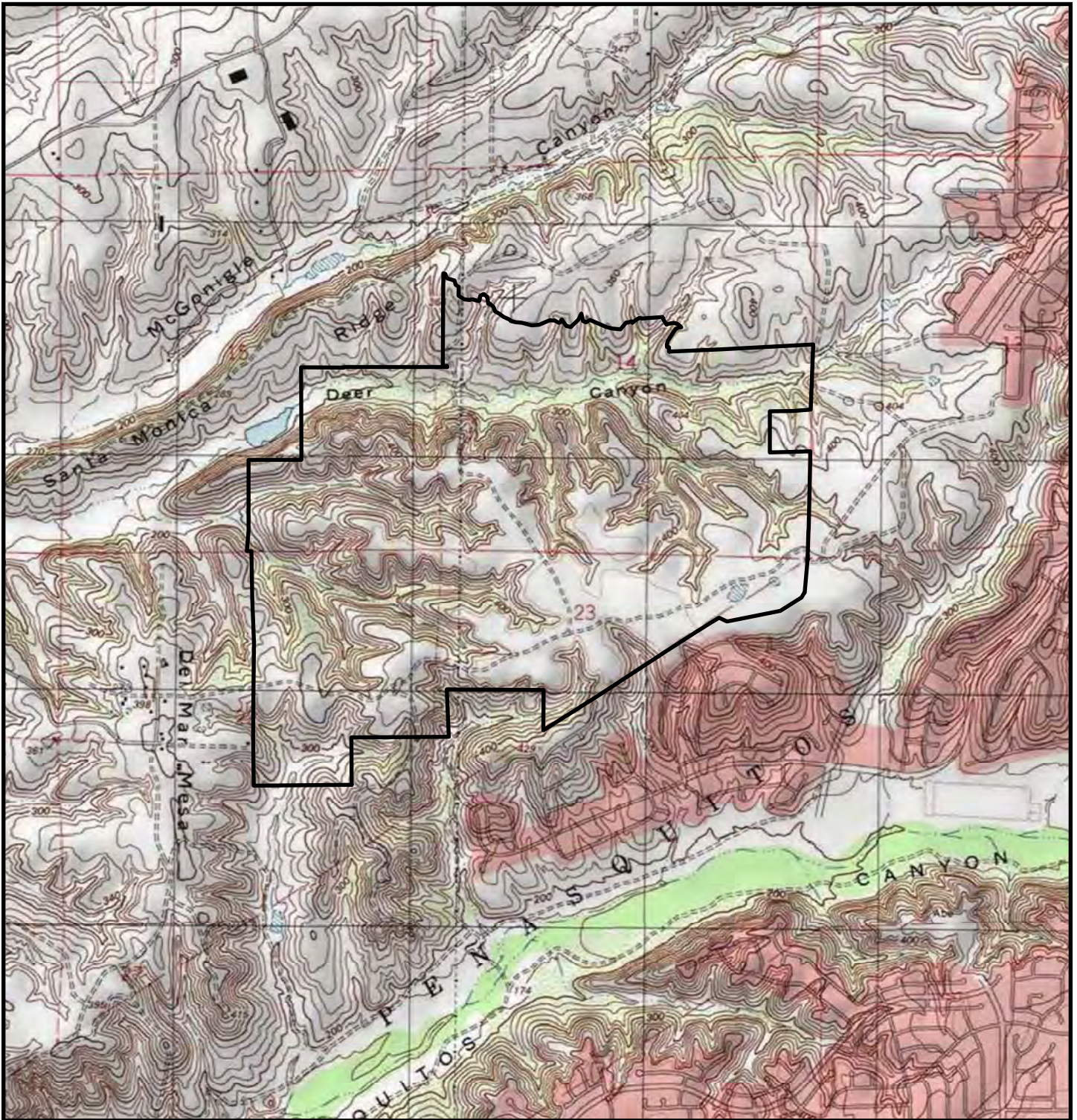
3.2.1.1 Topography

Del Mar Mesa is situated south of Highway 56 and north of Los Penasquitos Canyon, east of Carmel Country Road and north of Park Village Road. The topography (Figure 3-7) of the large Del Mar Mesa is diverse with level mesa tops, steep slopes, major drainages, and undulating mima mounds and intervening depressions (vernal pools). Elevations range from 420 feet above sea level on the mesa to 200 feet above sea level in the bottom of Deer Canyon, which runs along the northern edge of the Preserve.

3.2.1.2 Geology

The underlying rocks at the vernal pools on Del Mar Mesa Preserve are part of the Late Eocene epoch (45–40 million years ago) Poway Conglomerate that built out over the ancient coastal plain as a large cone of conglomeratic sediment from an apex just north of Lakeside. The Late Eocene epoch climate was semi-arid with 50–60 centimeters (cm) of annual rainfall that fell primarily during one season (Peterson and Abbott 1979). Eocene strata are dominated by rhyolite clasts brought from east of the modern Gulf of California by a large, long-distance, flood-type stream. The seasonality and lack of rainfall created soils under low moisture conditions that yielded caliches and clay in contrast to the dominant gravels and sands, and rare deposits of clay sediment on the high-energy, gravelly alluvial fan.

Most of the vernal pools in the San Diego area developed upon gently dipping terraces cut into the Eocene alluvial fan by a westward-retreating ocean from the Late Pliocene epoch (over one million years ago) to present. The vernal pools studied on Del Mar Mesa Preserve are toward the eastern (older) side of the Linda Vista Terrace. In brief, the vernal pool topography is largely developed within the B horizon of an ancient soil profile now being dissected under changed climatic conditions (refer to Page 3-41 for additional information).



Map Source: USGS 7.5 Minutes topographic map series
Del Mar Quadrangle

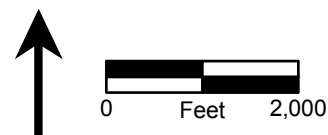


FIGURE 3-7
Topography on
Del Mar Mesa Preserve

3.2.1.3 Soils

Soils, along with other physical characteristics, are important components that affect what vegetation type will grow at a particular location. Soils are derived from weathering of parent rock materials, with additional mineral and organic material contributed from the deposition and decay of plants, animals, and microbes. Soils throughout San Diego County have been mapped at a gross scale by the U.S. Department of Agriculture (USDA).

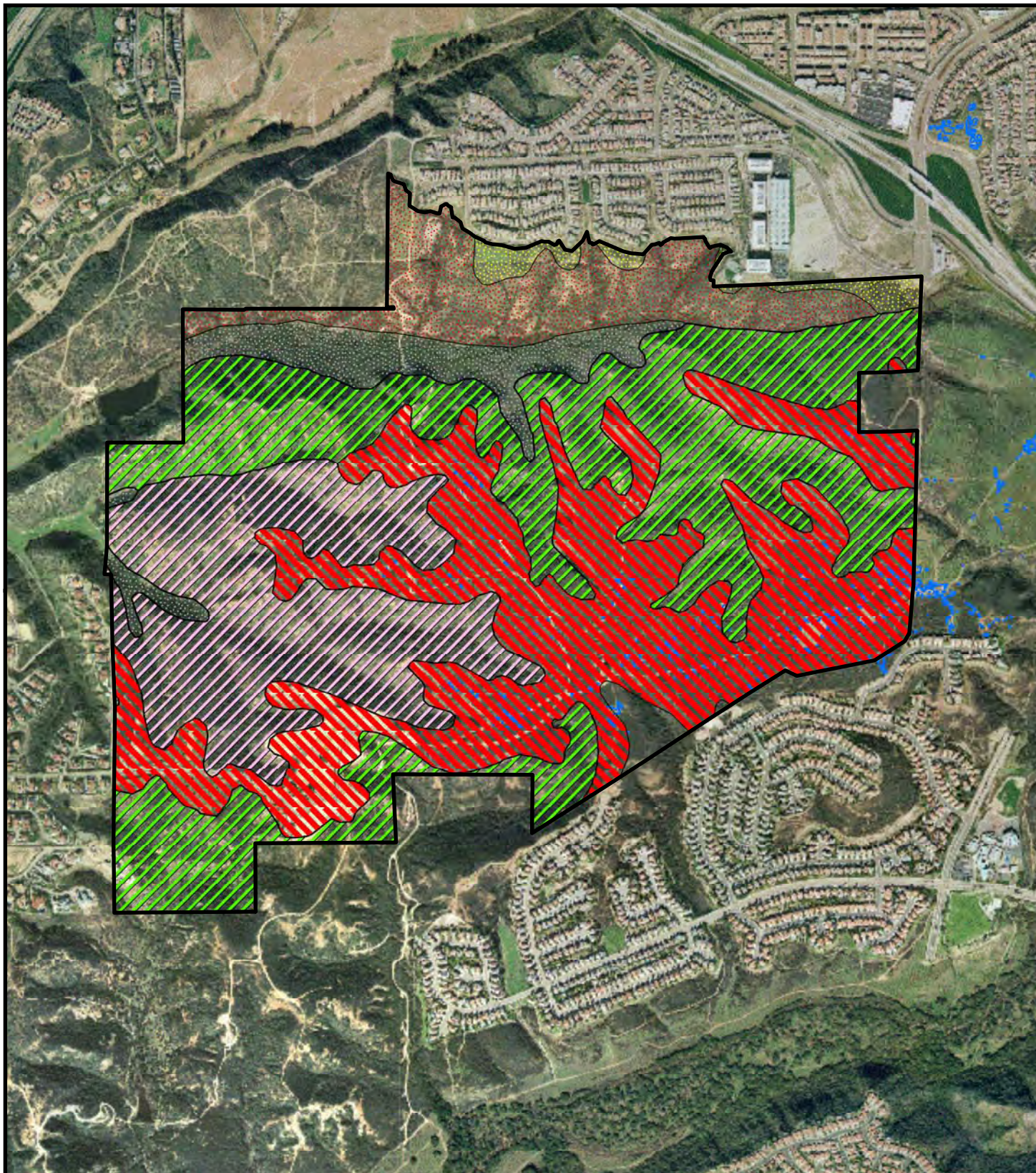
Soils on the Del Mar Mesa Preserve as mapped by the USDA (1973; Figure 3-8) are discussed below. Each soil type is generally associated with the topography as it changes over the Preserve. The Redding soils are located on the mesa tops. Salinas clay loam is the primary soil in the canyon bottoms such as in Deer Canyon. The Terrace Escarpments and Olivenhain cobbly loams are on the steep slopes.

Redding Series (Redding cobbly loam, dissected, 15 to 30 percent slopes; Redding gravelly loam 2 to 9 percent slopes). The Redding series consists of well-drained, undulating to steep gravelly loams that have a gravelly clay subsoil and a hardpan. These soils formed in old mixed cobbly and gravelly alluvium. Plant species typically associated with this soil series are chamise, California buckwheat, laurel sumac, scrub oak, and annual forbs and grasses. The surface layer is typically yellowish-brown and light-brown, with medium and strongly acidic gravelly loam about 15 inches thick. The subsoil is yellowish-red and red, of very strongly acid gravelly clay loam and gravelly clay.

The Redding Cobbly loam (15 to 30 percent slopes) formation on-site is found in the nearly level ground in the central and eastern portions of the mesa, which are typically characterized by steep slopes and narrow gullies. These soils on the mesa are 8–10 inches deep over a hardpan where the vernal pools are best developed. On the north and western portions of the mesa, Redding cobbly loam predominates on slopes of 15–30 percent. The soils are 10–20 inches deep over a hardpan.

The Redding gravelly loam (2 to 9 percent slopes), is an undulating to gently rolling soil, with an average slope of 3 percent. The topography consists of low, broad mounds, which are locally known as mima mounds.

Terrace Escarpments. Terrace escarpments consist of steep to very steep escarpments and escarpment-like landscapes, which occur on nearly even fronts of terraces or alluvial fans. In most places there are 4 to 10 inches of loamy or gravelly soil over soft marine sandstone, shale, or gravelly sediments. Vegetation may consist of sparse cover of brush and annual forbs and grasses on south-facing slopes while fairly dense cover may cover north-facing slopes.



**Del Mar
Mesa Preserve**



Soil Types

- Olivenhain cobbly loam, 30 to 50 percent slopes (not visible at this scale)
- Olivenhain cobbly loam, 9 to 30 percent slopes
- Redding cobbly loam, dissected, 15 to 50 percent slopes
- Redding gravelly loam, 2 to 9 percent slopes
- Salinas clay loam, 2 to 9 percent slopes
- Terrace escarpments
- Del Mar Mesa Preserve

FIGURE 3-8
Soils on
Del Mar Mesa Preserve

Steep to very steep terrace escarpments bound Del Mar Mesa Preserve to the south and line the north-facing slopes of Deer Canyon along the north side of the Preserve.

Olivenhain Series (Olivenhain cobbly loam, 9 to 30 percent slopes; 30 to 50 percent slopes). Olivenhain cobbly loam series consists of well-drained, moderate to deep cobbly loams that have a very cobbly clay subsoil. Plant species typically growing on soils of the Olivenhain series are chamise, scrub oak, California buckwheat, wild oats, sugar bush, smooth brome, and cactus. The steep slopes on the north side of Deer Canyon along the northern edge of the Preserve are Olivenhain cobbly loam that occurs on 9 to 50 percent slopes and has a very cobbly clay subsoil.

Salinas Series. Salinas clay loam, 2 to 9 percent slopes forms on floodplains and alluvial fans from sediments washed from other soil types, including Las Flores soils. The dark grayish brown surface layer grades from clay loam to heavy clay loam and may extend to 22 inches deep. Below this, the very dark gray brown heavy clay loam and clay loam subsoil extends up to 46 inches deep. The soil is moderately permeable, with slow to medium runoff and slight to moderate erosion hazard. The bottoms of the main drainages throughout the Del Mar Mesa Preserve are characterized by Salinas clay loam. No large rocks crop out on the mesa, but there are patches of rough, rocky soil and exposed erosion surfaces.

Vernal Pool Soils. In addition to the general soils information provided by USDA mapping, detailed studies of the soil underlying the H Series vernal pools at Del Mar Mesa Preserve were conducted for Caltrans (Greenwood and Abbott 1980) for the purposes of determining: (1) how much watershed is required to sustain a water level sufficient to maintain the topographic and biologic equilibrium of the pools, and (2) can the existing watershed area be modified without significant risk to the existing equilibrium? These questions were important at the time because Caltrans was intending to buy these pools to mitigate impacts caused by State Route 52 across Clairemont and Kearny Mesas and they did not know if additional vernal pool and watershed lands would be added to their incipient preserve. This parcel of land, sometimes called the “bowtie” parcel because of its shape, was the first parcel dedicated to preservation and around which other lands for preservation have been added.

The study focused on two major (referred to as the “large pool” and the “smaller pool”) and several minor vernal pools (referred to as the “inter-pool area”) within a large drainage basin atop the mesa. These pools are important because the large pools are the largest known in San Diego County, and they support the northernmost occurrence of the endangered San Diego mesa mint (*Pogogyne abramsii*).

The mesa top and the drainage basin are of such gentle slopes that precipitation gathers in isolated depressions as well as in the large pools. The total drainage basin area studied was 12.5 acres; the largest pool was 1.6 acres, the smaller pool 0.6 acre, and the inter-pool area 0.3 acre.

From test borings the investigators made estimates of layering depths and volumes of the various soil horizons within the drainage basin and under the vernal pools. The test boring locations were sited to provide the maximum information from the least amount of disturbance. The primary finding was the presence of two clay layers that contribute to the reservoir capacity of the vernal pool soils:

1. The upper loamy clay layer found throughout the basin ranges from 0.6 to 1.8 feet in thickness, with an average thickness of 1.06 feet.
2. The lower clay layer is highly compact, with a high content of expanding clays which serve to seal the bottom basin and it averages 2.15 feet thick.

The secondary finding based on the borings was the absence of a duripan (i.e., hardpan, a hardened layer of soil usually found in the B horizon caused by the penetration of soil particles by a substance such as silica, sesquioxides, calcium carbonate, or organic matter) layer throughout the drainage basin. They had assumed that because the soils at the top were Redding soils and that Redding soils and vernal pools generally are underlain by duripan layers that act as aquicludes, underground layers of impermeable materials which prevent the movement of ground water or soil moisture, to seal the overlying soils from percolation loss, a duripan would be found. However, in this case, the seal was dependent upon swelling clays.

The dominant minerals in the clay layers (Table 3-2) were smectite and vermiculite occurring in exceedingly fine (one micron), book-like packets that have a strong affinity to absorb water and expand. These fine clays were more abundant in the lower clay layer than the upper clay area. Coarser, less expansive illite and chlorite clays were more abundant in the upper layer than in the lower layer.

**TABLE 3-2
CLAY TYPES ON DEL MAR MESA PRESERVE**

Clay Type	Definition
Smectite	A type of clay more properly called montmorillonite, with an expanding crystal lattice. Sometimes refers to expandable clays other than montmorillonite.
Vermiculite	An expanding clay with greater expansion ratios than smectitic/montmorillonite clays.
Illite	A hydrous mica with a crystal structure similar to montmorillonite but lacking its expansive characteristics; water is permanently trapped in the fixed spaces between the lattice layers.
Chlorite	A hydrous mica clay with a very limited expandability.
Montmorillonite	A clay with an expanding crystal lattice which makes it highly expandable upon the addition of water.

The investigators surmised that this pattern probably occurred during an ancient soil-forming process wherein the finer expandable clays were more easily transported downward by

descending surface water to accumulate in a B horizon soil profile, which is a soil layer of maximum downward movement and deposition of silicate clay materials. They conclude that the vernal pools on Del Mar Mesa Preserve must hold water because of the low permeability caused by swelling of the fine, clay mineral sediments, rather than by the presence of a duripan or hardpan layer. These clay soils form desiccation cracks when they dry and contract.

The Redding soil is a relict soil or paleosol (ancient soil) and not a product of the present climate. This determination has been based on the weathering profiles on the Linda Vista Terrace, which are characterized by a pronounced reddish color due to precipitation and oxidation of iron-bearing minerals at depths ranging up to at least 15 meters, and pH readings of 4.3 to 6, and usually a discontinuous iron- and silica-cemented hardpan. Also in the associated sandy, back-beach ridges of the Carlsbad Series are opalized root tubes and a prominent layer of small pebble-sized, ironstone concretions. These characteristics do not represent our present climate. Coastal plain soils are thin and leached only near the surface; they are low in organic matter and have some accumulation of calcium carbonate. The thick reddish zone indicates higher rainfall and deep moist surface condition not occurring at present. The incompatibility of the thick red soils and the modern climate let Carter (1957) to conclude they are relicts of an earlier humid climate.

3.2.2 Biological Resources

Del Mar Mesa Preserve has been the subject of biological study for many years, particularly the unique type of vernal pools that are found there. Unlike other vernal pools in San Diego County, those on Del Mar Mesa Preserve are almost exclusively found within chaparral habitats, versus other pools that may occur in coastal sage scrub or grasslands.

The information in this section is compiled from existing biology studies and recent field checks for verification. Most of the information describing the existing conditions on Del Mar Mesa Preserve is taken from the Biological Resources Report and Impact Analysis for Subarea V North City Future Urbanizing Area prepared by Dudek & Associates, Inc., (1996) for the City of San Diego, Development Services Department, as part of the subregional planning efforts. Other information has also been incorporated, as referenced.

3.2.2.1 Vegetation Communities

Nine vegetation communities have been identified on Del Mar Mesa Preserve, as classified by Holland (Figure 3-9).

- Diegan coastal sage scrub
- Southern willow scrub
- Southern mixed chaparral
- Southern maritime chaparral
- Chamise chaparral
- Scrub oak chaparral
- Non-native grassland
- Vernal pool
- Eucalyptus woodland



Photograph 3-7. Vegetation at the Northeast Corner of Del Mar Mesa Preserve

Areas of bare dirt are considered disturbed land.

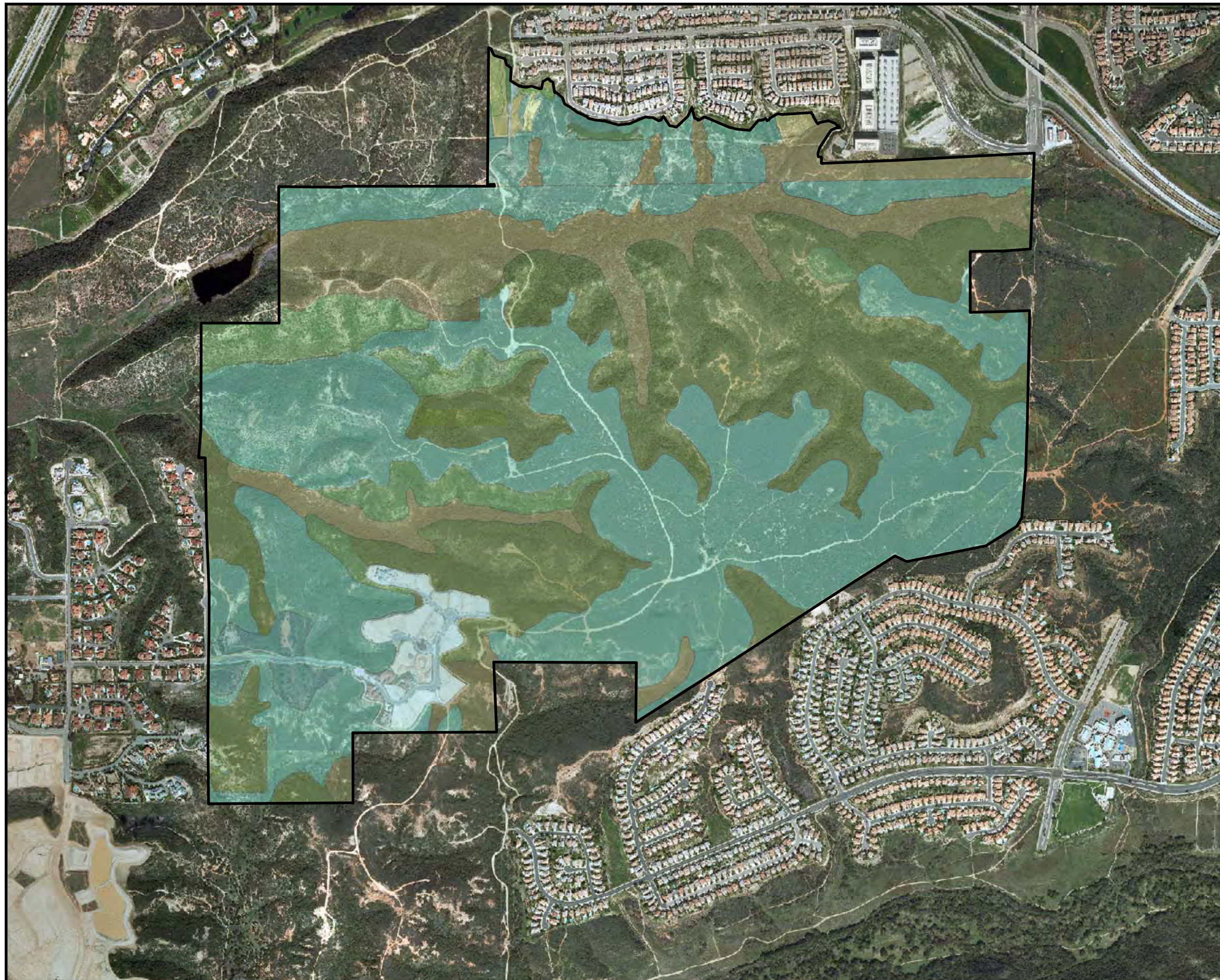
Plant species observed on Del Mar Mesa Preserve are listed in Appendix 3f.

Many of the native vegetation communities exist in disturbed as well as undisturbed conditions.

Diegan Coastal Sage Scrub. This community comprises 53.2 acres of the Preserve. Diegan coastal sage scrub, the southern form of coastal sage scrub, is comprised of low-growing, aromatic, drought-deciduous soft-woody shrubs that have an average height of approximately three to four feet. This community is typically dominated by facultatively (optionally) drought deciduous species such as California sagebrush, California buckwheat, laurel sumac, and white sage, and is typically found on low moisture-availability sites with steep, xeric slopes or clay rich soils that are slow to release stored water. These sites often include drier south- and west-facing slopes and occasionally north-facing slopes, where the community can act as a successional phase of chaparral development. Coastal sage scrub intergrades at higher elevations with several types of chaparrals, or in drier more inland areas with Riversidean sage scrub. This community is found in coastal areas from Los Angeles County south into Baja California, Mexico. Coastal sage scrub is considered sensitive by resource agencies and a Tier II (Uncommon Upland) by the City of San Diego's MSCP Subarea Plan.

On the western part of the Del Mar Preserve, this vegetation community is primarily dominated by California sagebrush or black sage, with most of it having been disturbed by agriculture, grazing, or fires. In the eastern part of the Preserve, coastal sage scrub grows on steep south-facing slopes in the context of the taller and denser chaparral communities. In these areas, black sage and common encelia with patches of California adolphia characterize the coastal sage scrub. A small amount of the coastal sage scrub at the east end of the mesa included notable amounts of native grasses (*Nassella pulchra*, *N. lepida*, and *Melica imperfecta*); these areas were mapped as coastal sage scrub/valley needlegrass grassland.

Southern Mixed Chaparral. There are 259.3 acres of southern mixed chaparral on the Preserve. Southern mixed chaparral is a vegetation community typically dominated by broad-leaved sclerophyllous (hard-leaved) shrubs or small trees that characteristically occupies protected north-facing and canyon slopes or ravines where more mesic conditions are present.



- Del Mar Mesa Preserve
- Vegetation Communities**
- CSS/Chamise Chaparral
- Chamise Chaparral
- Chamise Chaparral - Disturbed
- Developed
- Diegan Coastal Sage Scrub
- DCSS - Disturbed
- Disturbed Chamise Chaparral
- Disturbed Habitat
- Eucalyptus Woodland
- Non-Native Grassland
- Scrub Oak Chaparral
- Southern Maritime Chaparral
- Southern Mixed Chaparral
- Southern Willow Scrub

FIGURE 3-9
Vegetation on Del Mar Mesa Preserve



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Dominant shrubs in this community are typically 5 to 10 feet tall and may include manzanita (*Arctostaphylos* spp.), toyon (*Heteromeles arbutifolia*), ceanothus (*Ceanothus* spp.), mission manzanita, and sugar bush (*Rhus ovata*). Many species in this community are adapted to repeated fires by their ability to stump sprout. The vegetation is usually dense, with little or no understory cover, but may include patches of bare soil. This community is typically found in sites that are moister than those supporting chamise chaparral. Southern mixed chaparral typically occurs in coastal foothills of San Diego County and northern Baja California, Mexico, usually at elevations below 3,000 feet. This community is considered a Tier IIIA (Common Upland) by the City of San Diego's MSCP Subarea Plan.

Southern mixed chaparral is common in all but the southwestern portion of the Del Mar Preserve site. It is highly variable from patch to patch in stature, composition, and amount of disturbance present. The most common species in this community on-site is chamise and Nuttall's scrub oak (*Quercus dumosa*), laurel sumac, and black sage. There is a small area near the western edge of the property that consists of wart-stemmed ceanothus and summer holly in the shaded regions of the drainages that support the southern mixed chaparral.

Southern Maritime Chaparral. Southern maritime chaparral makes up 39.0 acres of the vegetation on the Preserve. Southern maritime chaparral is comprised of a low-growing, fairly open chaparral that grows along the coast and is influenced directly by the coastal climate. The vegetation community typically forms a mosaic of dense, impenetrable stands of vegetation intermixed with open areas. The plant species composition of southern maritime chaparral is similar to southern mixed chaparral. The presence of wart-stemmed ceanothus, Torrey pine and Del Mar sand aster in southern maritime chaparral distinguishes it from southern mixed chaparral. Southern maritime chaparral generally occurs at elevations below 3,000 feet and is restricted to sandy soils within the coastal fog belt and foothills in south Orange County, in San Diego County from Carlsbad to Point Loma, and in northern Baja California, Mexico (Hogan et al. 1996). This community is considered sensitive by state of California resource agencies and a Tier I (Rare Upland) by the City of San Diego's MSCP Subarea Plan.

Southern maritime chaparral is restricted to the south-central portion of the Del Mar Mesa Preserve. Other sensitive species within this vegetation community included coast barrel cactus (*Ferocactus viridescens*), ashy spike-moss, and Del Mar Mesa sand aster.

Chamise Chaparral. Chamise chaparral is the most common type of chaparral community in southern California. Del Mar Mesa Preserve is dominated by this community, with 440.0 acres on the site. This vegetation community is dominated by chamise, a shrub that is three to ten feet in height. Associated species contribute little cover and mature stands are densely interwoven with very little herbaceous understory or litter. Chamise chaparral is often found on xeric slopes and ridges at low elevations. Granitic chamise chaparral is found in areas where the soil has a granitic base (Holland 1986). This habitat type is adapted to repeated fires by its ability to stump sprout. It is the predominant chaparral type in southern California, including areas such as Ventura, Los Angeles, San Bernardino, Riverside, and San Diego Counties. This community is considered a Tier IIIA (Common Upland) by the City of San Diego's MSCP Subarea Plan.

This vegetation community is found in several large patches mainly in the eastern half of the Preserve. In some of these areas, scrub oak and other species make up to 25 percent of the scrub cover.

Scrub Oak Chaparral. This community is the third largest on the site, totaling 103.0 acres. Scrub oak chaparral is dominated by a dense, evergreen chaparral that typically grows to 20 feet and is dominated by Nuttall's scrub oak with considerable Mountain mahogany (*Cercocarpus betuloides*). This chaparral community is somewhat more mesic than many chaparrals, and often occurs at slightly higher elevations of up to 5,000 feet. Substantial leaf litter accumulates in this habitat. Scrub oak chaparral occurs from the western Sierra foothills and North Coast range from Tehama County south through the southern California mountains and Baja California, Mexico.

Scrub oak chaparral occurs primarily on the bottom and lower slopes of drainages in the eastern half of the Preserve forming dense, nearly monotypic stands.

Non-Native Grassland. There are 5.9 acres of non-native grassland mapped on-site. Non-native grassland is characterized by a dense to sparse cover of annual grasses reaching to three feet high, which may include numerous native wildflowers, particularly in years of high rainfall. Non-native grasslands contain species including, but not limited to, bromes (*Bromus* spp.), wild oat (*Avena* spp.), ryegrass (*Lolium* spp.), and fescues (*Vulpia* spp.). Typically, non-native grassland includes at least 50 percent cover of the entire herbaceous layer attributable to annual non-native grass species, although other plant species (native and non-native) may be intermixed (City of San Diego 2012). These annuals germinate with the onset of the rainy season and set seeds in the late winter or spring. With a few exceptions, the plants are dead through the summer-fall dry season, persisting as seeds. Non-native grasslands are usually found on fine-textured, usually clay soils, that range from being moist or waterlogged in the winter to being very dry during the summer and fall. Typically, this vegetation community is found in valleys and foothills throughout most of California (except for the north coastal and desert regions) at elevations below 3,000 to 4,000 feet. Non-native grassland is considered a Tier IIIB (Common Upland) by the City of San Diego's MSCP Subarea Plan.

Mostly human disturbance via agriculture has degraded the quality of native habitats throughout a large area of the western half portion of the Preserve. Annual grasslands on-site are dominated by slender wild oat (*Avena barbata*), foxtail chess (*Bromus madritensis* ssp. *rubens*), and smooth brome (*Bromus hordaceus*). Some of these grasslands are punctuated by individual shrubs like California sagebrush, laurel sumac, and coast goldenbush (*Isocoma menziesii*). This habitat provides limited value for most typical sage scrub wildlife species, and is void of sensitive plant species. However, it may provide valuable foraging habitat for raptors.

Vernal Pools. Vernal pools fill with water in the spring, are dry during the summer, and stay dry until winter rains begins. They have a distinctive assemblage of plant species that may be aquatic or may germinate following the drying of the pool. Plant species that make up the vegetation that grows in the vernal pools and around their margins on Del Mar Mesa Preserve



include San Diego button celery (*Eryngium aristulatum* var. *parishii*), San Diego Mesa mint, water star-wort (*Callitriche marginata*), stone-crop (*Crassula aquatica*), short woolly marbles (*Psilocarphus brevissimus*), grass poly (*Lythrum hyssopifolium*), spikerush (*Eleocharis* sp.), California adder's tongue (*Ophioglossum californicum*), downingia (*Downingia cuspidata*), and little mousetail (*Myosurus minimus*).

Eucalyptus Woodland. There is a small patch of eucalyptus woodland on the southwest portion of the site, occupying 2.15 acres. This is a fairly widespread tree in southern California, typically forming monotypic stands of introduced, Australian eucalyptus trees (*Eucalyptus* spp.). The understory is usually depauperate or lacking from either shade or the toxic properties of the leaf litter. Eucalyptus woodlands are typically limited in value, serving only as nesting and perching sites for raptors. Stands of eucalyptus are distributed throughout the Preserve.



Photograph 3-9. Eucalyptus Woodland at Del Mar Mesa Preserve

Southern Willow Scrub. Southern willow scrub occupies 0.17 acre on the Del Mar Mesa Preserve, in the far northeast corner. Southern willow scrub is considered a sensitive wetland habitat by CDFG and U.S. Army Corps of Engineers (USACE). Southern willow scrub is a dense riparian community dominated by broad-leafed, winter-deciduous trees such as willows (*Salix* spp.), and often scattered with Fremont cottonwoods (*Populus fremontii*) and western sycamores (*Platanus racemosa*). This vegetation community is typically found along major drainages but also occurs in smaller drainages. The density of the willows typically prevents a dense understory of smaller plants from growing. The representative species typically grow in loose, sandy, or fine gravelly alluvium deposited near stream channels during flood flows. This community requires repeated flooding to prevent succession to community dominated by western sycamores and Fremont cottonwoods (Holland 1986).

Disturbed land. Disturbed habitat in this document refers to all dirt roads, graded areas, and other areas that lack vegetation. Approximately 15.7 acres in the southwest region of the Del Mar Mesa Preserve are considered disturbed.

3.2.2.2 Vernal Pools

Vernal pools are shallow, isolated, ephemeral wetlands. The microrelief surrounding vernal pools typically consists of small mima mounds or hummocks. Vernal pools fill with water during winter rains and the water evaporates after the rains cease. Plants in vernal pools may be

aquatic or may germinate following the drying of the pool. San Diego mesa hardpan vernal pools have a characteristic suite of plant and animal species. Hardpan vernal pools are primarily found north of Otay Mesa (Holland 1986). Vernal pools are considered to be sensitive habitat by local, state, and federal governments, and it is estimated that over 95 percent of the vernal pool habitat in San Diego County has been destroyed.



Photograph 3-10. Vernal Pool on Del Mar Mesa



Photograph 3-11. Vernal Pool on Del Mar Mesa Preserve

Sensitive plant species occurring in the vernal pools on Del Mar Mesa Preserve include San Diego button celery and San Diego mesa mint. Sensitive animal species within vernal pool habitat on the Preserve include the two-striped garter snake (*Thamnophis hammondi*), western spadefoot, and San Diego fairy shrimp. Other sensitive species typically associated with vernal pools include California adder's-tongue (*Ophioglossum californicum*), Orcutt's brodiaea (*Brodiaea orcuttii*), and San Diego goldenstar.

Numerous vernal pools are on Del Mar Mesa Preserve within areas mapped as chamise chaparral and southern mixed chaparral. Species dominating these pools are water star-wort, stone-crop, small woolly marbles, and grass poly. Some of the larger and deeper pools are distinguished by spikerush (*Eleocharis* sp.). Smaller populations of California adder's tongue are present in some pools, and San Diego button-celery is common in many of the pools. San Diego mesa mint is found in some of the pools as well. Downingia and little mousetail are present in the southeastern pool complex.

3.2.2.3 Wildlife

Del Mar Mesa Preserve supports a diversity of wildlife species. The diversity of animals observed and expected to occur in this area on the mesa is typical of relatively undisturbed native habitat in coastal San Diego County.

Wildlife species that have been observed at Del Mar Mesa Preserve are listed in Appendix 3g. Many other species than were observed during surveys are likely to occur on the Del Mar Mesa Preserve and may be encountered and documented during future monitoring and research studies.

3.2.2.4 Sensitive Biological Resources

Sensitive biological resources on Del Mar Mesa Preserve are shown on Figure 3-10. The locations of some sensitive species observations during past surveys were not mapped though the species was documented as being present. These species should be monitored when funding becomes available.

The City of San Diego has been monitoring some of the species discussed below (see Section 7.3.1), as required by the MSCP. When funding becomes available, it is recommended that future monitoring be done to determine the status of those sensitive species that are not being currently monitored.

a. Sensitive Plant Species on the Del Mar Mesa Preserve

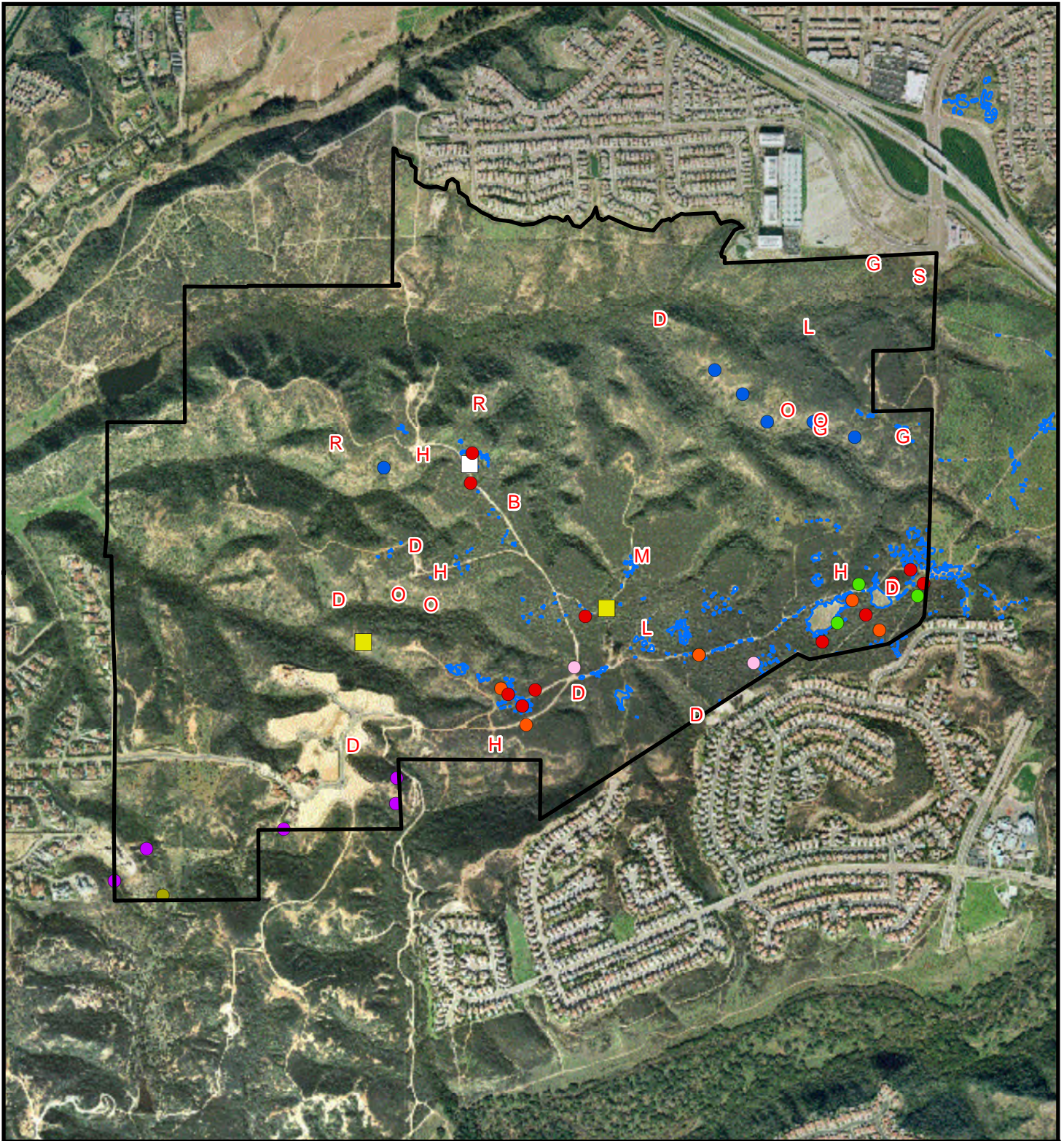
Sensitive plant species observed on the Del Mar Mesa Preserve are listed in Appendix 3h. A complete list of species covered by the MSCP Subarea Plan is in Appendix 4. Those species that have been observed or detected on the Del Mar Mesa Preserve and that are covered by the MSCP Subarea Plan are described below and have specific management directives discussed in Section 7.3.1. They are:

- Del Mar Manzanita
Arctostaphylos glandulosa var. *crassifolia*
- Orcutt's brodiaea
Brodiaea orcuttii
- Wart-stemmed ceanothus
Ceanothus verrucosus
- Del Mar sand aster
Lessingia filaginifolia var. *filaginifolia* (= *Corethrogyne filaginifolia* var. *linifolia*)
- San Diego goldenstar
Bloomeria clevelandii
- San Diego button celery
Eryngium aristulatum var. *parishii*
- San Diego mesa mint
Pogogyne abramsii

Del Mar manzanita is federally listed as endangered. San Diego button celery and San Diego mesa mint are both federally and state listed as endangered.

Ten other species on the CNPS's List 1B and 2, considered eligible for state listing by CDFG and considered CEQA-significant, have been identified on-site. Those listed, but not described below, are described in Appendix 3i:









- San Diego sagewort
Artemisia palmeri



 **Del Mar Mesa Preserve**

Sensitive Plants



(Source: City of San Diego; NDDB)

-  *Arctostaphylos glandulosa* var. *crassif*
-  *Brodiaea orcuttii*
-  *Corethrogyne filaginifolia* var. *linifo*
-  *Eryngium aristulatum* var. *parishii*
-  *Ferocactus viridescens*
-  *Muilla clevelandii*
-  *Myosurus minimus* ssp. *apus*
-  *Pogogyne abramsii*



Vernal Pools

Sensitive Plants
(Source: RECON)

-  *Adolphia californica*
-  *Muilla clevelandii*

Sensitive Animals

(City of San Diego; NDDB)

-  CA rufous-crowned sparrow
-  California gnatcatcher
-  Grasshopper sparrow
-  Little mouseltail
-  Mountain lion
-  Orange-throated whiptail
-  San Diego horned lizard
-  Southern mule deer
-  Western bluebird

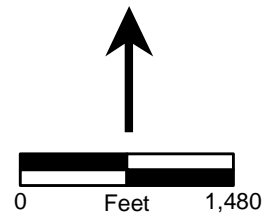


FIGURE 3-10
Sensitive Species on
Del Mar Mesa Preserve

Orcutt's brodiaea
Brodiaea orcuttii

Summer holly
Comarostaphylis diversifolia ssp. *diversifolia*

Del Mar sand aster
Lessingia filaginifolia var. *filaginifolia* (= *Corethrogyne filaginifolia* var. *linifolia*)

Coast barrel cactus
Ferocactus viridescens

Nuttall's scrub oak
Quercus dumosa

San Diego goldenstar
Bloomeria clevelandii

Wart-stemmed ceanothus
Ceanothus verrucosus

Palmer's grappling hook
Harpagonella palmeri var. *palmeri*

California adolphia
Adolphia californica

Three other plant species considered by CNPS to have limited distribution (List 4 and 3 species) are also found on-site:

Western dichondra
Dichondra occidentalis

California adder's-tongue fern
Ophioglossum californicum

Little mousetail
Myosurus minimus

The MSCP-covered plant species on the Del Mar Mesa Preserve are described below, with their status, as currently known, on the Preserve. Sensitive plant species that are not covered by the MSCP are described in Appendix 3i. Several other sensitive plant species that have not been seen on the Del Mar Mesa Preserve could occur there and may be found during future monitoring and research studies.

Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*). Del Mar manzanita is federally listed as an endangered species (USFWS 1996) and is a covered species under the MSCP Subarea Plan. This shrub is in the heath family (Ericaceae), and can be distinguished from the common Eastwood manzanita (*A. glandulosa* ssp. *glandulosa*) by its shorter stature (to four feet) and by leaf and bract characters. This subspecies occurs in southern maritime chaparral on sandstone terraces and bluffs in central coastal San Diego, and in northern coastal Baja California, Mexico. Urban expansion and clearing for agriculture have been responsible for

most of the loss of this species. Del Mar manzanita is a component of the chaparral vegetation communities in the southwestern corner of the Del Mar Mesa Preserve (see Figure 3-10).

Orcutt's brodiaea (*Brodiaea orcuttii*). Orcutt's brodiaea is a CNPS List 1B species. Orcutt's brodiaea is considered sensitive by the City of San Diego. It is found only in San Diego, Riverside, and Orange Counties and in Baja California, Mexico (CNPS 2001). This herbaceous perennial in the lily family (Liliaceae) sprouts from corms. Its preferred habitat in San Diego County is vernal moist grasslands, mima mound topography, vernal pool edges, and occasionally along stream banks. It is known to occur in clay, and sometimes serpentine, soils including Stockpen gravelly loam on Otay Mesa and Redding gravelly loam on Mira Mesa (Reiser 2001). Orcutt's brodiaea has been documented on mesas in the central and southeastern portions of the Del Mar Mesa Preserve (see Figure 3-10).

Wart-stemmed ceanothus (*Ceanothus verrucosus*). Wart-stemmed ceanothus is in the buckthorn family (Rhamnaceae). It is a conditionally covered species under the MSCP Subarea Plan, and a CNPS List 2 species. This large evergreen shrub occurs along coastal San Diego County and northern Baja California, Mexico (Reiser 1996). Wart-stemmed ceanothus is typically found on north-facing slopes as a component of southern mixed chaparral or southern maritime chaparral vegetation communities (Holland 1986). This species produces clusters of small white lilac-like flowers that appear between January and April. The small thick leaves and corky "warts" on the stem are characteristic of the species (Munz 1974). This plant is threatened by loss of habitat to development (CNPS 2001). Wart-stemmed ceanothus is a component of the southern maritime chaparral on the Del Mar Mesa Preserve. The southern maritime chaparral grows on canyon slopes and bottoms in the western half of the Preserve, and on the north-facing slopes of Deer Canyon that runs across the north end of the Preserve.

San Diego button-celery (*Eryngium aristulatum* var. *parishii*). San Diego button-celery is a member of the Apiaceae family. This annual/perennial herb is federally listed as endangered, state listed as endangered, and a CNPS List 1B species. It was also a covered species under the MSCP Subarea Plan; however, the City relinquished federal coverage for vernal pool associated species following the Brewster lawsuit. A vernal pool HCP that includes coverage for San Diego button-celery has been drafted and would provide "take" coverage for this species if adopted. San Diego button-celery is an annual/perennial species restricted in distribution to Riverside County, San Diego County, and Baja California, Mexico, where it occurs within coastal sage scrub, valley foothill grasslands, and vernal pools. San Diego button-celery grows in vernal pool areas in the north and south central, and the southeastern portion of the Del Mar Mesa Preserve.

Coast barrel cactus (*Ferocactus viridescens*). Coast barrel cactus is a CNPS List 2 species and an MSCP-covered species. This perennial stem succulent in the cactus family (Cactaceae) ranges coastally from San Diego County southward into northern Baja California, Mexico. The preferred habitat for coast barrel cactus is on hillsides in Diegan coastal sage scrub, particularly around rock outcrops or in cobbles on warm dry slopes with a southerly exposure. It is also found near vernal pools on Otay Mesa. It is associated with habitat (Stockpen gravelly clay

loam, Miguel-Exchequer rocky silt loam, and Redding gravelly loam soils) (Reiser 2001). Coast barrel cactus is threatened by urbanization, vehicles, and horticultural collecting. Coast barrel cactuses have been found on west- and south-facing slopes in the north central and the northeastern portions of the Del Mar Mesa Preserve.

Del Mar sand aster (*Lessingia filaginifolia* var. *filaginifolia* [=*Corethrogyne filaginifolia* var. *linifolia*]). Del Mar sand aster is a CNPS List 1B species, with the highest rating for rarity, endangerment, and limited distribution (3-3-3) and is a covered species under the MSCP Subarea Plan. This perennial herb is a member of the sunflower family (Asteraceae) with gray-green leaves, violet ray flowers and yellow disk flowers that appear in summer. Del Mar sand aster is found in open coastal sage scrub and southern maritime chaparral on weathered sandstone-derived soils. It is endemic to San Diego County from Batiquitos Lagoon in Carlsbad, south to Del Mar Mesa, Carmel Mountain, and Torrey Pines State Park. Del Mar sand aster has been mapped as occurring in the southwestern corner of the Del Mar Mesa Preserve.

San Diego golden-star (*Bloomeria clevelandii*). San Diego golden-star is a member of the plant family Liliaceae. This herbaceous perennial is an MSCP-covered species and is on List 1B of the CNPS *Inventory* (CNPS 2001). San Diego golden-star is found only in southwestern San Diego County and northern Baja California, Mexico, where it occurs on clay soils in coastal sage scrub, chaparral, and grassland habitats (Munz 1974). It is a perennial bulb threatened by loss, degradation, and conversion of habitat. San Diego golden-star grows near vernal pools, though never within the inundation area of vernal pools. This species occurs in the south-central and southeastern portions of the Del Mar Mesa Preserve.

San Diego mesa mint (*Pogogyne abramsii*). This species is state and federally listed as endangered and is a CNPS List 1B species. San Diego mesa mint is a narrow endemic species and was covered by the MSCP; however, the City relinquished federal coverage for vernal pool associated species following the Brewster lawsuit. A vernal pool HCP that includes coverage for San Diego mesa mint has been drafted and would provide “take” coverage for this species if adopted.

San Diego mesa mint is a member of the Lamiaceae family. This annual herb flowers from April to June and is found only in vernal pools within San Diego County. San Diego mesa mint grows in the vernal pools where are located in the south-central and southeastern portion of the Del Mar Mesa Preserve.

b. Sensitive Animal Species

Sensitive wildlife species that have been observed during the various studies on the Del Mar Mesa Preserve are listed in Appendix 3j. The species described below are covered by the MSCP Subarea Plan, and management directives for them are in Section 7.3.1. Those not covered by the MSCP are described in Appendix 3i.

i. Invertebrates

San Diego fairy shrimp (*Branchinecta sandiegonensis*). The San Diego fairy shrimp is federally listed as endangered and was covered by the City of San Diego's MSCP Subarea Plan; however, the City relinquished federal coverage for vernal pool associated species following the Brewster lawsuit. A vernal pool HCP that includes coverage for San Diego fairy shrimp has been drafted and would provide "take" coverage for this species if adopted. This species is restricted to vernal pools in coastal southern California and south to northwestern Baja California, Mexico (USFWS 2000). The life cycle of fairy shrimp is relatively simple, with larvae hatching out of resting eggs after being covered with water for a prescribed period of time, developing into adults, and mating and laying eggs before the pool dries. The development time is influenced both by the water temperature and the species-specific responses to environmental cues. San Diego fairy shrimp are found in vernal pools that are generally less than 30 centimeters deep. This species takes between 3 and 8 days to hatch and development to the adult stage takes between 7 and 20 days. They are generally found in pools without other fairy shrimp but have been found with versatile fairy shrimp and Riverside fairy shrimp. During a 2001 survey, immature specimens were incidentally observed in vernal pools by RECON biologists.

ii. Amphibians

Western spadefoot toad (*Spea hammondi*). The western spadefoot toad is a CDFG species of special concern. This species is found from central northern California through the coast ranges from San Francisco south into Baja California, Mexico (Stebbins 1985). The western spadefoot toad is primarily a species of the lowlands, frequenting washes, floodplains of rivers, alluvial fans, alkali flats, temporary ponds, and vernal pools. This species is generally found in areas of open vegetation with sandy or gravelly soil (Stebbins 1985). The main threat to the western spadefoot toad is believed to be habitat loss and fragmentation, although pesticide uses have been implicated as well. This species has been detected on the Preserve, but its locations have not been mapped.

iii. Reptiles

San Diego horned lizard (*Phrynosoma coronatum blainvillii*). The San Diego horned lizard is a CDFG species of special concern and an MSCP-covered species. This lizard ranges from coastal southern California to the desert foothills and into Baja California, Mexico. In Riverside County, the San Diego horned lizard occurs in the western half of the county east to the desert passes. It is often associated with coastal sage scrub, especially areas of level to gently sloping ground with well-drained loose or sandy soil (Mills 1991). This animal usually avoids dense vegetation, preferring 20 to 40 percent bare ground in its habitat. Populations along the coast and inland have been severely reduced by loss of habitat. Where it can be found, the San Diego horned lizard can be locally abundant, with densities near 20 adults per acre. They are largely dependent on harvester ants for food, which contributes to about half their diet. Adults are active

from late March to late August; young are active from August to November or December. This species has been observed throughout the Preserve in chaparral habitat.

Belding's orange-throated whiptail (*Aspidoscelis hyperthya beldingi*). The Belding's orange-throated whiptail is a CDFG species of special concern and an MSCP-covered species. This species ranges from southwestern San Bernardino County to the tip of Baja California, Mexico, in areas of low, scattered brush and grass with loose sandy loam soils. It can be found in open coastal sage scrub, chaparral, washes, streamsides, and other sandy areas with rocks, patches of brush, and rocky hillsides (Stebbins 1985). The orange-throated whiptail feeds primarily on subterranean termites. It is active during the spring and summer months and hibernates during the fall and winter. Adult orange-throated whiptails generally hibernate from late July or early August until late April. The immature whiptail has a shorter inactivity period, usually hibernating from December through March. Hibernation sites are on soft, well-drained slopes with southern exposure and little or no vegetation cover, and road cuts tend to be suitable. The orange-throated whiptail has declined within its range as a result of habitat loss and fragmentation (McGurty 1980). This species has been observed on the Preserve in chaparral habitat.

iv. Birds

Northern harrier (*Circus cyaneus*). Northern harriers are a CDFG species of special concern, and nesting sites are considered sensitive by CDFG. This raptor is also an MSCP-covered species. The species is a fairly common winter visitor and a formerly widespread breeder throughout California. The northern harrier hovers close to the ground while foraging in grasslands, agricultural fields, and coastal marshes. The northern harrier nests on the ground, with the nest concealed by marsh plants or other dense vegetation, in marshes and also on grasslands, in fields, or in areas of sparse shrubs (Unitt 2004; Zeiner et al. 1990). This species has been nearly eliminated as a nesting species in southern California because of disturbance and loss of suitable habitat (Small 1994). The local breeding population undoubtedly varies much with rainfall and the abundance of prey, and in San Diego County, was estimated in 2004 to be 25–75 pairs (Unitt 2004).

Cooper's hawk (*Accipiter cooperi*). The Cooper's hawk is an MSCP-covered species. Cooper's hawks range throughout most of the United States (National Geographic Society 1983).

In San Diego County, they are widespread over the coastal slope wherever there are stands of trees. They traditionally nest in oak woodlands and sometimes in riparian habitats, but also will use eucalyptus trees (Unitt 1984); during the bird atlas project (Unitt 2004) observers found twice as many nests in eucalyptus as in oaks. They nest high in trees but beneath the canopy. The Cooper's hawk is most numerous in lowland and foothill canyons and in the urban areas of the City of San Diego (Unitt 2004), where it forages primarily on songbirds but is also known to eat small mammals (National Geographic Society 1983). Although quantitative data is unavailable, Unitt (1984) speculates that breeding Cooper's hawks have declined in San Diego

County as a result of human disturbance related to urban and agricultural development. The breeding habitat on Del Mar Mesa Preserve is marginal for Cooper's hawks; however, there is a low to moderate potential for Cooper's hawk to forage within the Preserve.

Western bluebird (*Sialia mexicana*). The western bluebird is recognized as a locally rare species and is an MSCP-covered species. Western bluebirds occur throughout the year in foothills and mountains of San Diego County and are also residents of the more inland parts of the coastal lowland (Unitt 1984). The western bluebird breeds in open woodlands of oaks, riparian deciduous trees, or conifers with herbaceous understory and, in winter, uses more open habitats (Unitt 1984). Their breeding season is from May to July with egg dates from May 1 to June 12 (Unitt 1984). Western bluebirds generally require trees and shrubs for cover and will nest and roost in cavities of trees or snags. In the non-breeding season, western bluebirds will supplement their diet with berries of mistletoe, poison oak, and elderberry, among other species, and the presence of mistletoe berries may govern local occurrence in winter (Grinnell and Miller 1944). Competition for nesting cavities from non-native European starlings (*Sturnus vulgaris*) and house sparrows (*Passer domesticus*) threaten western bluebirds (Zeiner et al. 1990).

Coastal California gnatcatcher (*Polioptila californica californica*). The coastal California gnatcatcher is federally listed as threatened, a CDFG species of special concern, and an MSCP-covered species. This resident species occurs below the 2,400-foot elevation level, with 90 percent of the birds at locations below 1,000 feet. The San Diego County population exceeds 2,000 pairs, with fires in 1996 and 2003 temporarily reducing the carrying capacity of several of the habitat cores for this species (Unitt 2004). Wildfires of October 2003 affected 4 percent of the known coastal California gnatcatcher occurrences, 16 percent of its designated critical habitat, and 28 percent of the USFWS model for suitable habitat (Bond and Bradley 2004, as cited in Unitt 2004).

Coastal California gnatcatchers occur in the coastal slopes of southern California from Ventura County and the Los Angeles basin south to Baja California, Mexico (Atwood 1980; Jones and Ramirez 1995). It breeds only in coastal sage scrub vegetation preferring patches dominated by California sagebrush and flat-top buckwheat and avoiding those dominated by sage, laurel sumac, and lemonadeberry (Weaver 1998a, as cited in Unitt 2004). A breeding pair's territory ranges from less than one hectare along the coast to over 9 hectares farther inland, and is about 80 percent larger during the non-breeding season (Unitt 2004). During dry months, the species will forage in adjacent riparian areas. The coastal California gnatcatcher population in southern California has been reduced through loss of habitat to urban and agricultural development of the coastal slopes. Nest predation by various animals and brood parasitism by brown-headed cowbirds is also reducing the population (Atwood 1980; Unitt 1984 and 2004). This species was documented in Diegan coastal sage scrub and southern maritime chaparral habitat on the Preserve during surveys in 1994.

Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*). The southern California rufous-crowned sparrow is a CDFG species of special concern and an

MSCP-covered species. This resident bird ranges throughout coastal southern California, from Santa Barbara County south to San Diego County and into northwestern Baja California, Mexico (Grinnell and Miller 1944). Nests are most often made on the ground at the bases of bunchgrasses and low shrubs. Generally they begin nesting during the third week of March, with a few pairs starting earlier or later (Unitt 2004). Habitat affiliations are coastal sage scrub, chaparral, and adjacent grassy areas (Unitt 1984). The birds remain in their established territories for life, with juveniles probably dispersing only a few miles from where they were hatched (Unitt 2004). Habitat affiliations are coastal sage scrub, chaparral, and adjacent grassy areas (Unitt 1984). Insects are the primary food item of this species. Urbanization has decreased the amount of habitat suitable for southern California rufous-crowned sparrows.

v. Mammals

Mountain lion (*Felis concolor*). The mountain lion is a California fully protected species and is covered by the MSCP Subarea Plan. It has shown dramatic decline in southern California. Mountain lions are widespread but uncommon in California, ranging from sea level to alpine meadows. Mountain lions are most abundant in riparian and bushy habitats, as long as southern mule deer (their primary food source) are present. Home ranges for adult animals range from 8 to 40 square kilometers, which is larger for males and smaller for females. Numbers appear to be on the increase in California (Zeiner et al. 1990), but their main threat is human development, which leads to fragmentation of the habitat. As the habitat is fragmented, the movement of the lions is restricted which increases the associations with humans (Zeiner et al. 1990). Mountain lion has been observed on the Preserve; however, its current status is not known.

Southern mule deer (*Odocoileus hemionus fuliginata*). The southern mule deer is an MSCP-covered species. Mule deer inhabit a variety of vegetation communities, including coastal sage scrub, chaparral, grassland, woodland, and riparian systems. Distribution extends from Baja California into portions of San Diego, Orange, Imperial, and West Riverside Counties. Adults' antlers may reach a four-foot spread. Mule deer primarily forage upon herbaceous plants, but will also eat various shrubs and trees (National Audubon Society 1991). The population of mule deer that uses the Del Mar Mesa Preserve is presumed to be stable.

3.2.2.5 Wildlife Corridors

Corridor linkages existing between the Del Mar Mesa Preserve and surrounding areas include Deer Canyon to the northern border of the preserve that connects with the Santa Monica Ridge. Wildlife corridors in the Carmel Mountain/Del Mar Mesa vicinity are illustrated on Figure 3-5. The Santa Monica Ridge is bordered to the north by McGonigle Canyon. This corridor facilitates passage onto Black Mountain Park. Continuing eastward from Deer Canyon is the Carmel Valley. This corridor will be linked to the Gonzales Canyon in the future by a wildlife corridor that is currently being revegetated. Traveling south of Carmel Valley is a corridor that connects with the southwest corner of Del Mar Mesa Preserve, which feeds into Los Peñasquitos Canyon

Preserve. The Neighborhood 10 development impedes movement of wildlife from Los Peñasquitos Canyon into Carmel Mountain directly, but there are a couple of entrances via the southeast corner of Carmel Mountain Preserve, and from using the Carmel Country Road wildlife tunnels, which access Carmel Mountain on the northeast corner via Shaw Valley. The major connections between the Carmel Mountain Preserve to Torrey Pines State Reserve are restricted mainly to a few narrow routes along Sorrento Valley Road, Carmel Valley Road, and Carmel Mountain Road.

The Sorrento Valley corridor is outside of the Carmel Mountain and Del Mar Mesa Preserves; however, it is an important linkage between the coastal and inland areas of San Diego. The Sorrento Valley corridor was the only functional wildlife corridor to areas outside of the Torrey Pines Reserve in Crooks' 1997 study. A corridor previously labeled as functional by Ogden (1996), the Carmel Mountain corridor, no longer appears to be used, apparently due to construction and development over the last five years. No evidence of the use of the Sorrento Valley corridor by mule deer, bobcats (*Lynx rufus*), or mountain lions was found in 1992. The pressure of the development of Carmel Mountain Road has likely been the cause of their "switching" to the Sorrento Valley linkage.

At least two routes are used by predators and mesopredators through the Sorrento Valley corridor. The northern route starts at the west end of Los Peñasquitos Canyon, passes under Interstate 805 (I-805) and Interstate 5 (I-5), goes along the lawn south of the business complex on Sorrento Valley Road, passes under Sorrento Valley Road, and ends in Los Peñasquitos Lagoon. The southern route starts on the east side of Los Peñasquitos Canyon and passes under I-805 and I-5, goes under Sorrento Valley Road, and ends in Los Peñasquitos Lagoon. Both routes follow the natural riparian channel between Los Peñasquitos Lagoon and Los Peñasquitos Canyon.

Six species have been found to use the Sorrento Valley Wildlife corridor. All species use both routes within the corridor. Bobcats and coyotes use the corridor several times a month, while evidence of the coyote, fox, and raccoon are found almost nightly. Opossums and skunks frequently use the wildlife corridor. No deer tracks were found, and this is likely due to the low underpass limiting the use of the corridor by deer. No mountain lion tracks were found either; however, this may be due to the fact that the duration of past surveys was too short to register a rare event.

As the only functional corridor between the Torrey Pines State Reserve and other core areas, Sorrento Valley corridor is vital, and requires restoration, protection and maintenance to continue to function. A number of management measures to ensure the functionality of the Sorrento Valley corridor, not only for the species currently using it, but for the mountain lion and mule deer as well, are outlined in Crooks (1997).

The Carmel Valley Corridor was functional for mountain lion, bobcat, coyote, and fox in 1992 (Ogden 1992). It was not thoroughly surveyed by Crooks in 1997 because the freeway was under construction. Crooks (1997) recommends that current construction plans be analyzed and

construction be monitored to ensure a functional corridor is created. Two I-5 bridges have been constructed over the Carmel Valley Creek channel. These parallel bridges measure approximately 8 feet high and 40 feet wide, and together they cover an over 200-foot stretch of the creek. It has not yet been determined if wildlife accepts this underpass as a viable route of travel, or if it is now or will remain accessible to wildlife.

The Carmel Mountain underpass was used by deer, mountain lions, bobcats, and coyotes in 1992 (Ogden 1992), but it is no longer functional. In 1992, wildlife could travel west from Del Mar Mesa, down Carmel Mountain Road, then across a small dirt road. West of the I-5 underpass, the corridor turned north and followed a narrow coastal sage scrub berm between I-5 to the east and an industrial park to the west. At the north end of the industrial park, the corridor turned west and followed a chaparral vegetated ravine to Sorrento Valley Road. Animals crossed the two-lane road and railroad tracks before entering Peñasquitos Lagoon and the main reserve. It is likely that this corridor has been permanently severed due to additional office development on the west side of I-5, widening and paving Carmel Mountain Road through the underpass, and current housing construction on the east side of I-5.

The existing Environmental Impact Report for Carmel Valley Neighborhood 10 (Neighborhood 10) (RECON 1994) displays an open space corridor from Los Peñasquitos Canyon running northeast to Carmel Mountain. This corridor is intended to provide a critical avenue for wildlife movement between Los Peñasquitos Canyon and McConigle Canyon/Carmel Valley to the north. Several sensitive reptile, mammal, and bird species currently use this corridor to meet their foraging and home range requirements. When development of Neighborhood 10 and Sorrento Hills planning area is completed, this will be one of the only remaining corridor linkages designated as open space. Without this connection, wildlife movement between Carmel Valley and Los Peñasquitos would decrease dramatically, resulting in increased fragmentation of many sensitive populations.

The Del Mar Mesa (Subarea V) Specific Plan EIR (City of San Diego 1996) states that the Del Mar Mesa Preserve area is considered to be a high value core habitat area. Adjacent to this area, south of the preserve, lays Los Peñasquitos Canyon Preserve. Los Peñasquitos Lagoon and Torrey Pines State Reserve lie a few miles to the west, via Carmel Valley. In addition, lands to the north currently provide habitat and wildlife movement capability, including the San Dieguito River valley and Black Mountain Park.

The City of San Diego, along with a number of wildlife conservation groups and agencies, recognize the Del Mar Mesa as an important area that allows wildlife movement between Los Peñasquitos Canyon and Deer Canyon, McGonigle Canyon, Carmel Valley, and open space areas to the north, west, and east. According to the Del Mar Mesa (Subarea V) Specific Plan EIR (City of San Diego 1996), the movement of animals is not confined to narrow corridors. Several large mammals use many of the dirt roads, such as mule deer, coyote, bobcat, mountain lions, as well as smaller animals. Birds are unrestricted, and have access to all portions of the site that suit them. Regions that funnel wildlife movement in Subarea V, include the north-south trending canyons and tributary drainages to Los Peñasquitos Canyon, Carmel

Valley, Deer Canyon, and Shaw Valley. Deer Canyon is considered a major corridor because of its relative isolation from disturbance and its water sources.

The City of San Diego MSCP Subarea Plan (1997) recognizes that this core resource area encompasses one of the few intact natural open space areas in coastal San Diego County that is still linked to larger expanses of habitat towards the east.

3.2.3 Cultural Resources

This section provides a background of the cultural resources on the Preserve.

3.2.3.1 Cultural Setting

a. Prehistoric Period

The area of the county occupied by the Preserves has a long and rich history of archaeological investigation. Malcolm Rogers, an early pioneer of archaeological survey, site documentation, and testing, concentrated his work in the southern California deserts and coast. Rogers, from the San Diego Museum of Man, recorded numerous local sites during the 1920s. He subsequently presented a cultural scenario for prehistoric people who created these sites. Rogers suggested that these people were nomadic gatherers who subsisted mainly on shellfish collected from beaches and around lagoons, and made stone tools which might best be described as “crude” (Rogers 1929).

Based on the proximity of these sites to the community of La Jolla, Rogers named this the La Jolla complex, or tradition, and the name has remained. It is interesting to note that Rogers hypothesized that the La Jolla complex was the oldest archaeological tradition in the region, primarily because of what he interpreted to be simple stone artifacts. This is now known to be incorrect. The La Jolla complex, as identified by Rogers, has been reliably radiocarbon dated between 8,000–2,000 years before the present (B.P.). The cultural materials identified as belonging to this tradition have been found in sites with radiocarbon dates as much as 8,500 years B.P.

Since the early proposition by Rogers that the La Jolla tradition was the most ancient of the archaeological manifestations in the San Diego region, clarification has been provided by the discovery of older materials and the recognition that the “crude” quality of the La Jolla artifacts is not a sound basis for a basal chronological placement. Later in his life, Rogers made it quite clear that his original thinking on this matter was in error.

The earliest archaeological materials in the county are attributed to a tradition, or phase, that is known as the San Dieguito. This phase, which begins in the county by about 9,500 years B.P., is a southern California reflection of a more ancient Folsom/Clovis tradition of large game and aquatic resource use concentrated around what are now desert areas and the Great Basin pluvial lakes of the late Pleistocene epoch (Moratto 1984). Artifacts of this period are generally

described as stone bifaces, lanceolate projectiles, crescentics, and a variety of scrapers and choppers. Late in the tradition, pressure flaking was introduced. The site assemblages tend to be found as surface scatters or shallow deposits on ridge tops and overlooking the Pacific Ocean, leading to a characterization of these people as nomadic hunters. Pleistocene megafauna began a decline, ultimately resulting in their extinction during the same time period as the first evidence of prehistoric human occupation begins in southern California (circa 10,000 B.P.). Thus, an economy based on large game hunting may have been practiced here for no more than 1,000 years. This may explain the relative scarcity of San Dieguito artifacts in the county. On-going research suggests that these people supplemented hunted foods and raw materials with gathered or foraged materials to a greater extent than was once portrayed. Sites of this ancient time are relatively unusual and often appear to have been disturbed or “contaminated” by archaeological materials from the subsequent traditions, the La Jolla and Kumeyaay.

Radiocarbon dating of two sites in western San Diego County, the Harris site and Rancho Park West, indicates that beginning circa 8,000 years B.P., the San Dieguito tradition was replaced by the La Jolla tradition, which held sway for roughly 6,000 years. There is considerable debate as to whether the San Dieguito people continued to occupy the county, or if they abandoned this area when the La Jolla tradition people arrived (Moriarty 1967; Kaldenberg 1982; Gallegos and Carrico 1984; Wallace 1978). Extinction of large game and the conversion to an already incipient maritime and floral resource orientation seems the simplest explanation of in situ culture change.

Stone tools of the La Jolla period appear to be “crude” compared with the San Dieguito holdings in items. Stone artifacts dating to the La Jolla phase sites do not reflect the variety of types and quality of craftsmanship that is represented in the San Dieguito tradition. There appears to be more expedient selection of raw material. Rather than searching out basalts and fine-grained meta-volcanics, the La Jolla tradition people seemed content to use the more readily available river cobbles. This type of rock is not well suited to fine working, and many of the tools appear to have been created and used expediently as a need for a cutting or scraping edge arose. Fine craftsmanship is lacking in the lithic tools of this period, and there is little to suggest that stone working was anything but a means to an end. The La Jolla phase tools are often made from cobble-based core stones with unifacial and bifacial edge damage from scraping and battering. While there is obvious edge preparation, the removal of flakes from these tools is through hard hammer percussion, resulting in undulating and imprecise edges.

In contrast to San Dieguito sites, La Jolla phase sites tend to yield ground stone implements, predominantly manos, and slab or basin metates. The settlement pattern is also distinctive. Sites are found both inland and along the coastal margin, with concentrations in major drainages where plant resources could be processed and around the estuaries or lagoons. These sites often reflect a depth of cultural deposit that is not found at sites of the preceding phase, and at coastal locations, shellfish refuse accumulations are common. This is consistent with the economic adaptation of the La Jolla-era peoples. Exploitation of marine and seed

resources requires a very different tool kit than that of hunting large game. Further, one would expect a very different social and cultural system to evolve out of these different adaptive strategies.

By circa 2,000 years B.P., Yuman-speaking people were present in the Gila/Colorado River drainage. Within a short time, some of these groups had migrated further west and entered Imperial and San Diego Counties, bringing changes in subsistence patterns, technology, and customs. The Yuman-speaking people are the ancestors of the ethno-historically known Kumeyaay (also referred to in earlier literature as Diegueño due to their association with the San Diego Mission). Archaeological findings identify a number of changes resulting from this contact. Artifacts associated with this tradition include ceramics; small, finely worked triangular projectile points; bedrock milling equipment, in particular pestles and mortars; and scrapers. One of the most distinctive markers of contact with desert groups is the introduction of ceramic technology. However, there is some evidence that the original Yuman speakers who entered the county 2,000 years B.P. did not use pottery and that the ceramic tradition was introduced as late as 1,000 years B.P. (Clevenger and Schultze 1995).

Yuman traditions of plant processing are also distinctive. These activities included grinding on bedrock surfaces, creating deep “conical” depressions on bedrock surfaces, and stone bowls. In addition to the mano and metate implements that were already present, the Yuman assemblage includes pestles and deeper and narrower mortars or bowls and the extensive use of bedrock outcroppings as processing areas. In this period, mortuary customs were also changed from flexed inhumation to cremation.

b. Historic Period

Spanish colonization of Alta California began in 1769 with the migration of Spanish and Mexican troops, religious personnel, and civilians into the San Diego region. The landing for the seagoing portion of this excursion was the San Diego Bay, with a landfall near the area that is identified as Old Town. This group was followed by an overland expedition and a settlement was established at the location that is now within Presidio Park. Within a few years, the sacred and military elements of the colonial forces were separated and the mission portion of this early settlement was moved to the east, in Mission Valley, where the settlement was named Mission San Diego de Alcalá. The siting of this mission was on a large Native American village, which is known from ethnographic sources as Nipaguay.

Spanish colonial activities throughout Alta California affected all of the aboriginal groups from the coast, where initial contact took place, to the inland areas. The Mexican period (1822–1848) saw the continued displacement and disruption of traditional lifeways primarily through the expansion of the land grant program and development of extensive rancho holdings.

Granting of statehood and the gold rush brought many changes for California generally and for San Diego County specifically. By the late 1800s, development in the county was well under way with the beginnings of a recognizable downtown San Diego area and the gradual

development of a number of outlying communities, many of which were established around previously defined ranchos and land grants.

The area directly around the two Preserves was not included in any of the rancho land grants in either the Spanish or Mexican periods. Carmel Valley to the north was the site of an open-range sheep ranch established in the 1770s by a retired soldier from the San Diego Presidio. This soldier, named Cordero, built an adobe dwelling in the valley, roughly located just east of I-5 and south of Carmel Valley Road. Cordero lived there until his death, and for a time both McGonigle Valley and Carmel Valley were referred to as “Cordero” (Northrup 1989).

Don Jose Antonio de Jesus Serrano built a second adobe in Carmel Valley (Northrup 1989). Although there are no structures dating to the Spanish or Mexican periods in the Preserve areas or immediate vicinity, it is likely that cattle and sheep, especially the Cordero flocks from the north, grazed the Carmel Mountain Preserve lands.

Rancho los Peñasquitos, granted to Francisco Maria Ruiz in 1823, is located east of the Carmel Mountain Preserve and forms the southern border of the Del Mar Mesa Preserve. Los Peñasquitos was the first private land grant of the Mexican period in San Diego County. In 1836 Ruiz, who had no spouse or descendents, deeded the rancho to Francisco Maria Alvarado. George Alanzo Johnson, was given one-half interest in the rancho in 1862, when he married into the Alvarado family. Johnson moved in and made considerable improvements to the rancho in the next 20 years. J. S. Taylor acquired the rancho in the early 1880s, remodeling the ranch house and continuing to run cattle. The rancho’s subsequent owners made some alterations and additions, using the ranch house as a bunkhouse. In 1974 the County of San Diego purchased 193 acres, including the Johnson Taylor ranch house complex, as part of a proposed Los Peñasquitos Regional Park.

Ranching was the main occupation of the residents in this part of the county from the late nineteenth through the early twentieth century. The largest ranch in the vicinity of the Carmel Mountain Preserve was owned by the George McGonigle family, for which McGonigle Canyon is named. In 1899, the McGonigles sold over 1,000 acres of land to the Sisters of Mercy, a Catholic order of nuns associated with Mercy Hospital. Structures were built and the sisters cultivated the surrounding land. The farm supplied vegetables and dairy products to Mercy Hospital (Mikesell 1988). The sisters named the property Mount Carmel Ranch, from which the valley took its modern name Carmel Valley.

Another family, the Knechtels, moved to the Carmel Mountain area from Nebraska in the 1890s. The original Knechtel homestead, now recorded and designated CA-SDI-11724H, is located in the northeast corner of the Carmel Mountain Preserve. Anton Knechtel occupied the homestead from 1889 to 1903. He was buried on his farm, the grave being located approximately 100 meters north of the farm site, on a ridge. Although no structures still stand at the farm site, foundations and piles of wood remain, and his grave remains in good condition. The Knechtel family continued to dry farm beans on various tracts of land in Carmel Valley through the late 1980s.

3.2.3.2 Cultural Resources Found on the Del Mar Mesa Preserve

Literature and site records for recorded cultural resources were reviewed in 2001 (Price and Cheever 2002). Archival information from the South Coastal Information Center and the San Diego Museum of Man show 65 previously recorded prehistoric and historic sites on the two Preserves.

All of Subarea V, which includes Del Mar Mesa, has been included in previous surveys (City of San Diego 1996). As a result of these surveys, 38 prehistoric and historic archaeological sites are recorded within the Del Mar Mesa Preserve boundaries (Table 3-3). Of these sites, 24 are prehistoric, two are historic, and 12 are prehistoric isolates. One prehistoric site (CA-SDI-11909), and one historic site (CA-SDI-13077H), were previously evaluated and the historic site was determined to be potentially significant (Schaeffer 1998).

The prehistoric sites are all listed as “lithic scatters,” “chipping stations,” or quarries. They are the result of testing the cobbles that eroded out of the ridge edges. The testing determined how suitable the material was. These sites have a limited variety of artifact types, usually consisting of flakes, shatter, cores, and possibly a few flaked stone tools. The potential for subsurface deposits is very low for such sites, due to the limited variety of tasks and small amount of time needed to test potential cobbles. No habitation sites that would have a wide range of artifact types or subsurface deposits were recorded. The 12 isolates consist of one or two flakes or cores and two stone tools.

The historic site, CA-SDI-13077H, has several cobble features, consisting of two small cobble circles, two large filled cobble circles, and a cobble rectangle with semicircular extensions. A low-density trash scatter surrounds the features. No determination of the age of the site has been proposed.

One of the prehistoric sites (CA-SDI-10138A-B) could not be relocated in recent surveys and is considered destroyed.

**TABLE 3-3
RECORDED CULTURAL RESOURCES IN DEL MAR MESA PRESERVE**

CA-SDI	SDM-W	P-37-	Site Description	Site Recorded	Report Reference
10137	3568		3 chipping stations, 11 cores, 36+ flakes	Oct. 1995	Gallegos & Assoc. 1995
10305	3687		Light lithic scatter, a few cores, updated in 2000	Oct. 1995	Gallegos & Assoc. 1995
14119	6596		Light lithic scatter, 4 cores, 5+ flakes, disturbed by grading	Oct. 1995	Gallegos & Assoc. 1995
14121	6598		Sparse lithic scatter (FLAs*, milling, a few flakes)	Oct. 1995	Gallegos & Assoc. 1995
14122	6599		Cobble quarry site, cores and flakes	Oct. 1995	Gallegos & Assoc. 1995
14123	6600		Chipping station, 3 cores, 12+ flakes	Oct. 1995	Gallegos & Assoc. 1995
14124	6601		Lithic scatter with chipping station, several cores, 24+ flakes	Oct. 1995	Gallegos & Assoc. 1995
14125	6602		Light lithic scatter, 3 cores and numerous flakes	Oct. 1995	Gallegos & Assoc. 1995
14126	6603		Sparse lithic scatter, cores, biface frag. flakes	Oct. 1995	Gallegos & Assoc. 1995
14127	6604		Chipping station, 5 cores, 12+ flakes	Oct. 1995	Gallegos & Assoc. 1995
14128	6605		Sparse lithic scatter, cores and flakes	Oct. 1995	Gallegos & Assoc. 1995
14129	6606		Sparse lithic scatter, cores and flakes	Oct. 1995	Gallegos & Assoc. 1995
14130	6607		Sparse lithic scatter, 3 cores, 6+ flakes	Oct. 1995	Gallegos & Assoc. 1995
14131	6608		Flaking station, 2 cores, 3+ flakes	Oct. 1995	Gallegos & Assoc. 1995
14132	6609		Sparse lithic scatter, 2 cores, 2 fla, 30+ flakes	Oct. 1995	Gallegos & Assoc. 1995
14133	6610		Sparse lithic scatter, 3 cores, 1 preform, 15+ debitage	Oct. 1995	Gallegos & Assoc. 1995
14134	6611		Sparse lithic scatter, 1 core, 2 tools, 1 flake	Oct. 1995	Gallegos & Assoc. 1995
14135	6612		Sparse lithic scatter, 2 cores, 2 flakes	Oct. 1995	Gallegos & Assoc. 1995
14136	6613		Chipping station, 1 core, 5 flakes	Oct. 1995	Gallegos & Assoc. 1995
14137	6614		Sparse lithic scatter, 2 flaked lithic artifacts	Oct. 1995	Gallegos & Assoc. 1995
14138	6615		Sparse lithic scatter, cores and flakes	Oct. 1995	Gallegos & Assoc. 1995
14139	6616		Sparse lithic scatter, cores, hammerstone, flakes	Oct. 1995	Gallegos & Assoc. 1995
11909	6721		Lithic scatter, collected and tested by B. Smith in 1990	1990	Smith 1990
10138A-B	3569A-B		Recorded as lithic scatter, destroyed by 1993		Gallegos & Assoc. 1993
13077H			3 cobble features (possible foundation), evaluated by Schaeffer 1998	Feb. 1993	Schaeffer 1998
14147H	6620		Trash deposit and possible foundation	Oct. 1995	Gallegos & Assoc. 1995

TABLE 3-3
RECORDED CULTURAL RESOURCES IN DEL MAR MESA PRESERVE
(continued)

CA-SDI	SDM-W	P-37-	Site Description	Site Recorded	Report Reference
	5424		Isolate, broken point	1992	Gallegos & Assoc. 1992
	6547	14177	Isolate, 2 flakes	July 1995	Gallegos & Assoc. 1995
	6636		Just outside west boundary, isolated flake	Oct. 1995	Gallegos & Assoc. 1995
	6637	14510	Isolated quartzite core	Oct. 1995	Gallegos & Assoc. 1995
	6638	14511	Isolated flake	Oct. 1995	Gallegos & Assoc. 1995
	6643	14516	Isolate, 2 flakes	Oct. 1995	Gallegos & Assoc. 1995
	6644	14517	Isolate, 1 core	Oct. 1995	Gallegos & Assoc. 1995
	6645	14518	Isolate, 2 quartzite cores	Oct. 1995	Gallegos & Assoc. 1995
	6646	14519	Isolate, 1 core, 1 core/scrapper	Oct. 1995	Gallegos & Assoc. 1995
	6647	14520	Isolate, flake and scrapper	Oct. 1995	Gallegos & Assoc. 1995
	6648	14521	Isolate, 1 quartzite core	Oct. 1995	Gallegos & Assoc. 1995
	6649	14522	Isolated core	Oct. 1995	Gallegos & Assoc. 1995

*FLA = Flaked lithic artifact

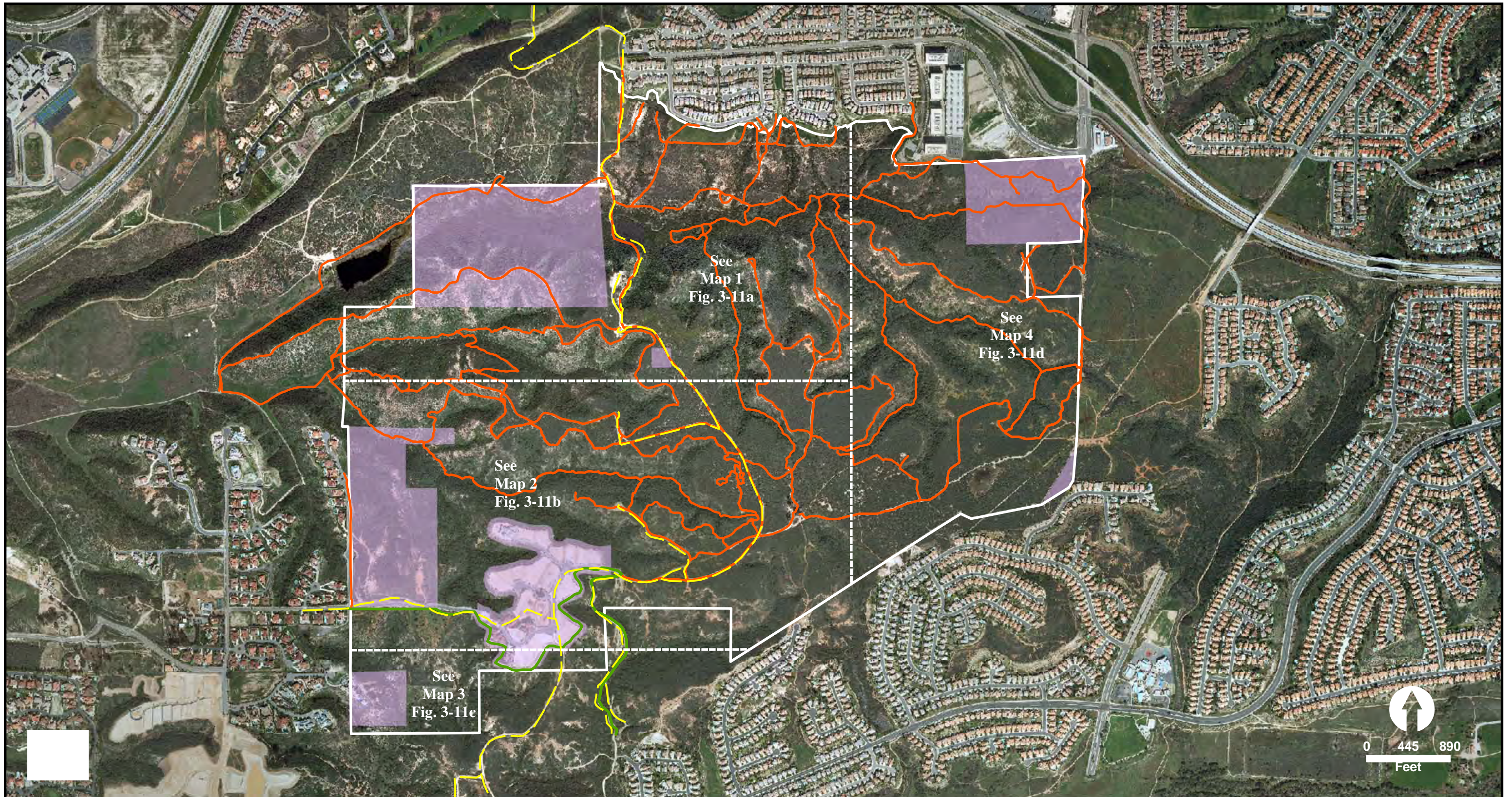
3.2.4 Land Use and Recreation

The Del Mar Mesa Preserve is owned by private land holders and four public land owners/managers (see Figure 2-2): City of San Diego, County of San Diego, CDFG, and USFWS. Each of these entities has mandates that direct their management of open space preserves. Five parcels on Del Mar Mesa Preserve have been preserved as mitigation by (1) Metropolitan Wastewater Department, (2) public land managed by a non-profit organization (formerly TET), (3) Mira Mesa Market Center, (4) Environmental SVCS and 5) the Deer Canyon Mitigation Bank (see Figure 2-2).

A network of roads and trails (Figure 3-11a through 3-11d) is located throughout the Del Mesa Preserve and are mainly SDG&E easement access roads, wide trails used by vehicles, horseback riders, bicyclists, and people on foot; and narrow footpaths or single-track trails. Trail widths vary from a few feet to 30 feet where easement road width has been expanded.

Most of the roads are maintained by SDG&E for access to their transmission line towers. The southeastern-most road accesses the Vernal Pool Reserve on CDFG property and ends at the southeastern corner of the Preserve. Many of the roads and trails bisect vernal pools within the chaparral. Vernal pools are located alongside and, in some cases, within the roads on the Preserve. Vehicles have made deep depressions and road ruts during the wet seasons and the depressions and ruts remain during the dry parts of the year. In addition to using the wider, easement roads people also use the more narrow trails, causing them to widen into the adjacent vegetation. People have illegally cut the CDFG Vernal Pool Reserve fence in several places to facilitate access between the preserves.

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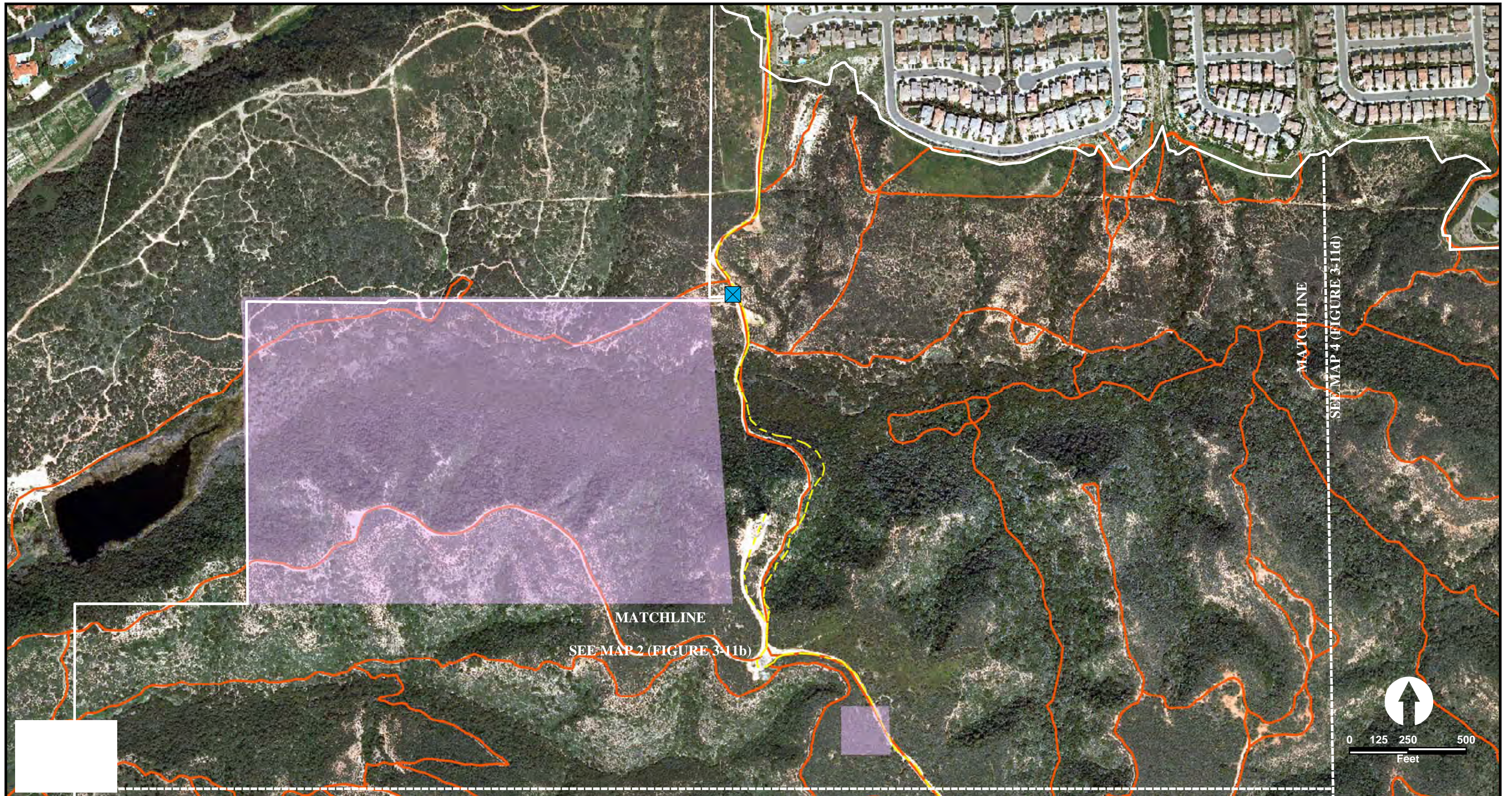


-  Existing unauthorized paths
-  Utility access roads
-  Existing trails per Del Mar Mesa Specific Plan
-  Private property

Notes:
 1 - Fencing and signage will be installed as necessary
 2 - Public trails will not be located on private land (pending land acquisition, MOU and/or trail easement)
 3 - Lands not shown as private, within the boundaries of Del Mar Mesa Preserve, are in public ownership or under easement to a public agency

FIGURE 3-11
Overview of
Existing Roads, Paths, and Trails
on Del Mar Mesa Preserve

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Access for emergency and property owner vehicles

Existing unauthorized paths

Existing trail per Del Mar Mesa Specific Plan

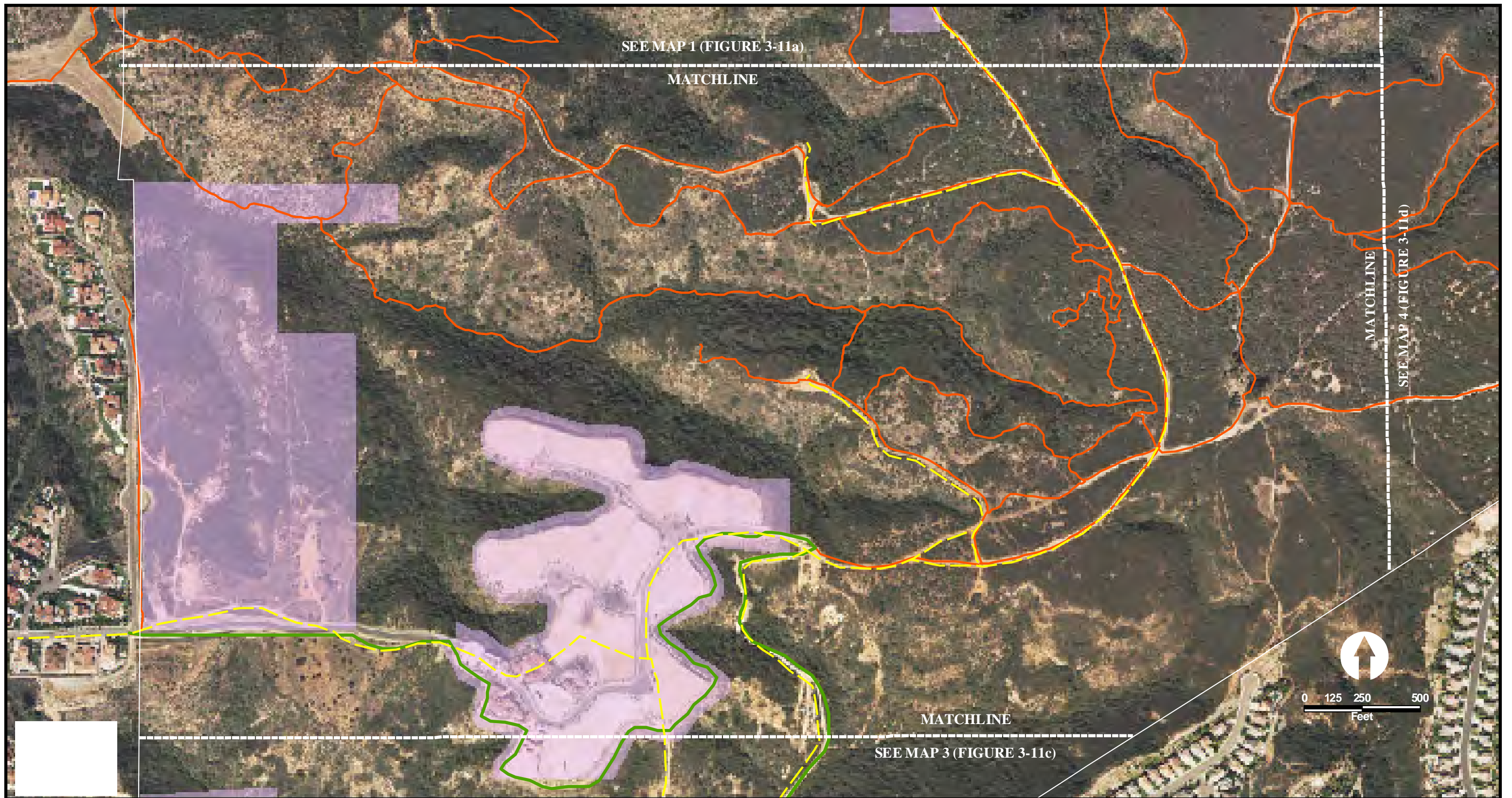
Utility access roads






Private property

Note: Public trails will not be located on private land (pending land acquisition, MOU and/or trail easement)

FIGURE 3-11a
Existing Roads and Paths
on Del Mar Mesa Preserve
(Map 1)

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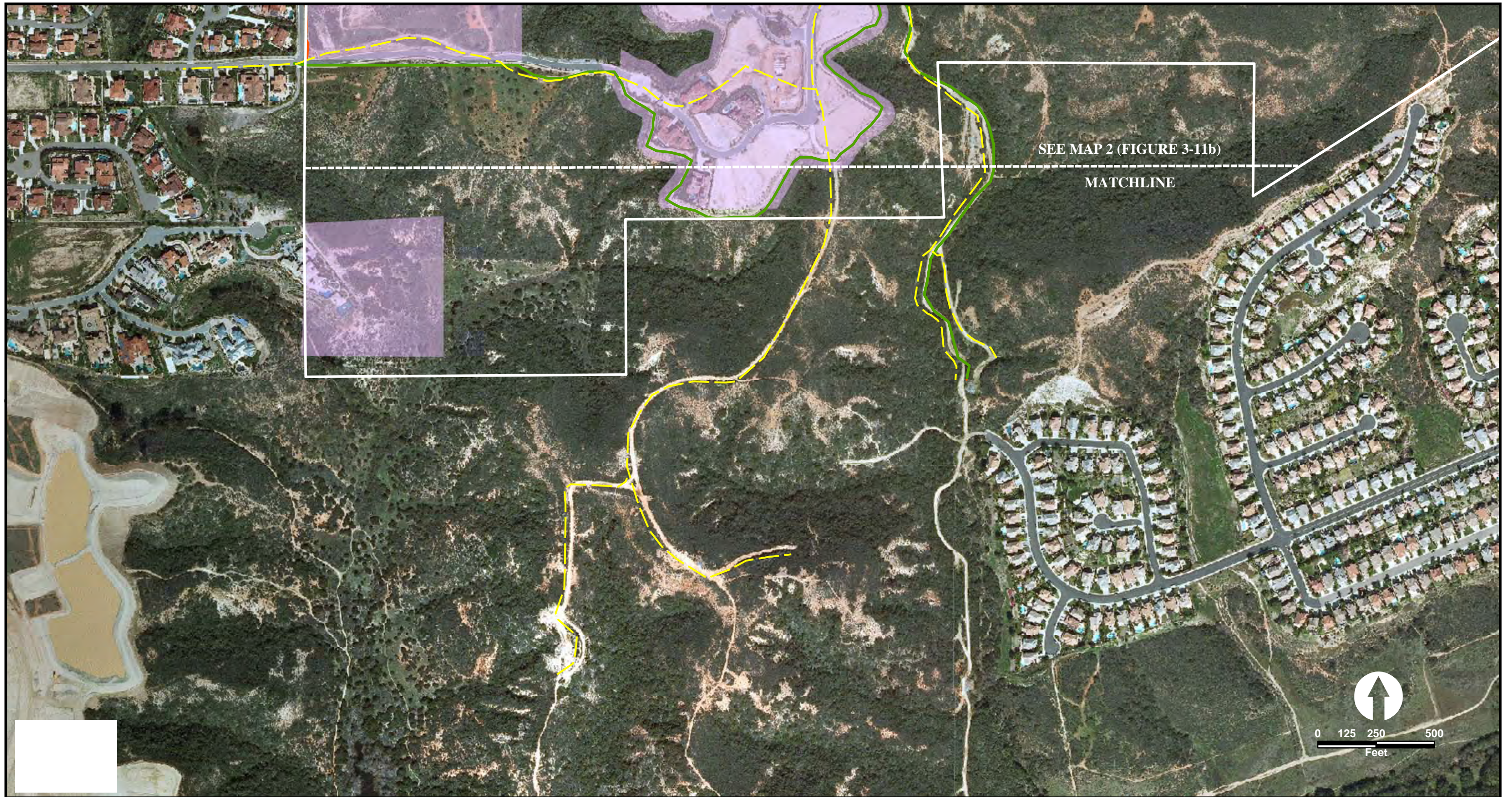


-  Access for emergency and property owner vehicles
-  Existing unauthorized paths
-  Utility access roads
-  Existing trail per Del Mar Mesa Specific Plan
-  Private property

Note: Public trails will not be located on private land (pending land acquisition, MOU and/or trail easement)

FIGURE 3-11b
Existing Roads and Paths
on Del Mar Mesa Preserve
(Map 2)

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Access for emergency and property owner vehicles



Existing unauthorized paths



Existing trail per Del Mar Mesa Specific Plan



Utility access roads








Private property

Note: Public trails will not be located on private land (pending land acquisition, MOU and/or trail easement)

FIGURE 3-11c
Existing Roads and Paths
on Del Mar Mesa Preserve
(Map 3)

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-  Access for emergency and property owner vehicles
-  Existing unauthorized paths
-  Utility access roads
-  Existing trail per Del Mar Mesa Specific Plan
-  Private property

Note: Public trails will not be located on private land (pending land acquisition, MOU and/or trail easement)

FIGURE 3-11d
Existing Roads and Paths
on Del Mar Mesa Preserve
(Map 4)

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4.0 Challenges to be Faced

4.1 Public Use

Challenges that may be encountered with public use of the Preserves include education of the visitors so they understand the purpose and values of the Preserves; accidents people may have while visiting the Preserves; and possibly crowd management since the Preserves are in the vicinity of many private residences. Public use of the Preserves may cause damage to trails, including visitors walking or riding off the trails; animal excrement from the pets that are walked on the trails; litter; and noise.

4.2 Urban Encroachment and Edge Effects

“Edge effects” is a general term for a variety of impacts to natural communities across a boundary between land uses and habitat.

Rotenberry and Kelly (1993) list several potential edge effects to habitat reserves in southern California, including:

- Introduction of alien predators, particularly domestic cats;
- Introduction of competitors (rats and mice);
- Disease transmission from domestic or commensal animals to wildlife;
- Trespass and associated habitat alteration;
- Increased levels of nighttime illumination; and
- Increases in sound and vibration levels.

The first three of these “edge effects” are biologically-mediated and have the potential to impact the entire area of the preserves, not just the edges. Replacement of native vegetation communities by exotic vegetation may be added to the list of these biological edge effects.

Habitat alteration by trespassers is a direct human impact. A variety of unauthorized uses of the preserves may be included in this group; however, in general these impacts will be concentrated in those areas that are most accessible to the general public.

The last two edge effects listed may be termed physical effects and, like physical changes to forest edges, are limited in impact to relatively limited, peripheral areas of the preserves.

The impact of these edge effects, and the ultimate value of these preserves as wildlife habitat, depends on the extent of human impacts to the surrounding landscape, their direct and indirect effects, and the proactive measures taken to ameliorate these effects.

In 1990, land use in the vicinity of the Preserves was primarily undeveloped lands and extensive agriculture. In the last decade residential development has begun to change the area (Figures 4-1 and 4-2), and this process will continue until Carmel Mountain and Del Mar Mesa become “habitat peninsulas,” areas with development along most of their perimeters, but retaining a degree of connectivity with other habitat areas.

The Carmel Mountain Preserve is about 300 feet from the nearest residential development, near the southwest corner of the Preserve (San Diego Association of Governments [SANDAG], Land Use 1990 GIS coverage). Housing is adjacent to the southwest corner, and within 600 feet, of the preserve at points along the southern and eastern sides. Land use plans call for multi-family housing adjacent to the west and north sides of the Preserve, and single-family housing adjacent to the south side (SANDAG 1990). To the east, a mix of housing, golf courses, and wildlife corridors are in place that will produce less severe edge effects.

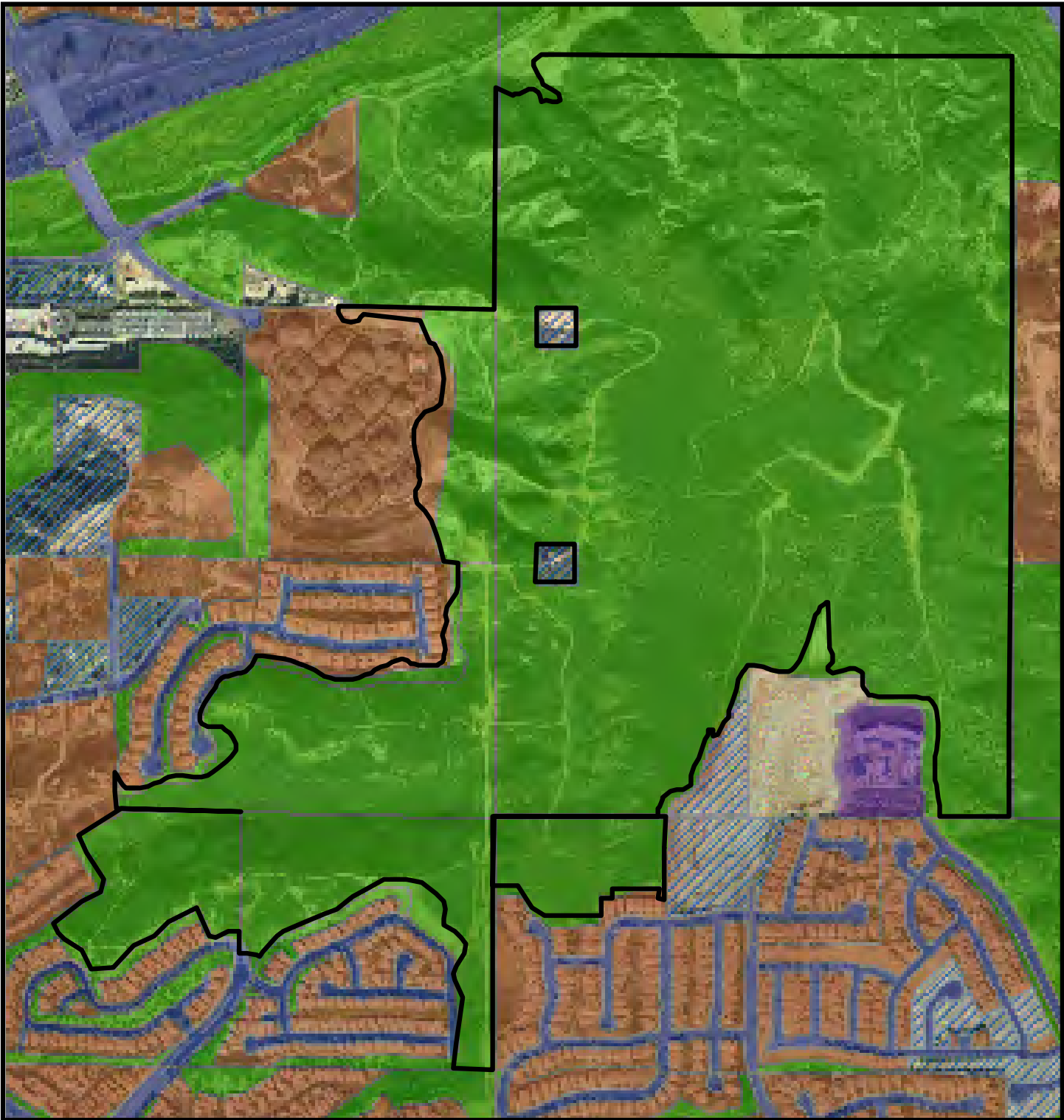
In 1990, the future Del Mar Preserve was about 2,000 feet from the nearest residential development to the east of the Preserve. By 2000, residential development along three-quarters of the Preserve’s southern side and within 1,500 feet of its eastern side had been constructed. Planned land use for the area calls for retail and strip commercial development adjacent to the east side of the Preserve, and rural residential development to the west. The Del Mar Preserve will be linked to habitat corridors to the north and south.

4.2.1 Exotic Animals

Increases in available food resources in the surrounding area (e.g., household garbage) may lead to increased population levels of both native and non-native opportunistic species, such as opossums, skunks, coyotes, rats, and mice. Increased populations then expand into native habitat, competing with native wildlife for food resources within the Preserves. During times when food is limited, particularly during drought, these artificially sustained animals may out-compete native wildlife for naturally occurring food resources. Commensal animals may also serve as disease vectors, introducing native wildlife to novel diseases associated with humans and their domestic animals.

Domestic cats (*Felis catus*) prey on wild animals for reasons other than hunger, so their introduction, even if they are well fed by the owners, can affect the populations of birds, reptiles and small mammals, if the cats are allowed to roam in the Preserves.

The Argentine ant (*Iridomyrmex humilis*) may occur on either of the Preserves. Argentine ants displace native ants, which are the main prey of the San Diego horned lizard. The



Carmel Mountain Preserve

Land Use









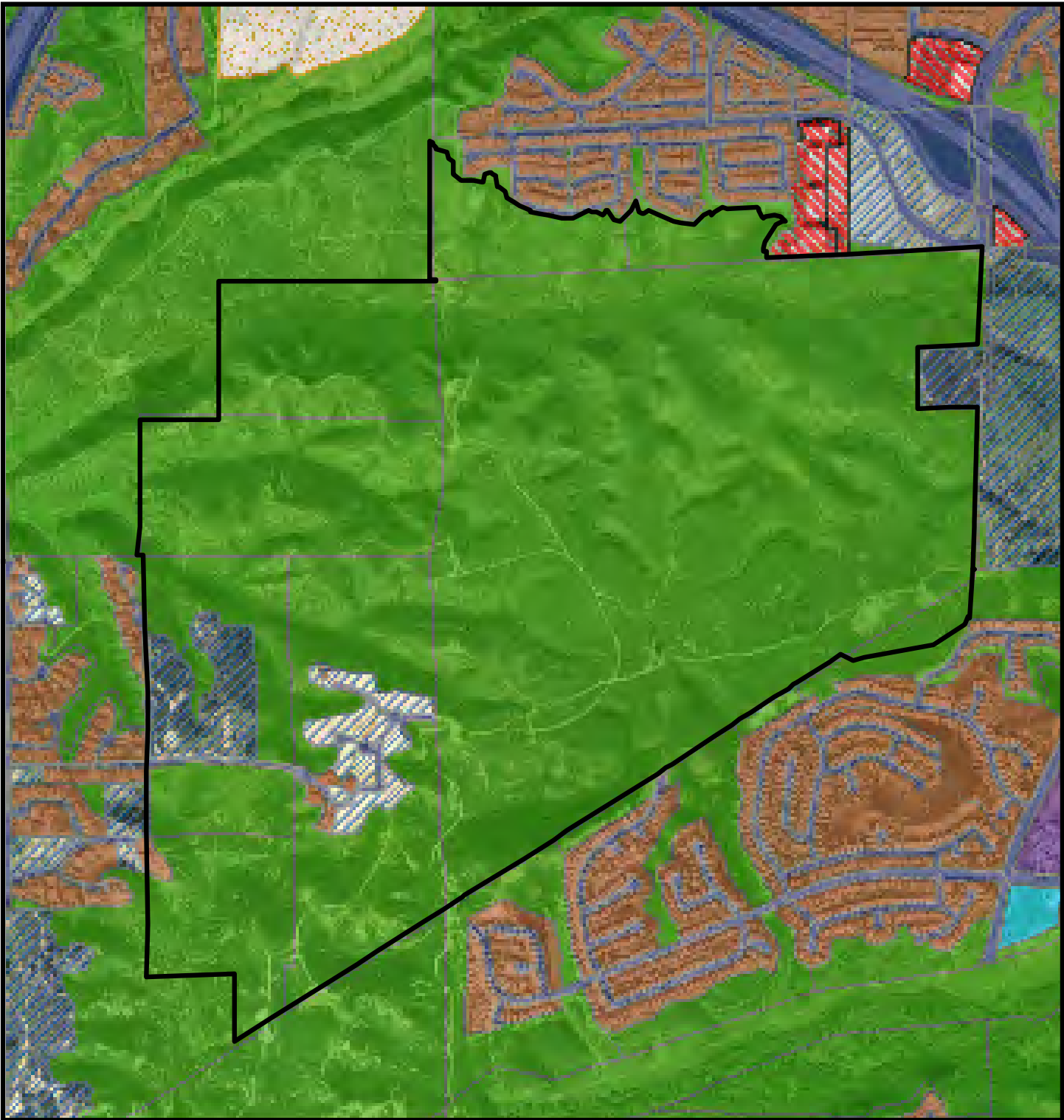
- | | | | |
|---|-------------|---|-----------------------------|
|  | Commercial |  | Open Space |
|  | School |  | Residential |
|  | Field Crops |  | Park - Active |
|  | Roads |  | Vacant and Undeveloped Land |



FIGURE 4-1
Land Use
Carmel Mountain Preserve



**Del Mar
Mesa Preserve**

Land Use









- | | |
|---|---|
|  Commercial |  Open Space |
|  School |  Residential |
|  Field Crops |  Park - Active |
|  Roads |  Vacant and Undeveloped Land |



FIGURE 4-2
Land Use
Del Mar Mesa Preserve

locations of Argentine ants and imported fire ants found during maintenance and monitoring activities on the Preserves should be noted and the ants destroyed as part of routine maintenance. Control measures that are based on methods prescribed by County and state agencies and approved by the Habitat Manager, should be implemented by City staff, dependent on staffing and budget availability. Food and moisture in trash can attract Argentine ants. Therefore, trash should be removed frequently and regularly. Water should not be supplemented in native vegetation communities on the Preserve, except where necessary for a limited time for habitat restoration.

The use of pesticides is discouraged on the Preserves. If the Habitat Manager determines that pesticides are needed to control invasive plants or animals, the Habitat Manager shall be responsible for any permits required by City, County, state and federal guidelines. Any pesticides used must be on the City Park and Recreation pre-approved pesticide list.

An unfortunate inclusion to the exotic species group is uncontrolled pets. Dogs and cats can be major predators on native species. Steps shall be taken to prevent the predation of native species by dogs, cats, and other non-native predators. Predator control should be initiated case-by-case and as funding allows. The following are guidelines for predator control:

- Trapping of non-native predators should be limited to strategic locations where determined useful to protect ground and shrub-nesting birds, lizards, and other sensitive species from excessive predation.
- Predator control should be considered a temporary, short-term activity.
- A predator control program should only be implemented to address a significant problem that has been identified and is needed to maintain balance of wildlife within the Preserves.
- Predator control methods shall be humane. A dequate shade and water should be provided and traps should be checked twice daily.
- If a predator control program becomes necessary, signs at access points should be installed to notify adjacent residents that trapping is scheduled and how to retrieve their trapped pets.
- Any domestic animal inadvertently trapped should be taken to the nearest animal shelter.
- Any predator control activities should be coordinated with MSCP staff to ensure that the activity complies with MSCP Subarea Plan regulations.
- The Habitat Manager shall promote education of the open space users to the potential impacts of uncontrolled pets, such as by posting signs at trailheads.
- Leash laws shall be enforced within the Preserves so that pets cannot impact the native habitat (e.g., by digging) or prey on native wildlife (e.g., eating small birds and reptiles).

- The Habitat Manager shall report persistent and chronic problems caused by uncontrolled pets in the open space to the County Animal Control Officers.

Eradication and control efforts shall be done at the most effective and efficient time of year, and these efforts shall reflect the latest information in the field on control of the target species.

Observations of non-native predators (i.e., brown-headed cowbirds, feral cats, etc.), within the Preserves should be reported as soon as possible to the Habitat Manager. A qualified biologist should verify any observations by unqualified staff or the public. If funding is available, the Habitat Manager/ranger should begin predator control at that location in accordance with the guidelines given above.

Another significant variable contributing to the loss of chaparral-dependent bird species is the absence of coyotes and the presence of gray foxes in areas of isolated habitat. The loss of dominant predators, such as coyotes, is believed to lead to population explosions of smaller predators, such as foxes and domestic cats that prey on bird species, a phenomenon known as “mesopredator release” (Soule et al. 1988).

4.2.2 Invasive Plants

Intact native vegetation is generally resistant to invasion, providing few safe sites where non-native seeds can establish. Natural disturbances, such as fire or mammal burrowing, human-induced disturbances, and development adjacent to natural open space create opportunities for opportunistic non-native species to invade and become established.

Invasive plant species have the potential to displace native species and eventually dominate the habitat, hybridize with native plant species, provide food and habitat for non-native animal species, and effect ecosystem functions such as nutrient cycling, wetland hydrology, sedimentation, and erosion (Brossard et al. 2000).

Invasive species present on the Preserves and in surrounding wildlands include non-native grasses (*Avena* spp., *Bromus* spp., *Hordeum* spp., *Lolium* spp.), mustard (*Brassica nigra*), and thistles (*Carduus* spp., *Centaurea* spp., *Cirsium* spp.). Invasive species that may be introduced from residential developments include pam pas grass (*Cortaderia selloana*), crown daisy (*Chrysanthemum coronarium*), and other landscape plants.

Most of these exotic species present threats to upland habitats, where they occupy the understory and are unlikely to result in major ecosystem changes in the absence of widespread disturbance. Perennial ryegrass (*Lolium multiflorum*), a non-native grass species, is adapted to moist soil conditions and has a high potential to invade the fringes of vernal pools and other ephemeral wetlands, even in the absence of additional habitat disturbance.

4.2.3 Direct Human Impacts

Unregulated human activities that may reduce habitat quality include trespass, encroachment by people building structures, construction of unauthorized trails, motorized vehicle use, building temporary habitations, and fire. Soil disturbance from these activities provides sites for exotic plant species to become established and increases soil erosion. Impacts that create new trails, particularly through chaparral and coastal sage scrub, can effectively increase the “edge” within the Preserves by expanding the foraging range of cats and other mesopredators, and creating dispersal corridors for commensal animals.

4.2.4 Physical Impacts

Increases in nighttime illumination and in sound and vibration levels from surrounding residential development and roadways may directly affect wildlife activity along the urban/wildland interface at the periphery of the Preserves. Increased light levels at night reduce habitat for nocturnal animals, which has been demonstrated in San Diego County by reduced nocturnal: diurnal snake capture ratios near developed areas (Fisher 2001). Noise levels above 60 A-weighted decibels are considered by regulatory agencies to interfere with nesting success of coastal California gnatcatcher and least Bell’s vireo, and may affect other bird species.

These impacts are relatively minor in scale, impacting only the periphery of the Preserves with adjacent residential development or roads over a width on the order of 100 feet.

4.3 Easements

Easements on the Preserves can cause the encroachment of weeds from disturbance associated with maintaining access within the easements.

4.4 Brush Management

Brush management to protect homes and other development adjacent to the Preserves could cause impacts to vegetation and sensitive species.

4.5 Erosion

Trail erosion is the most likely challenge to be faced by public use of the Preserves. In addition, natural erosion of the sandstone bluffs, particularly in the vicinity of the short-leaved dudleya populations, will also be a challenge.

5.0 Constraints and Opportunities

5.1 Opportunities

Options for managing the Preserves vary in scale, cost, and effort to achieve. It is anticipated that numerous strategies will be employed in a multifaceted approach. Some examples of the varied conservation opportunities on Carmel Mountain and Del Mar Mesa Preserves are as follows:

5.1.1 Maintain and Manage the Existing Preserve System

A preserve system has been established that serves as the core upon which to expand.

5.1.2 Expand and Enhance the Existing Preserves

Opportunities exist to expand the boundaries of the existing Preserves by purchase of land, land swapping, and land donations. The Preserves may be enhanced through restoration projects, installation of public education features, and additional enforcement activities.

5.1.3 Custom Design Appropriate Management Strategies

This Resource Management Plan (RMP) provides specific management policies, direction, and actions for the two Preserves to improve conditions for existing sensitive species, establish conditions that will support the introduction or reintroduction of other native species, and address other issues such as those associated with non-native and invasive species. Management needs to be adaptive to changing conditions of ecosystems, species viability, level of stress, and many other factors. On-going examples are the changing, or evolving, policies of land and wildlife management agencies with regard to their stances on invasive versus native species and wildfire management, and potentially varying conflicting purposes, desires, and abilities.

5.2 Constraints

Constraints are equally as important as the opportunities and are an inherent and useful tool in identifying the various strategies for implementing this plan. Many of the constraints represent factors that we have no control over, yet have an influence on the Preserves. The following are examples of the many factors that should be considered and evaluated in the adaptive management of the Preserves.

5.2.1 Level of Species-Specific Information

This is critical to making informed decisions during the management process. Adequate knowledge about the status, life history, distribution, and habitat requirements of plants and animals is essential and oftentimes lacking.

5.2.2 Existing and Future Actions or Landscape Elements that may Pose Impacts to Sensitive Species

Land use, water use, transportation elements, and utility corridors all have implications as potential threats and stressors to sensitive, vulnerable species, and their habitats.

5.2.3 Land Use Conflicts within Biologically Significant Areas

Existing or future land uses may conflict with the needs of native species in some areas.

5.2.4 Conflicting Needs of Different, Equally Important Species

There may be areas where two or more sensitive species exist in the same ecosystem competing for food sources or with conflicting needs for other habitat elements.

5.2.5 Costs of Land, Expertise, and Improved Data

Cost is a significant determinant in the reserve implementation and management.

5.2.6 Funding of Land Management Policies and Practices

The methods with which the Preserves are managed, in part or as a whole, will be critical to their long-term survivability. The land management stakeholders—local, state, and federal agencies as well as private parties—will be challenged to define and refine management policies and practices to best meet their goals and the goals of the Management Plan. Realistic limitations must be considered while identifying new sources of funding in both the short term and the long term.

5.2.7 Current and Future Agency and Jurisdiction Staffing Levels and Budgets

Agency and jurisdiction staffing levels and budgets will need to be reviewed to determine their adequacy in light of the potential for increased management, maintenance, and monitoring responsibilities.

5.2.8 Changes over Time

The fact that landscapes are dynamic needs to be considered in the implementation of this plan to ensure appropriate adjustment of management and monitoring strategies.

Because of their inherent dichotomy, the conservation opportunities and constraints can be viewed as opposing and *at the same time* complementary elements of the preserve management process. Viewing the level of current conservation status of lands shows us at the same time the areas outside of protection. Conversely, identifying the ecosystems that are most threatened by current and future actions shows us the areas most in need of protective measures and conservation.

6.0 Maintenance and Use Guidelines

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6.1 SDG&E Utility Maintenance

6.1.1 Utilities on Carmel Mountain Preserve

A 150-foot-wide SDG&E easement runs north to south along the western side of the Carmel Mountain Preserve (see Figures 3-6a and 3-6b) and encompasses approximately 8.0 acres. The easement accommodates 138-kilovolt and 230-kilovolt high-tension overhead transmission lines, a 30-inch high-pressure gas line, and 10- and 16-inch fuel lines. Facilities for 12-kilovolt electric distribution and 69-kilovolt electric transmission are also located within the Carmel Mountain Preserve.

6.1.2 Utilities on Del Mar Mesa Preserve

SDG&E access roads to their transmission towers are located on the Del Mar Mesa Preserve (see Figures 3-11a-d), including a 100-foot-wide easement that runs north to south and encompasses approximately 14.5 acres. SDG&E also maintains important access roads outside of the easements discussed above.

6.1.3 Utilities Operation and Maintenance at the Preserves

SDG&E has developed a Subregional NCCP (SDG&E 1995) designed to provide long-term conservation of habitats and species while allowing SDG&E to develop, install, maintain, operate, repair, and replace facilities on public and private land within the subregional plan area, including land set aside for the protection of plants and animals such as Carmel Mountain and Del Mar Mesa.

The Carmel Mountain and Del Mar Mesa Preserves are within the MHPA as designated by the MSCP Subarea Plan; however, implementation of SDG&E's Subregional NCCP is independent of the MSCP Subarea Plan and other plans. Therefore, SDG&E may conduct necessary operation, maintenance, repair, and replacement activities as listed below for all facilities that are or may be located within the preserve, provided the activities are conducted in accordance with the Subregional NCCP.

Overhead Facilities

- New overhead facility alignment
- Placement of structures
- Placement of electrical equipment on structures
- Insetting poles
- Equipment repair and replacement

- Pole anchors and stubs
- Insulator washing
- Tree trimming
- Use of helicopters

Underground Facilities

- New underground facility alignment
- Underground facility access
- Protection of underground facilities in waterways
- Trenching
- Line markers
- Use of helicopters and/or fixed wing aircraft for visual inspection

Other Ground Disturbance

- Access roads
- Access roads crossing waterways
- Slopes to create beds for structures or access roads
- Staging and other work areas
- Geotechnical remediation
- Geotechnical testing
- Pest control
- Fire control areas
- Vegetation control (mechanical and chemical)

Substations and Regulator Stations

- Substation and regulator siting
- Staging and other work areas
- Fire control areas
- Geotechnical failure protection and remediation

Even with the Subregional NCCP, many projects will require CEQA and NEPA review, such as projects that are subject to permits from the California Public Utilities Commission, Coastal Commission, Energy Commission, State Lands Commission, and several other state and federal agencies. However, without further authorization from USFWS or CDFG, SDG&E may conduct all necessary maintenance, repair, and replacement activities with respect to all existing facilities that are now or may hereafter be located within a preserve area of a Habitat Conservation Plan, if conducted in accordance with the provisions of the SDG&E Subregional Plan (SDG&E 1995).

Several species are adequately conserved by the Subregional Plan because impacts will be avoided unless deemed necessary for emergencies or repairs. Those species that occur on the Carmel Mountain and/ or Del Mar Mesa Preserve, and that are covered by the SDG&E Subregional Plan are (SDG&E 1995):

- Del Mar manzanita
- Orcutt's brodiaea
- Wart-stemmed ceanothus
- Short-leaved dudleya
- San Diego button celery
- San Diego barrel cactus
- Palmer's grappling hook
- Del Mar Mesa sand aster
- San Diego goldenstar
- Little mousetail
- California Orcutt grass
- Torrey pine

If impacts are unavoidable, state of the art conservation practices will be used to determine the best impact minimization and mitigation method consistent with SDG&E operational protocols. If repairs to existing facilities could result in an impact to short-leaved dudleya or other narrow endemic species, a biologist would be consulted. Pursuant to SDG&E's NCCP, narrow endemic species may not be impacted for non-emergency work without SDG&E conferring with the USFWS and CDFG. For new projects, kill or injury of narrow endemic animal species or destruction of such plants or their supporting habitat would not be covered by the Subregional Plan and the associated Implementing Agreement.

See Sections 7.1 and 7.2 of the SDG&E Subregional Plan for operational protocols and habitat enhancement measures.

6.1.4 Accidental Damage to Habitat

Any accidental damage to habitat on the Preserves outside the SDG&E right-of-way shall be mitigated per the "Subregional NCCP" (SDG&E 1995) as outlined in the SDG&E NCCP. The NCCP requires that projects go through a mitigation process for direct and indirect impacts. Forms of acceptable mitigation, in order of preference, include avoidance; on-site mitigation; fee-owned easements dedicated to the MHPA; and credits from pre-approved mitigation banks; and SDG&E shall conduct all operations within the Preserves according to "Operational Protocols" outlined in their NCCP. This NCCP serves as a 50-year permit with USFWS and CDFG and meets the requirements for the federal and state endangered species acts for 25 years, with an option for renewal up to 50 years.

6.2 Public Use

The following guidelines pertain to the use of the Preserves by the public:

1. All trail users should remain on designated trails for protection of adjacent sensitive resources and for their personal safety.

2. Signs will direct people to trails designated for horseback riding, hiking, and bicycling. Signs along each trail will identify its uses. All undesignated trails are closed to the public.
3. Domestic animals shall be on a leash at all times within the Carmel Mountain and Del Mar Mesa Preserves and will remain on designated trails.
4. All litter should be placed in trash receptacles placed at trail heads and other locations within the Preserves. Trash receptacles should be emptied regularly.
5. Park rangers will enforce state law, city codes and ordinances, and the policies of this RMP in conformance with current Department Instruction. In addition, CDFG policies govern enforcement and use of State of California lands, and USFWS Refuge policies govern enforcement and use of lands owned by USFWS.
6. Regular patrols to identify and control vandalism, off-road vehicle activity, poaching, and illegal encampments shall be conducted.
7. Subsequent to completion of a Notice to Vacate and in accordance with applicable codes, any encampments found shall be removed as soon as possible after consideration of biological concerns.
8. No unauthorized motorized vehicles shall be driven on any trails within the preserve. No off-trail use is allowed within the preserves. Authorized vehicles include emergency vehicles, preserve managers' vehicles, Park Rangers' vehicles, or maintenance personnel (including SDG&E) vehicles.
9. Graffiti and other effects of vandalism shall be removed or repaired as soon as possible, based on park staff schedules.
10. A reporting and enforcement procedure should be developed to prevent residential or landscape encroachment into the Preserves.
11. Areas where dumping occurs should be checked regularly and barricaded, if deemed necessary, to prohibit dumping.
12. Any identified hazardous waste shall be removed as soon as possible following appropriate hazardous waste material disposal guidelines. Areas should be signed within 24 hours of identification of the waste to indicate the presence of hazardous materials and should be designated as off-limits to public use.

Table 6-1 provides a possible schedule for maintenance.

**TABLE 6-1
PRESERVE MAINTENANCE SCHEDULE**

Task	Schedule
Restroom cleaning (if they are installed)	As needed, as determined by park staff.
Litter control	Twice per week in parking lots and picnic areas; annual cleanup in other areas; and special volunteer projects for litter and illegal encampment removal as needed.
Illegally dumped material removal	As soon as possible where needed.
Manure removal from equestrian trails and parking lots	As soon as possible where needed.
Graffiti removal	As soon as possible from preserve facilities.
Maintenance and installation of gates, chains, and locks	As needed to prevent illegal entrance (coordinate with SDG&E, agencies, private landowners, and other entities that may need access).
Sign replacement, repair, and cleaning	As needed.
Picnic areas vegetation maintenance if picnic areas are designated at the preserves – flail, mow, and weed to prevent fire and safety hazards	In the spring after native plants go to seed (April - June).
Safety hazard removal (such as fall en trees or hanging shrub limbs along the trails)	Remove and place as needed.
Improper or illegal public activity removal (such as transient encampments; private encroachments on public land; tree houses, swings, or ropes in trees)	As needed.
Exotic, nonnative plant removal	As and where needed, by City staff or volunteers trained or supervised by City staff. Coordination with other agencies conducting similar activities in the area is desirable for optimum effectiveness.
Brush removal and thinning within 100 feet from structures within preserves, per City of San Diego Municipal Code 142.0412 to address Category I fire hazards	As need based on an annual evaluation.
Trail maintenance	Major repairs once per year after the end of the rainy season; minor repairs throughout the year as needed.
Hazardous material removal	When identified, hazardous materials should be removed per approved procedures. Contact the City of San Diego Environmental Services Department hazardous materials team for details.
Parking lot maintenance	Parking areas maintained and repaired once per year after rainy season.
Sewer line and access road service (City of San Diego Metropolitan Wastewater Department), if they are installed at the preserves – service manholes, monitor and maintain sewer lines and access roads	Once per year or according to existing MWWD schedule. Emergency repairs should be conducted as soon as possible.
Power line and right-of-way maintenance (SDG&E)	General maintenance once per year. Emergency repairs as soon as possible.

6.3 Preserve Maintenance

The following guidelines address several issues that pertain to maintenance activities for both Preserves:

1. If required, all applicable city, state, and/or federal permits shall be obtained prior to conducting any maintenance activity. Additionally, proposed maintenance activity shall comply with guidelines in this management plan.
2. If a maintenance activity should result in direct or indirect impacts to surrounding habitat or sensitive resources, the maintenance area should be coned or flagged by a Park Ranger, Natural Resource Planner, or qualified biologist and/or archaeologist to aid the maintenance personnel in keeping the impact confined to the work area.
3. Prior to conducting any maintenance activity that disturbs existing soil from the ground to the subsoil in areas that have not previously been surveyed for archaeology; a site check for archaeological resources shall be conducted by a qualified archaeologist. Results shall be given to the City of San Diego (Contact: Park Ranger or Natural Resource Planner for review by Development Services archaeologist) and the land owner, if applicable, for review and evaluation. If the potential for indirect impacts exist, the site shall be flagged to keep work crews away. If direct impacts are found to be likely, the project should: (1) try to avoid the area; (2) minimize the impact; and (3) develop and implement a plan for recovery of resources subject to approval by the City contacts provided earlier. Native American consultations should be made, when appropriate, during impact analysis and mitigation design and implementation.

A stewardship program for prehistoric and historic resources should be instituted for the Preserves in conjunction with the information outlined in the Cultural Resources section of this document. A designated steward would then be involved in consultations about projects and possible impacts to cultural sites.

4. Access should be maintained for emergency and maintenance vehicles (including utility access where required). Road maintenance should be limited to clearing or thinning brush and smoothing the road surface within the existing roadway.
5. All road repair and maintenance activity should be confined to the roads and easements themselves. Work should be planned and coordinated with appropriate personnel and agencies in advance to ensure no impacts occur to known sensitive biological and archaeological resources.
6. Whenever possible, maintenance and/or patrol vehicle activity should be minimized within the preserves when soils are wet to avoid degradation of trails.
7. All fences and gates will be kept in good repair and, when necessary, promptly replaced.
8. All maintenance activities should use best management practices for erosion control at the work site.

9. Trail (hiking, bicycling, and equestrian) maintenance will be initiated based on inspection by the Habitat Manager and coordinated with biologist and/or archaeologist, as necessary.
10. Trail closures should be instituted to: allow native vegetation to recover; facilitate wildlife movement; protect archaeological sites and biological sensitive species or areas; allow added protection for sensitive species during breeding season; provide erosion control; ensure public safety; and allow for trail maintenance. Such closures may be temporary or permanent depending on the need.

Additionally, the City Park and Recreation Department, Open Space Division staff reserves the right to restrict the use of and/or close any public trail or access point on Carmel Mountain and Del Mar mesa to protect the public health, safety, and welfare. An example of such conditions would include, but is not limited to, restrictions/closure during inclement weather, trail overuse, landform deterioration, or other adverse conditions.
11. Existing and proposed trails will be regularly evaluated by a qualified biologist and/or Habitat Manager for impacts with consideration given to erodibility of soils and to sensitive species/habitat in the vicinity.
12. Fencing may be needed to keep people on the trails and out of sensitive areas. All fencing shall be placed in a manner that avoids impacts to native vegetation.
13. Refurbish existing trails and relocate, if necessary, to avoid environmentally sensitive areas.
14. Poison oak, stinging nettle, and other native human nuisance plant species should be controlled only around highly used public areas, such as trails, parking lots, historic points of interest, and interpretive displays. In other areas they should be allowed to remain as part of the natural system.
15. Equestrian trails need to be cleaned as necessary using manual, not mechanical, methods.
16. Brush management activities (fire breaks, brush thinning) should be done in accordance with City of San Diego Land Development Code. Brush management actions conducted in accordance with the Land Development Code are exempt from mitigation requirements in this document. Further information with regard to fire management activities is provided in Section 8.0 of this document, which includes the Fire Management Plan for the Preserves.
17. Wildlife corridors shall be kept free of debris, trash, homeless encampments, and other obstructions to wildlife movement.
18. Any wildlife crossing should be screened on both sides of the crossing between the crossing and adjacent land uses.
19. The potential release of toxic or extraneous materials should be monitored and enforcement action taken as necessary.

20. Affected land owners within the preserves should be contacted prior to any maintenance activities. Any additional regulatory requirements should be implemented as required by the affected land owners (e.g. USFWS Refuge requirements).
21. Maintenance activities should avoid being conducted during the rainy season when soils are wet.
22. Kiosks and educational panels shall be located in a manner that does not impact native vegetation.
23. Except where previously approved by the landowner, all vehicles, personnel, and equipment shall remain within the existing right-of-way.

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Table 6-1 provides a possible schedule for maintenance.

6.3.1 Public Awareness

The long-term success of the Preserves and the concept of habitat protection are dependent on the Preserve's acceptance by local community residents as valuable amenities and resources. A belief in open space as a part of their community causes residents and local schools to become interested and protective of the resource. Consequently, residents and local schools should not only refrain from disturbing the resource but also inform others of its importance, to prevent vandalism and unauthorized activities from occurring within the open space. In this manner, by becoming stewards of the open space preserve areas, community members provide a valuable service to the Habitat Manager and the preserve, as their vigilance affords protection to the area when the Habitat Manager is not present (Affinis 1998; Helix 2000).

It is the Habitat Manager's responsibility to work with the community as much as possible and take steps to maintain a positive working relationship between the community and the habitat management program.

Volunteer services are both a method of and a result of public awareness. The Habitat Manager shall participate in subregional or regional programs that encourage and feasibly use volunteer services. Continual volunteer programs may be established, allowing students the opportunity to volunteer and aid the Habitat Manager in the maintenance of the open space.

Deleted: Volunteer services, while working within a particular project area, are normally developed at the subregional or regional level.

6.3.2 Trash Disposal

Trash and recycling bins may be placed at selected trail entrances as needed. Park staff shall be responsible for the general cleanliness of the Preserves by removing trash and litter. Park staff shall coordinate with the biologist if trash needs to be removed from habitat. Due to the presence of both historic and prehistoric archaeological artifacts within the open space, coordination with the Preserve's Habitat Manager will be required prior to any trash removal within non-trail/road areas.

The handling, transport, and disposal of any hazardous materials or hazardous wastes found in the open space will be subject to all applicable local, state, and federal regulations. The regulations dictate the qualifications of the personnel and the type of methods and equipment used. Notification of any toxic spills or unlawful dumping of hazardous wastes in the plan area will be reported to the Habitat Manager.

6.3.3 Transient Encampments

Transient encampments are prevalent throughout the undeveloped open space areas of San Diego County. The Habitat Manager shall regularly survey for and report any permanent encampments to the Police Department. All transient encampments should be removed.

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6.3.4 Shooting/Hunting

The preservation of habitat is the primary function of the open space Preserve. Shooting and hunting are generally prohibited within the City limits. No shooting or hunting of any kind shall be permitted in the Preserves, and potential hunters shall be advised by signage warning them of the legal consequences of such activity. The Habitat Manager will post this signage as well as inform, in a non-confrontational manner, anyone shooting or hunting within the open space that these activities are illegal or report the activity to the Police Department, CDFG, or USFWS. The Habitat Manager shall report any confrontational situations and any chronic offenders to the aforementioned agencies.

Deleted: Sheriff's Office,

6.3.5 Problem Species

Many exotic animal species can interfere with the life cycles of native animals. Brown-headed cowbirds lay their eggs in other, smaller birds' nests. The large cowbird hatchlings take food intended for the smaller native hatchlings, and the native hatchlings die. European starlings, which form large flocks, displace native species by consuming food and nesting in tree and large shrub cavities that would otherwise be used by native species. Problem species such as these that are persistently present on the Preserves shall be removed, dependent on budget availability. Feral and unleashed domestic dogs and cats shall also be removed, dependent on budget availability. It is the Habitat Manager's responsibility to ensure necessary approvals and permits are obtained from the City, CDFG, and USFWS before the removal operations begin.

The public should be educated to promote top predators as "keystone species" of the natural world, rather than as "varmints" degrading the quality of suburban life. This education could be implemented through signage and field trips within the Preserves, and educational packets for schools and community groups.

Educating the public on the adverse impact of invasive exotic species, particularly pampas grass and other ornamental plants, should also be part of community education. Volunteer efforts to control exotics within the Preserves should be encouraged, with the recognition that

these efforts will be of primary benefit to long-term habitat quality by increasing the level of community appreciation of native species and natural ecological processes. Eradication of exotic plant species should be regarded as a secondary outcome of volunteer activities, and will most likely depend upon efforts of Preserve staff for effective, coordinated implementation.

Public outreach efforts should include signs within the preserve illustrating the destructive effects (erosion, exotic invasive plants) of unauthorized activities; outreach to community groups, including mountain bicycle outlets and associations; and outdoor classroom programs.

6.3.6 Poaching/Collecting

Removal of any natural resource from the open space—e.g., plants, animals, rocks, minerals—is prohibited. Anyone attempting to take such things shall be informed of the policy by the Habitat Manager, in a non-confrontational manner. Signage will also include language warning of the legal consequences of removing any natural resources. The Habitat Manager shall report any confrontational situations and any chronic offenders to the appropriate Sheriff's Office.

The Habitat Manager, at his/her discretion, may allow cuttings only for revegetation of areas within the Preserves. Any such cuttings shall be taken only by the Habitat Manager, under his/her supervision, or under a written agreement specifying amounts and localities of collectible materials. These cuttings will be limited to only what is necessary to the revegetation effort and will not seriously deplete the existing vegetation.

6.3.7 Lighting

No lighting shall be directed towards the open space areas. Lighting from adjacent developments shall be shielded and directed downward and away from open space.

6.3.8 Fencing/Barriers

Permanent fencing preventing human traffic may be placed at appropriate locations on the Preserves to limit the amount of human disturbance to the habitat, and control access as needed. The fencing shall be routinely patrolled to monitor for signs of trespassing, specifically around the vernal pools.

Permanent or temporary fencing that does not inhibit the movement of wildlife may be installed along or adjacent to power transmission line access roads within the open space.

Barrier posts will be placed at trailheads to prevent motorized vehicles from entering the trail while allowing authorized users to pass through. The Habitat Manager shall also coordinate with SDG&E to have a gate placed at each entrance to the SDG&E access roads.

Deleted: 6.4. New Development
6.4.1. New Development Guidelines
The following guidelines are a summary of both existing regulations and additional guidelines that pertain specifically to new development on and adjacent to the Preserves: ¶
1. Applicable City, state, or federal permits shall be required prior to beginning a development activity. Additionally, all such activity will comply with guidelines in this management plan. City of San Diego review of the project is also required to ensure that the project is in conformance with the Land Development Code and the guidelines adopted in this management plan are being incorporated. Affected landowners within the preserves should be contacted prior to any development activities. Any additional regulatory requirements should be implemented as required by the affected land owners (e.g., USFWS Refuge requirements). ¶
2. All developed areas in and adjacent to the preserves shall not drain directly into the preserves. All developed and paved areas shall prevent the release of toxins, chemical, petroleum products, fertilizers, exotic plant material, and other elements that might degrade or harm the natural environment within the preserves. Methods for pollutant runoff control, such as natural retention basins, grass swales, or mechanical trapping devices, should be maintained as needed to ensure proper function. Appropriate maintenance could include dredging of sediments, removing exotic plants, or adding chemical-neutralizing compounds. ¶
3. Development, construction, or maintenance design or activities should avoid concentrating runoff into the Preserves. ¶
4. All new development adjacent to the preserves should provide a buffer or setback outside the Preserves sufficient to accommodate MSCP Subarea Plan and brush management requirements, including mitigation for such activities if required. ¶
5. Adjacent development should provide a fence or vegetative barrier along the effected edge within their brush management zone, except at an approved trailhead location. ¶
6. Developer should consult with City of San Diego Park and Recreation staff to identify the specific trailhead location(s) in order to ensure the trailhead and connecting trail locations are sited away from sensitive plants, sensitive habitats, sensitive breeding areas, and cultural resources. The design of the trailhead and trail should also be subject to approval by the City of San Diego Park and Recreation staff and any affected landowner. ¶
7. Development of new trails requires City of San Diego environmental review per state law (CEQA). ¶
8. The trail system should be sited within or adjacent to existing access roads whenever possible to consolidate use. ¶
9. Trail width should be minimized, wherever possible, consistent with the type of use on that trail and trail location. ¶
10. Siting of trails should not follow ecotones (edges between vegetation communities) but should be limited, if possible, to a single trail ...

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7.0 Resource Management, Enhancement and Restoration Guidelines

7.1 Mitigation

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Pardee Homes (Pardee), through an agreement with the City of San Diego as part of the dedication of lands from Pardee to the City, has the right to sell 24.0 acres of habitat at the Carmel Mountain Preserve to another party as mitigation for development impacts as described in the Pacific Highlands Ranch Development Agreement (Section 5.2.5, Doc. #00-18571, September 9, 1998). The 24.0 acres is not specific to any location on the ground, but is a means for Pardee to recoup some of the cost of dedicating the land. The acres can be sold in part or as a whole, at a per-acre cost agreed upon between the City and Pardee.

7.2 Preserve Enhancement and Restoration Opportunities

Deleted: Other mitigation options are in the purchase of private lands adjacent to the Preserve and dedication of the land to the Preserve. Dedication of the land would require that the habitat be undisturbed and high quality. Some adjacent lands may require enhancement before they would be acceptable as mitigation for development impacts. ¶

This chapter summarizes potential enhancement and restoration programs for native habitat on Carmel Mountain and Del Mar Mesa, excluding privately owned lands, until the land is conserved in perpetuity by the landowner or acquired by a public or non-profit agency for the purposes of conservation or until written permission is obtained from the landowner. Enhancement or restoration of sensitive resources in the SDG&E access roads would only be done if these roads are no longer needed by SDG&E or private landowners.

7.3 Natural Resources Management

7.3.1 Species Monitoring and Management

7.3.1.1 MSCP Monitoring and Management Requirements

The City of San Diego adopted revised rare plant monitoring protocols based on input from a scientific advisory review, led by Dr. Kathryn McEachern, a rare plant specialist with the U.S. Geological Survey Biological Research Division. The project was funded through a grant from the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife.

The following plant and animal species, known to occur on either the Carmel Mountain Preserve or the Del Mar Mesa Preserve, are covered by the MSCP Subarea Plan. Each species has specific directives for their management within the MSCP preserve system. Management

directives for each species are from Table 3-5 of the MSCP (City of San Diego 1997; see Appendix 4).

a. Plants

Del Mar Manzanita. Del Mar manzanita is a federally endangered species that is restricted to sandstone bluffs. Within the City of San Diego MSCP area, 67 percent of the known habitat (southern maritime chaparral) and 91 percent of the major populations are covered. Area-specific management directives must include specific management measures to address the autecology (the study of individuals or populations of a single species and their relationship to their environment) and natural history of the species and to reduce the risk of catastrophic fire.

This species is confined to the coastal areas of San Diego and open spaces within the Metro-Lakeside-Jamul segment of the County of San Diego's MSCP Subarea Plan. Development is the primary risk to this species.

Management of this plant should include the mapping of any newly discovered locations, protection of the species, and expansion of the range. A weeding regime, where necessary based on MSCP or other monitoring, would have the dual effect of removing competition allowing the species to expand and to remove the fuel source near the ground, which if ignited could cause damage to the seeds and crowns. Other threats include invasive weeds, trampling, and brush management activities.

Orcutt's Brodiaea. This is a CNPS List 1B species that is most commonly associated with vernal pools. All of the major populations are located within the City's Multi-Habitat Planning Area (MHPA). All of the population will be conserved under the MSCP Subarea Plan. Area-specific management directives must include specific measures to protect against detrimental edge effects.

Orcutt's brodiaea is found within the preserve near vernal pools. The major threat to this species is competition by invasive weeds and vehicular and recreational activity. When this plant is located in undisturbed habitat, the native cover of the chaparral and other native plants suppresses the expression of the invasive weeds. Areas that have been disturbed or are exposed to an edge, such as a road or trail, allow weeds to gain a foothold and eventually blanket the habitat.

By minimizing edge effects along trails and roads and implementing a weed control program where necessary, the functional values of the habitat can be restored to a functional state. Vehicular and recreational traffic on the P reserves should also be monitored to reduce disturbance to this species.

Wart-stemmed Ceanothus. This is a CNPS List 2 species. Wart-stemmed ceanothus is a rounded evergreen shrub associated with chaparral on dry hills and mesas within San Diego.

Sixty-seven percent of the major populations will be conserved in the City's MSCP Subarea Plan.

Within the appropriate habitats, restoration of this species is required by the MSCP. Area-specific management directives for the protected populations must include specific measures to increase populations. Area-specific management directives must include specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire. Any newly found populations should be evaluated for inclusion in the preserve strategy through acquisition.

Within the preserve, this species is found in southern mixed chaparral on Carmel Mountain. Measures should be taken to remove invasive weeds that may compete with this species as determined by MSCP or other monitoring. This will have the dual action of expanding the habitat, and removing the ground level fuel source that would damage crowns and bulbs as the fire moved through the vegetation. Currently, wart-stemmed ceanothus is common on Carmel Mountain and efforts to increase population size are not recommended at this time. Implementation of weeding programs as necessary and continued restriction of access to authorized trails will likely maintain the status of this species on the Preserve.

Del Mar Sand Aster. Del Mar sand aster is a CNPS List 1B species. This species is limited to the sandstone soils that are found within the preserve. Area-specific management directives for the protected populations must include specific measures to protect against detrimental edge effects to this species, including specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire. Management measures to accomplish this may include prescribed fire.

Threats to existing populations on the Preserves include vehicular and recreational traffic, weed invasion and road grading. Information gathered from surveys conducted by the City of San Diego should be used to develop management strategies.

Expansion of the populations would be possible through a plant propagation program. Confining recreational activities to the designated trail system will minimize edge effects. Habitat for this species can be enhanced through the removal of exotic plants. Exotic plant control would reduce the effect that a fire would have upon the plants.

Short-leaved Dudleya. This species is listed as state endangered and was proposed as federally endangered until 1996. The threats to short-leaved dudleya decreased after the proposal was published. Short-leaved dudleya is a narrow endemic species under the City's MSCP Subarea Plan. Under the MSCP, 98 percent of major short-leaved dudleya populations will be conserved. Management directives for this species require specific measures for maintaining and increasing populations, reducing risk of catastrophic fire, and addressing autecology and natural history.

The short-leaved dudleya is a focal species for conservation on Carmel Mountain. This species' protection, along with the preservation of vernal pools and southern maritime chaparral habitats and their associated sensitive species, is the reason that Carmel Mountain was conserved. Appendix 5 provides recommendations for the enhancement and restoration of short-leaved dudleya on the Carmel Mountain Preserve.

San Diego Button Celery. San Diego button celery is a federally and state listed endangered species. It is on the MSCP's list of narrow endemics, and is a state MSCP covered species; the City relinquished federal coverage for vernal pool associated species following the Brewster lawsuit. Eighty-two percent of the major populations are covered under the MSCP. This species is limited to salt marshes and vernal pools. There are also important populations that are found on military installations throughout the county. Area specific management directives must include specific measures to protect against detrimental edge effects.

The population on Del Mar Mesa is likely subject to edge effects such as; vehicular and recreational activity, road grading and weed invasion. Restoration efforts, where applicable and as funding become available, will improve the quality of the habitat by protecting and enhancing the vernal pool habitat for San Diego button celery. Protection will include directing all activities to less sensitive areas when possible. Enhancement would involve restoring the natural hydrology to disturbed pools, removal of exotic plants and the reintroduction of plant propagules.

Coast Barrel Cactus. Coast barrel cactus is a CNPS List 2 species. It is usually found on dry hills with open coastal sage scrub. The MSCP conserves 81 percent of the major populations. Area-specific management directives must include measures to protect this species from edge effects, unauthorized collection, and include appropriate fire management and control. This species is currently threatened by vehicular and recreational activity on the Preserves. The populations within the Preserves should be protected and enhanced by redirecting activities to less sensitive areas when possible and by implementing an aggressive weed control program, as outlined in Chapter 7.0. Exotic plant control would reduce the effect that a fire would have upon the plants.

San Diego Goldenstar. The San Diego goldenstar is a CNPS List 1B species. It is associated with chaparral and coastal sage scrub on dry hills and mesa tops. Area-specific management directives must include monitoring of the transplanted populations and specific measures to protect against detrimental edge effects to this species. Vehicular and recreational activity pose the major threat to the current populations on the Preserves. Redirecting activity to less sensitive areas when possible is recommended. Invasive weeds should also be managed by the implementation of a weeding program, to maintain the status of this species on the Preserves.

Torrey Pine. The Torrey pine is a CNPS List 1B species. This distinctive pine is limited to microhabitats located only in Del Mar and Santa Rosa Island off of the coast of Ventura. The main population is located at Torrey Pines State Reserve and is under management.

Infestation by the bark beetle (*Ips paraconfusus*), and human-induced fires have been contributing to this species decline in San Diego County (Reiser 2001). This species should be monitored regularly for the presence of beetle activity. Exotic plant control would reduce the effect that a fire would have upon this species.

A small number of pines are located in two areas on the Carmel Mountain Preserve. It is not known if these individuals are native or the result of cultivation. They should be incorporated into the overall enhancement plan of the preserve.

San Diego Mesa Mint. San Diego mesa mint is a federal and state listed endangered species. It is associated with vernal pools and surrounding complexes. Many of the populations occur on military installations and are protected by federal agencies. Area specific management directives must include measures to protect against detrimental effects, maintain surrounding habitat for pollinators, and maintain pool watersheds.

The population on Del Mar Mesa is subject to direct vehicular and recreational activity, as it is associated with the vernal pool complex along the existing trails and roads. To ensure the survival of the species on Del Mar Mesa, redirection of activity around this habitat is recommended. The implementation of an aggressive restoration effort should be undertaken to improve the quality of the habitat by protecting and enhancing the pools that the species is associated with. Enhancement of this habitat would involve restoring the correct hydrology, removal of exotic plants and the reintroduction of propagules.

b. Invertebrates

San Diego Fairy Shrimp. The San Diego fairy shrimp is a federally endangered species. This species spends its entire lifecycle in vernal pools. Vernal pools are not independent systems, but are a part of a vernal pool complex in which individual pools are a subpopulation. The primary goal in the recovery of the fairy shrimp is to secure existing vernal pools and their watersheds from further loss and degradation in a configuration that maintains habitat function and species viability (USFWS 1998). Approximately 83 percent of vernal pool habitat is preserved in the MSCP preserve system (City of San Diego 1997). MSCP management directives require that area specific management directives for preserves protect vernal pools against edge effects that may harm the species.

Numerous vernal pools and depressions that pond water are present within the existing roads, SDG&E access roads and trails on Carmel Mountain and Del Mar Mesa Preserves. Direct vehicular and recreational activity is the major threat to this species.

Individual vernal pool and habitat restoration recommendations are discussed in Appendix 6 in detail. Management recommendations include performing surveys, to determine their distribution. Monitoring for the San Diego fairy shrimp and management of the existing habitat and restoration of disturbed vernal pools is also recommended. The future closure of roads and trails through the vernal pool complex on the Preserves is recommended to avoid the

degradation of the watershed and protect listed species. Fencing around sensitive areas and signage encouraging visitors to stay on paths is also recommended. Placing language on signs throughout the preserves stating that damaging the habitat of a federally listed species is illegal may also be a deterrent. Routine patrolling of all fenced off sensitive areas, especially the vernal pool preserve on Del Mar Mesa, is essential in maintaining the integrity of the fencing and landscape.

c. Reptiles

Belding's orange-throated whiptail. Belding's orange-throated whiptail is a federal and state species of concern. There is insufficient information on this species' breeding and egg-laying habitat requirements, but it is known to inhabit coastal sage scrub, chaparral, mixed chaparral and woodland habitats (County of Riverside 2000). Approximately 59 percent of the potential habitat and 62 percent of all known point occurrences will be conserved in the MSCP preserve system (City of San Diego 1997). The Plan requires monitoring of populations, habitat linkages to other protected areas, adaptive management practices and edge effect management directives to be instituted on preserves that support orangethroat whiptails.

Belding's orange-throated whiptails are known from two locations on Carmel Mountain Preserve and two locations on Del Mar Mesa Preserve. Suitable habitat is present on both Preserves to support the species. Pitfall traps have been installed on the Carmel Mountain and Del Mar Mesa Preserves as part of the MSCP Herpetofaunal Monitoring Program.

Management for orange-throated whiptail on the preserves will consist of continued monitoring efforts, maintaining existing potential habitat, encouraging habitat inhabited by prey species, and maintaining linkages to off-site habitat. Belding's orange-throated whiptail's preferred prey species is termites, and areas where this prey would be present such as in woodpiles and litter must be maintained and encouraged. Populations near development should be monitored for trends that might change due to edge effects such as domestic pets, exotic plants, and invasive ants (USGS and San Diego State University [SDSU] 2001).

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San Diego Horned Lizard. San Diego horned lizard is a CDFG species of concern. The San Diego horned lizard occurs primarily in coastal sage scrub habitat. Under the MSCP Subarea Plan, approximately 60 percent of potential habitat and 63 percent of point occurrences for this species will be conserved. The Plan requires area-specific management directives to maintain native ant species, discourage the Argentine ant and protect the species against detrimental edge effects (City of San Diego 1997).

Nine occurrences of San Diego horned lizard have been documented within the southern mixed chaparral and coastal sage scrub on Carmel Mountain and five within the chaparral on Del Mar Mesa Preserve. Suitable habitat exists on both Preserves to support this species. Pitfall traps have been installed on the Carmel Mountain and Del Mar Mesa preserves as part of the MSCP Herpetofaunal Monitoring Program.

Management for this species will include maintaining the existing suitable habitat and maintaining linkages to off-site habitat. Monitoring efforts to detect the species should continue. Irrigation and trash within the preserve should be controlled in order to discourage Argentine ants, which displace native ant populations. In addition, restoration of non-native grassland areas should be undertaken in areas that may support the species. The Center for the Reproduction of Endangered Species (CRES) has been monitoring the San Diego horned lizard for the past six years and has identified biological differences in horned lizards that inhabit disturbed habitat types. Horned lizards that inhabit disturbed habitats have a smaller body size and larger home range with lower plant diversity than those lizards found in pristine coastal sage scrub habitats (Zoological Society of San Diego 2001). This species tends to occur along roadsides, near thick vegetation. It is recommended that new trails and roads should not be created where the species is known to occur (USGS and SDSU 2001). In addition, educational signage should be placed throughout the preserve indicating the sensitivity of the animal and discouraging its removal as a pet.

d. Birds

Coastal California Gnatcatcher. The coastal California gnatcatcher is federally listed as threatened and is a CDFG species of special concern. The coastal California gnatcatcher typically occurs in or near sage scrub and prefers habitat dominated by California sagebrush. The bird also uses chaparral, grassland, and riparian woodland habitats where they occur adjacent to sage scrub.

Approximately 73,300 acres of existing and potential habitat for the coastal California gnatcatcher will be conserved and linked together within the MSCP preserve (City of San Diego 1997). MSCP management directives for this species include; measures to reduce and minimize disturbance to habitat during the nesting period from mid-February to August, and fire protection measures to reduce the potential of habitat degradation and conversion due to unplanned fires. Areas containing high value gnatcatcher coastal sage scrub habitat are priority conservation areas. Management measures to maintain or improve habitat quality of high value conserved habitat are also required by the management directives for this species (City of San Diego 1997). No clearing of occupied habitat within the City's MHPAs is allowed during the breeding season from March 1 to August 15.

Coastal California gnatcatchers have been observed on Carmel Mountain and Del Mar Mesa Preserves within coastal sage scrub and chaparral habitat (see Figures 3-4 and 3-10). It is recommended that suitable habitat on the Preserves be monitored for coastal California gnatcatcher to determine presence of the species, and the appropriate areas of habitat to be maintained or restored if necessary. Habitat around known nesting areas should be enhanced, and protected to discourage humans or domestic animals from disturbing the habitat. Occupied gnatcatcher areas should be monitored for the presence of brown-headed cowbirds (*Molothrus ater*), to prevent brood-parasitism.

Cooper's Hawk. The Cooper's hawk is an MSCP covered species. This hawk mainly breeds in oak riparian woodlands and on rare occasions may also use eucalyptus trees (Unitt 1984). Under the MSCP approximately 59 percent of potential oak woodland, chaparral, and sage scrub foraging habitat and 52 percent of potential oak riparian and woodland nesting habitat for this species is conserved. MSCP management directives for this species include 300-foot impact avoidance areas around active nests and minimization of disturbance in oak woodlands and oak riparian forests.

The eucalyptus woodlands and individual eucalyptus on Del Mar Mesa Preserve should be monitored for potential nesting activity during the breeding season. If active nests are located, signage should be placed at the appropriate intervals around the area restricting access during breeding season.

Northern Harrier. The northern harrier is a CDFG species of special concern. Northern harrier nesting sites are considered sensitive. The northern harrier most commonly nests on the ground at the edge of marshes, but will also nest on grasslands, fields, or in areas of sparse shrubs. Northern harriers have nested in San Diego County at the Tijuana River, Otay Mesa, Lake Hodges, and Camp Pendleton and active nesting is known to occur in the Tijuana River Valley, South San Diego Bay, Sweetwater Marsh and in Proctor Valley (Unitt 1984; City of San Diego 1997). Harriers exhibit nest area fidelity and will forage up to four miles from their nest sites (City of San Diego 1997). Under the MSCP, 42 percent of potential northern harrier nesting habitat and approximately 85,000 acres of potential northern harrier foraging habitat will be conserved. MSCP Management directives for this species include: (1) managing agricultural and disturbed lands within four miles of nest sites that are to become part of the MSCP preserve system to provide foraging habitat, (2) prioritizing grassland and wetland habitats for conservation within the preserve system, (3) impact avoidance areas of 900 feet or to the maximum extent possible within a preserve around active nest sites, and (4) maintaining wintering habitats within key wintering areas in San Diego County.

Northern harriers are not expected to nest on either preserve; however, the preserves support ample foraging habitat to support the species. Management for northern harrier should be directed at maintaining foraging habitat on both Carmel Mountain and Del Mar Mesa Preserves.

Southern California Rufous-crowned Sparrow. The southern California rufous-crowned sparrow is a CDFG species of special concern. Southern California rufous-crowned sparrows are year-round residents that can be found in coastal sage scrub that is generally steep and rocky and in grassy areas of coastal sage scrub (Unitt 1984). Southern California rufous-crowned sparrows are also known to inhabit grassland areas that have been created by fire and human disturbance when the grasslands are adjacent to coastal sage scrub (Unitt 1984). Under the MSCP, approximately 61 percent of potential southern California rufous-crowned sparrow habitat, in addition to 71 percent of mapped localities for the species, is conserved. MSCP specific management directives for this species include maintenance of fire processes to perpetuate herbaceous components in open phases of coastal sage scrub.

The southern California rufous-crowned sparrow is intolerant of edge effects, small habitat patches, low shrub volume and short-term habitat disturbance. According to Unitt (1984), favorable southern California rufous-crowned sparrow habitat occurs within Los Peñasquitos Canyon to the south of Del Mar Mesa Preserve. Management for the southern California rufous-crowned sparrow should be directed at maintaining the native herbaceous component within the sparrow's habitat, either by prescribed burns or manual methods.

Western Bluebird. The western bluebird is an MSCP covered species. During the spring this bird breeds in open woodlands of oaks, riparian deciduous trees, or conifers with herbaceous understory and in winter, uses more open habitats as well. Western bluebirds generally require trees and shrubs for cover and will nest and roost in cavities of trees or snags. Under the MSCP, 59 percent (15,000 acres) of potential western bluebird habitat will be conserved. The persistence of this species largely depends on the conservation of existing large populations of western bluebird on public lands east of the MSCP plan area (City of San Diego 1997).

Competition from European starlings and house sparrows has reduced eastern bluebird populations in parts of the eastern U.S., and threatens western bluebirds (Zeiner et al. 1990). Proximity to development increases the likelihood of starling and house sparrow presence (Marzluff and Ewing 2001). Management for the western bluebird should be directed at enhancing habitat around occupied habitat or nesting areas to discourage humans, domestic animals and pest species from entering the area.

Western Burrowing Owl. The western burrowing owl is a CDFG species of special concern. This species was observed during surveys on-site by RECON (1994), however, [the location](#) was not mapped.

It is believed that western burrowing owls may occur wherever there are ground squirrel colonies as squirrels are the primary excavators of western burrowing owl burrows. The animals exhibit high site fidelity, reusing the same burrow year after year (Rich 1984). Under the MSCP, approximately 4,000 acres of known suitable habitat and 5,770 acres of potential habitat within grassland vegetation communities will be conserved. Specific survey protocol and mitigation guidelines have been formulated for this species (California Burrowing Owl Consortium 1993) but are not legally required. MSCP management directives for western burrowing owl include the enhancement of known, historical, and potential western burrowing owl habitat, and the management of ground squirrels. Management measures will include the construction of artificial burrows and vegetation enhancement to enhance foraging habitat (City of San Diego 1997). Within preserve areas, western burrowing owl nests should be monitored to determine use and nesting success, predator control measures must be employed and a 300-foot impact avoidance area around occupied burrows must be established.

e. Mammals

Mountain Lion. The mountain lion is not a sensitive species but is covered under the MSCP and protected for its aesthetic and intrinsic value, as the largest native carnivore in the plan area

(City of San Diego 1997). The mountain lion requires large continuous tracts of land as their home ranges can vary from 13–800 square kilometers (Hansen 1992). Approximately 105,000 acres of mountain lion habitat is conserved with the MSCP preserve system (City of San Diego 1997). Under the plan, core and linkage areas were designed to maintain ecosystem function including large animal movement throughout different areas of the preserve system. Wildlife agencies are required to monitor the MSCP preserve area for changes in ecosystem function and develop adaptive management strategies should the need arise. In each subarea plan of the MSCP, linkages and road crossing/under crossings in wildlife movement areas are design requirements.

This species is constrained in the western areas of the MSCP preserve system by expanding residential development and loss of protective habitat. The mountain lion is known from historic sightings at Carmel Mountain and Del Mar Mesa Preserves (see Figures 3-4 and 3-8). The Los Peñasquitos and Del Mar Mesa Preserves are directly connected at the western end of the Del Mar Mesa Preserve and at three crossings along Park Village Road. Should mountain lions move into Los Peñasquitos Canyon, they could access the Del Mar Mesa Preserve from either of the four connection points. Access to the Carmel Mountain Preserve is constrained by the high density of residential development on all sides. Given the small size of this Preserve, it is unlikely to support this species.

Wildlife movement in Los Peñasquitos Canyon Open Space Preserve is monitored by the San Diego Tracking Team. In addition to monitoring conducted by the San Diego Tracking Team, several sites in Del Mar Mesa and Los Peñasquitos Canyon have been monitored as part of a wildlife corridor study by the Conservation Biology Institute as part of the MSCP. No mountain lion tracks were identified at any of the study sites in the vicinity of Del Mar Mesa or Los Peñasquitos Canyon (Hayden 2001).

Southern Mule Deer. The southern mule deer is not a sensitive species, but is covered under the MSCP for its aesthetic and intrinsic value, as the largest native herbivore in the plan area (City of San Diego 1997). The mule deer is the principal food source of the mountain lion. Mule deer utilize and modify several different vegetation communities: coastal sage scrub, chaparral and oak woodlands. Approximately 105,000 acres of mule deer habitat is conserved within the MSCP preserve system (City of San Diego 1997). Under the plan, core and linkage areas were designed to maintain ecosystem function including large animal movement throughout different areas of the preserve system. Wildlife agencies are required to monitor the MSCP preserve area for changes in ecosystem function and develop adaptive management strategies should the need arise. In each subarea plan of the MSCP, linkages and road crossing/under crossings in wildlife movement areas are design requirements.

In contrast to the mountain lion, mule deer are not as constrained within the MSCP Preserve system, as they are able to adapt to development in low densities and can move throughout urban canyons. Mule deer are known from historic sightings at Carmel Mountain and Del Mar Mesa and have been actively monitored by the San Diego Tracking Team since 1997 (Friends of Los Peñasquitos [Friends] 2002). Mule deer are routinely sighted in Los Peñasquitos and use

the canyons in and around Del Mar Mesa for movement and day bedding (Friends 2002, Hayden 2001). Mule deer and other mammals use the SDG&E access roads to the west of Park Village Road to move between Del Mar Mesa and Los Peñasquitos in addition to other areas (Hayden 2001).

7.3.1.2 Management of Sensitive Species Not Covered by the MSCP

Several plant and animal species on the Preserves are considered sensitive, but are not covered by the MSCP. Management recommendations for these species are provided below. Future surveying and monitoring of all plant and wildlife species discussed below is recommended as funds become available.

a. Plants

For most of the sensitive plants present on the Preserves, invasive weeds and recreational activity are the primary threats to the existing populations. Trampling and destroying the vegetation allows for the exotic weeds to become opportunistic. Redirecting activity to less sensitive areas when possible is recommended, as is implementing a weed management program in areas impacted by invasive species as funding becomes available. These guidelines should be considered when managing the following sensitive resources on the Preserves:

- California adolphia (*Adolphia californica*)
- South coast saltbush (*Atriplex pacifica*)
- San Diego sagewort (*Artemisia palmeri*)
- Seaside calandrinia (*Calandrinia maritima*)
- Summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)
- Sea dahlia (*Coreopsis maritima*)
- Western dichondra (*Dichondra occidentalis*)
- Palmer's grappling hook (*Harpagonella palmeri*)
- Little mousetail (*Myosurus minimus* ssp. *apus*)
- California adder's-tongue fern (*Ophioglossum californicum*)
- Nuttall's scrub oak (*Quercus dumosa*)
- Ashy spike-moss (*Selaginella cinerascens*).

b. Reptiles and Amphibians

The current herpetofaunal monitoring being conducted on both of the Preserves, as required by the MSCP, will contribute to the knowledge of species diversity present and how to better manage them.

The major threats to amphibian and reptile species on the Preserves include unauthorized vehicular and recreational traffic. Vernal pools provide habitat and important resources for amphibians and reptiles alike. Because many of the pools are located in roads and trails, redirecting recreational activity to less sensitive areas on the Preserves is recommended.

Educating the public of the benefit of these resources is also important, to eliminate destruction and entrapment of species. Signage is also recommended in habitat occupied by the species mentioned below.

Those sensitive amphibian/reptile species not covered by the MSCP include: Western spadefoot toad (*Spea hammondi*), two-striped garter snake (*Thamophis hammondi*) and the northern red diamond rattlesnake (*Crotalus ruber*).

c. Birds

Habitat degradation is the major threat to avian species on the Preserves. Guidelines suggested below should be considered when managing the following sensitive resources not covered by the MSCP on the Preserves:

White-tailed kite (*Elanus leucurus*). These birds prefer to nest in riparian woodland, live oaks, or groves of sycamores, and forage in any open, grassy area. It is recommended that the Eucalyptus groves be monitored for nesting, and that their preferred foraging habitat be enhanced. Open spaces occur on both preserves, and should be enhanced by implementing a weed control program, and by confining activity to the designated trail system. Future surveying and monitoring of all species discussed below is recommended as funds become available.

California horned lark. These birds typically inhabit grasslands, mesas, and areas with sparse vegetation. It is recommended that these open spaces be enhanced by implementing a weed control program, and by confining activity to the designated trail system.

Blue-gray gnatcatcher. This bird will winter in chaparral occasionally, and breeds in foothill chaparral, and riparian woodland. Brood-parasitism by brown-headed cowbirds is a threat to this bird. Recommendations for managing this bird include confining activity to designated trail system, and regular monitoring for brown-headed cowbirds in known locations of gnatcatchers.

Loggerhead shrike. This bird inhabits grasslands and chaparral, and prefers open areas with perches for hunting and fairly dense shrubs for nesting. It is recommended that these open spaces be enhanced by implementing a weed control program, and by confining activity to the designated trail system.

Bell's sage sparrow. This bird prefers interior chaparral, and coastal sage scrub habitats, including dense stands of chamise chaparral. It is recommended that activity be confined to the designated trail system, and that coastal sage scrub habitat be enhanced when necessary, and confining activity to the designated trail system.

Grasshopper sparrow. This bird prefers areas of tall grass, often when mixed with coastal sage scrub. It is recommended that activity be confined to the designated trail system, and that coastal sage scrub habitat be enhanced when necessary, and confining activity to the designated trail system.

d. Mammals

One sensitive mammal species not covered by the MSCP is present on the Preserves, the San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). This species prefers open or semi-open country. Maintaining the integrity of the natural open spaces on the Preserves is recommended.

7.3.1.3 Native Species Introduction

A native species that has been extirpated from the Carmel Mountain or Del Mar Preserve areas may be reintroduced into the Preserves. Any introductions are subject to the prior consensus of the City of San Diego, the Habitat Manager, the agency(ies) with jurisdiction over that species, and any private landowners that may be affected. Introductions must be evaluated with respect to feasibility and the availability of suitable habitat. Only native species whose historic range included the preserve site may be introduced.

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7.3.2 Habitat Management

7.3.2.1 Maintaining High Quality Habitat

To maintain high quality habitats on the Preserves, the following activities shall be prohibited:

1. Grading, except for habitat or species restoration, facilities such as nature/interpretive center or comfort station, or if trails need to be redirected around sensitive habitat or species.
2. Excavation, except for vernal pool restoration.
3. Placement of soil, sand, rock, gravel, or any other material, except for habitat or species restoration.
4. Clearing of vegetation, except for removal of exotic plant species, brush management activities, and rerouting of trails.
5. Minimizing the number of buildings or structures to be built.
6. Driving unauthorized vehicles.
7. Dumping trash or hazardous waste.
8. Allowing pets to run free in the habitat.

To limit impacts to the preserves, activities in the habitat are restricted to:

1. Natural resource surveys, including MSCP monitoring activities.
2. Emergency response by the Habitat Manager and the appropriate agencies in case of fires, floods, earthquakes, or other natural disasters.

3. Vehicle access ~~for preserve patrols, restoration implementation, and utility maintenance~~
4. Hiking, biking, and equestrian activities on the designated hiking/biking/equestrian trails.

Deleted: to the power transmission lines at the western edge of the Carmel Mountain Preserve for transmission line maintenance

All activities on the Preserves must avoid or minimize impacts to the native habitats and avoid take of listed species. If take cannot be avoided, the take must be authorized by a take permit from USFWS.

7.3.2.2 Invasive Exotic Plant Control Program

This section discusses a variety of methods involved in, and issues related to, restoration, including restoring occupied habitat; removing and controlling non-native plant species; preparing the site; selecting native plant species; collecting native plant seed; restoring microbial crusts; using salvaged materials; monitoring and maintaining the restored habitat, and implementing adaptive management techniques.

Non-native plant removal strategies should be site-specific to take advantage of habitat breaks such as those created by large shrub patches, canyon edges, rock outcrops, or roads so that patches of weeds can be effectively controlled. Taking advantage of existing breaks will enable managers to use non-native plant removal funds most efficiently. Initially, efforts should be concentrated on habitat patches that support sensitive species such as the short-leaved dudleya and vernal pools and this will improve the habitat quality in these most critical sites until resources are available to weed and restore larger areas. After non-native plant removal, populations of native species may be enhanced or re-established by hands seeding, or propagation off-site and outplanting.

The weed management program described below can be implemented over a five-year period. After weeds have been successfully controlled, a reduced level of effort will be required over the long-term to keep weeds under control. The long-term weeding program would focus on spot control of weed populations and finding and eradicating new infestations.

7.3.2.3 Restoring Areas Dominated by Non-native Plants when Native Species are Still Present

Native vegetation communities invaded by non-native species can be weeded using different methods, depending on the site conditions and the presence of sensitive resources. Some habitat patches will require only spot herbicide spraying, and possibly hand removal of individual non-native plants. Other methods can also be used, although not all non-native plant control methods may be appropriate in sensitive habitat, such as the use of pre-emergent or other herbicides. Site-specific non-native plant control strategies will be needed, and will be implemented as funding becomes available. Timing of non-native plant control efforts is critical to success. If non-native plants are not killed prior to seed set, then removal effort and cost will remain high over time. Another critical component of the non-native plant removal method

described below is that workers must be trained to distinguish between native and non-native plants for restoration to be successful.

This method of restoring native vegetation communities, which is described below, involves removal of dead plant thatch using hand tools and “weed whippers,” and return visits for spraying with glyphosate herbicide, appears to be successful on sites in central and southern San Diego County. Thick thatch can prevent native species from germinating and/or competing successfully for light and space with non-natives.

If non-native plants are present at moderate to high levels in areas that still have significant numbers of native species present, the following de-thatching technique can be used to restore or enhance these sites. De-thatching should be used in areas that have a buildup of organic matter on the soil surface, such as annual grasses or mustard.

De-thatch and Repeat Spray/or Hand Pull Method (in order):

- Cut thatch/dead non-native plants with “weed whippers.” This can be done during the summer or early fall.
- Rake up and collect non-native plant thatch.
- Remove thatch from site and dispose of it in dumpsters, a landfill, or an area where it can be composted nearby to reduce disposal costs.
- Return to site and spray Roundup (or more selective herbicide) on non-native plant seedlings after sufficient rains have fallen in winter and spring. In sensitive plant habitat hand pulling of weeds or weed whipping will be required in the immediate vicinity of rare plants to prevent them being killed by herbicide. Hand removal should be done in a manner that minimizes disturbance to the soil surface. Careful pulling or cutting of weeds is necessary so that the control methods do not create conditions favorable for further weed invasion.
- Repeat spraying/hand pulling as necessary to prevent seed set. Other options include the use of pre-emergent herbicide prior to the first significant rain. Pre-emergent herbicides kill seeds prior to seed germination. Pre-emergent herbicides should only be used in areas that are not intended for seeding with natives.
- Repeat spraying as necessary to maintain non-native plant density to a low level. If non-native plants are controlled each season prior to flowering and setting seed, the level of effort required should decrease over the five-year period.

The non-native plant removal process must be carefully monitored because as the dominant non-native plant species are removed, other non-native plant species can multiply rapidly and replace the formerly dominant non-native species particularly in more disturbed sites.

Adaptive management strategies must quickly address control of newly dominant non-native species. Frequent site visits are necessary during the growing season to assess non-native

plant removal efforts and to determine whether changes are needed in the strategy being used or the intensity of non-native plant removal efforts. This type of non-native plant removal effort requires control of weeds prior to flowering and seed development. As non-native plants are controlled over the first few years, natives will return to dominance. Removal of non-native plants by hand may be required around sensitive species and small populations of herbaceous natives. Herbaceous annuals, which may be locally rare because of non-native plant competition, may need population augmentation and careful hand removal of non-natives to ensure expansion of native plant species.

7.3.2.4 Exotic Plant Species

The introduction of exotic plant species is the chief cause of habitat degradation near developed areas. Control of exotic plant species will include:

- Monitoring of habitat within the open space for occurrence of exotic plant species.
- Removal of existing exotic species using manual methods as needed.
- Prevention or minimization of the introduction of exotic plants. The plants identified by the California Invasive Plant Council (Cal-IPC) should be prohibited from being planted or introduced in any way to the Preserves and should be removed if found (Appendix 7). The Habitat Manager **should** supply the table to the Habitat Management District and the local project developers and homeowners associations. The Habitat Manager **should** add plants to this list of exotics if it can be shown the species is having a negative impact on the Preserves.
- Removal of all new infestations promptly following their discovery. This is the responsibility of the Habitat Manager.

Perennial and biennial exotic plant species removal and control will consist of cutting weed stems off below ground level or pulling weeds manually. Annual weeds will be manually or mechanically (i.e., mowed) cut prior to producing ripe seed. Cut or pulled weeds will be disposed of properly. Use of herbicides for weed control will be allowed at the discretion of the Habitat Manager. Any herbicide used on Park and Recreation managed lands must be on the "Approved for Park and Recreation Use" herbicide list.

With the use of herbicides:

- The herbicides should be biodegradable.
- The minimum amount required to be effective will be used.
- Applications need to be done at the appropriate time of year to maximize efficiency.
- Applications must be focused on the target species, avoiding impacts to native vegetation.
- Areas treated shall be posted with signs warning of the presence of herbicides.

Pesticide application would be consistent with City, County, state, and federal guidelines. All applications must avoid take of listed species. The Habitat Manager is responsible for all the necessary permitting required for exotic plant species removal.

Each year, the Habitat Manager will assess the occurrence of perennial and biennial weeds in the open space. The Habitat Manager will identify problem areas, prescribe the measures to remove the weeds, prioritize the weed removal tasks, and set a schedule for the recommended actions, dependent on staffing and budget. Only herbicides on the Park and Recreation Department's pre-approved herbicide list will be used.

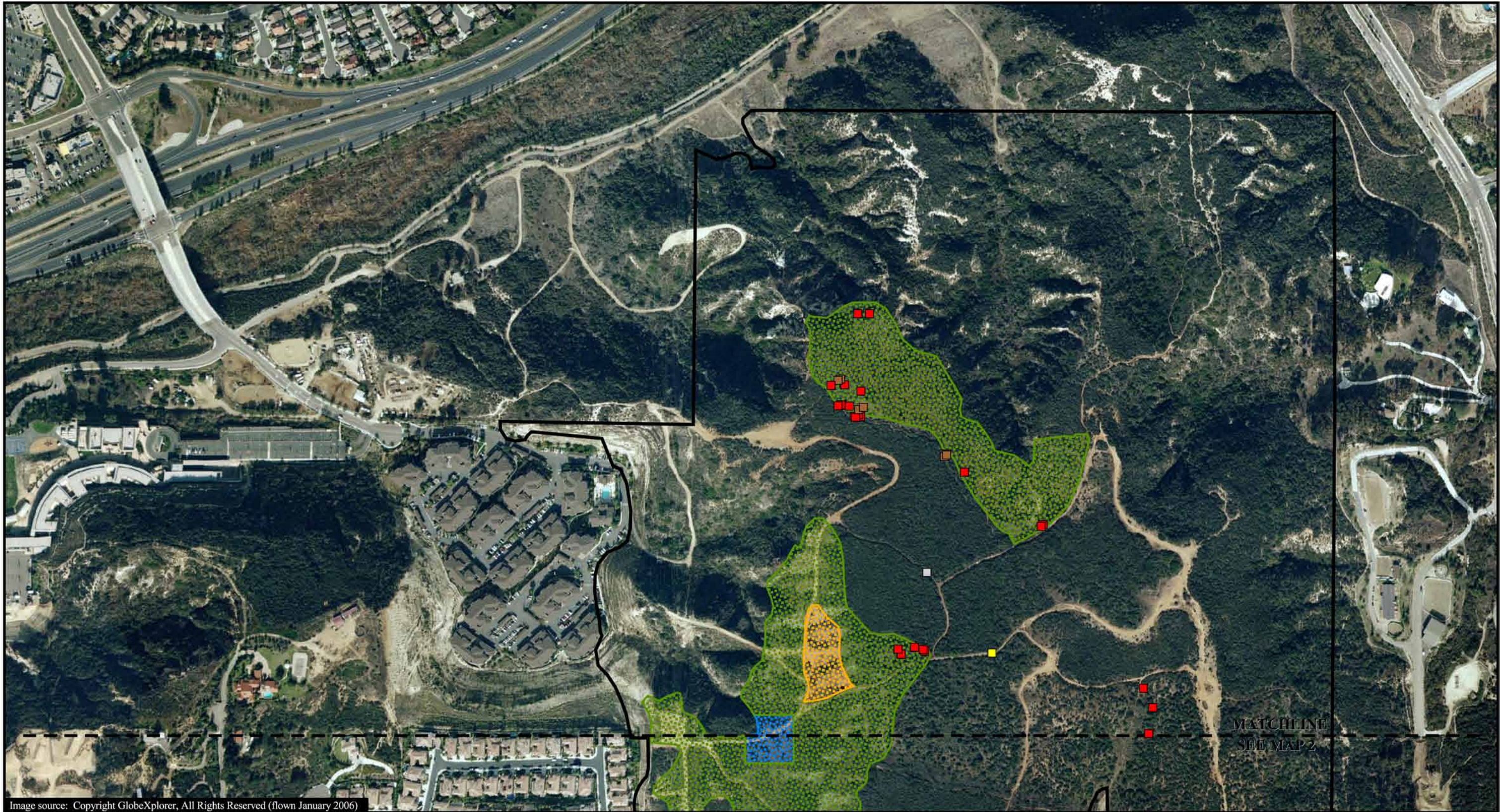
a. Focused Weeding Areas on Carmel Mountain

Areas proposed for de-thatching and intensive weeding on Carmel Mountain are depicted in Figures 7-1a and 7-1b. Known invasive species such as pampas grass and sweet fennel have also been mapped. In addition to the focused weeding areas depicted in the figures, all roads and trails in the Preserve should be surveyed for weeds each spring and a control program of spot spraying, hand pulling and timely weed whipping should be implemented. Most of the Preserve is relatively weed free at this time. The greatest concentrations of weeds occur in areas formerly disturbed by grading and clearing activities. In addition, any areas of recent burns should be checked frequently during the growing season to check for new weed patches and these weeds should be aggressively controlled to prevent further invasion of non-natives into burn sites. Although extensive weed invasion of most of the Preserve has yet to occur, the likelihood of future weed invasions will increase with time as development surrounds the Preserve.

b. Focused Weeding Areas on Del Mar Mesa


Areas proposed for de-thatching and intensive weeding on Del Mar Mesa are depicted in Figures 7-2a–d. In addition to the focused weeding areas depicted in the figures, all roads and trails in the Preserve should be surveyed for weeds each spring and a control program of spot spraying, hand pulling and timely weed whipping should be implemented. Most of the Preserve is relatively weed free at this time. The greatest concentrations of weeds occur in areas formerly disturbed by grading and clearing activities. In addition, any areas of recent burns on Del Mar Mesa should be checked frequently during the growing season to check for new weed patches and these weeds should be aggressively controlled to prevent further invasion of non-natives into burn sites. Although extensive weed invasion of most of the Preserve has yet to occur, the likelihood of future weed invasions will increase with time as development surrounds the Preserve. There are large populations of invasive weeds including artichoke thistle.




Deleted: future







MATCHLINE
SEE MAP 2

Image source: Copyright GlobeXplorer, All Rights Reserved (flown January 2006)

 Carmel Mountain Preserve

Potential Weeding and Enhancement Areas
 Weeding
 Weeding and enhancement
 Weeding/enhancement areas on private land (pending land acquisition)

 *Foeniculum vulgare* (Sweet fennel)
 *Cortaderia jubata* (Pampas grass)
 *Nicotiana glauca* (Tree tobacco)
 Trash

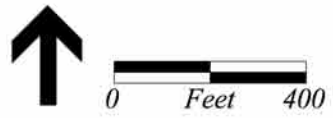



FIGURE 7-1a
Potential Weeding and Enhancement Areas
on Carmel Mountain Preserve
(Map 1)




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MATCHLINE
SEE MAP 2

Image source: Copyright GlobeXplorer, All Rights Reserved (flown January 2006)

 Carmel Mountain Preserve

Potential Weeding and Enhancement Areas
 Weeding
 Weeding and enhancement
 Weeding/enhancement areas on private land (pending land acquisition)

 *Foeniculum vulgare* (Sweet fennel)
 *Cortaderia jubata* (Pampas grass)

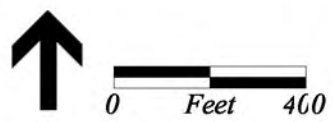


FIGURE 7-1b
Potential Weeding and Enhancement Areas
on Carmel Mountain Preserve
(Map 2)

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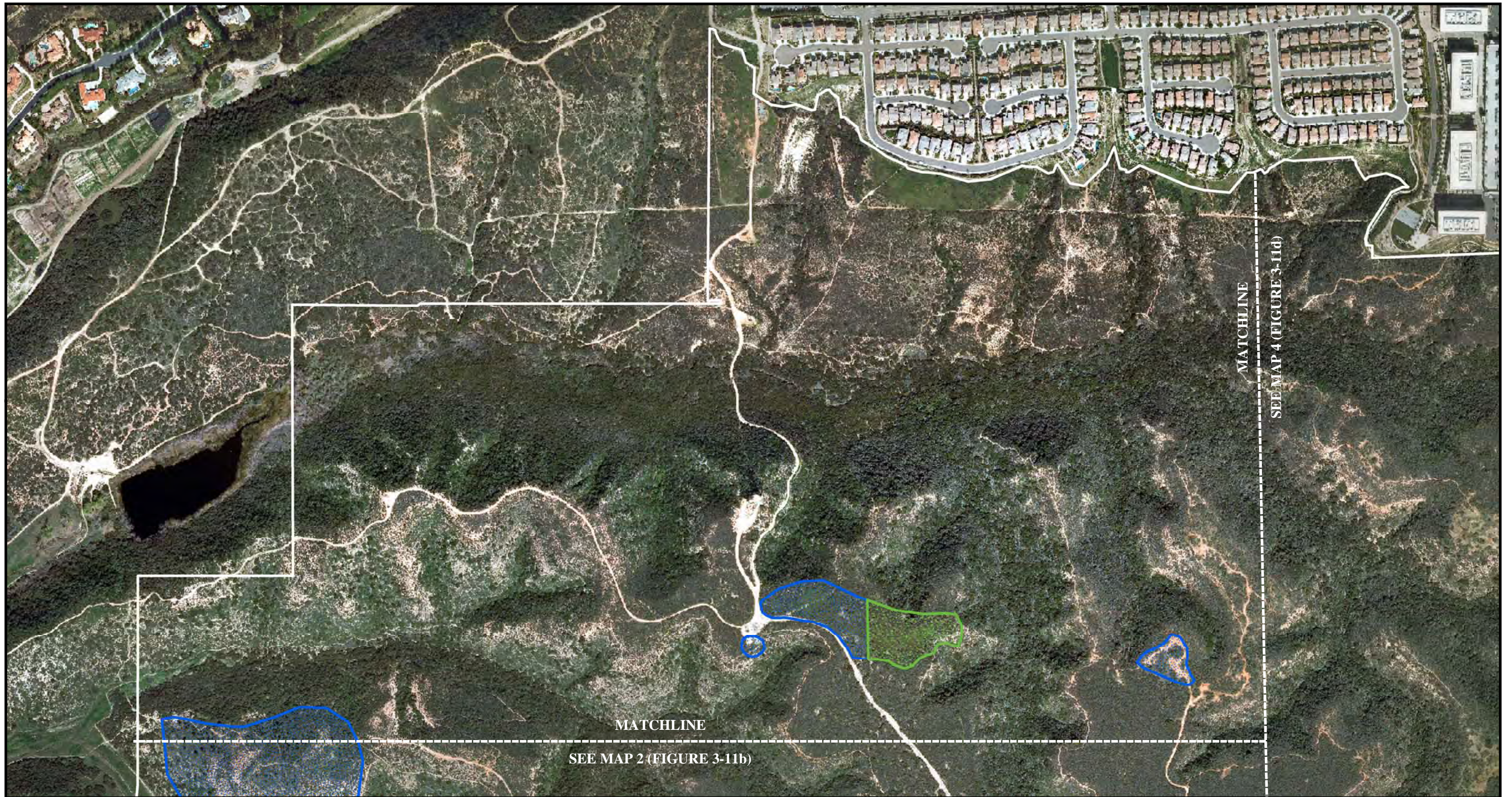


FIGURE 7-2a

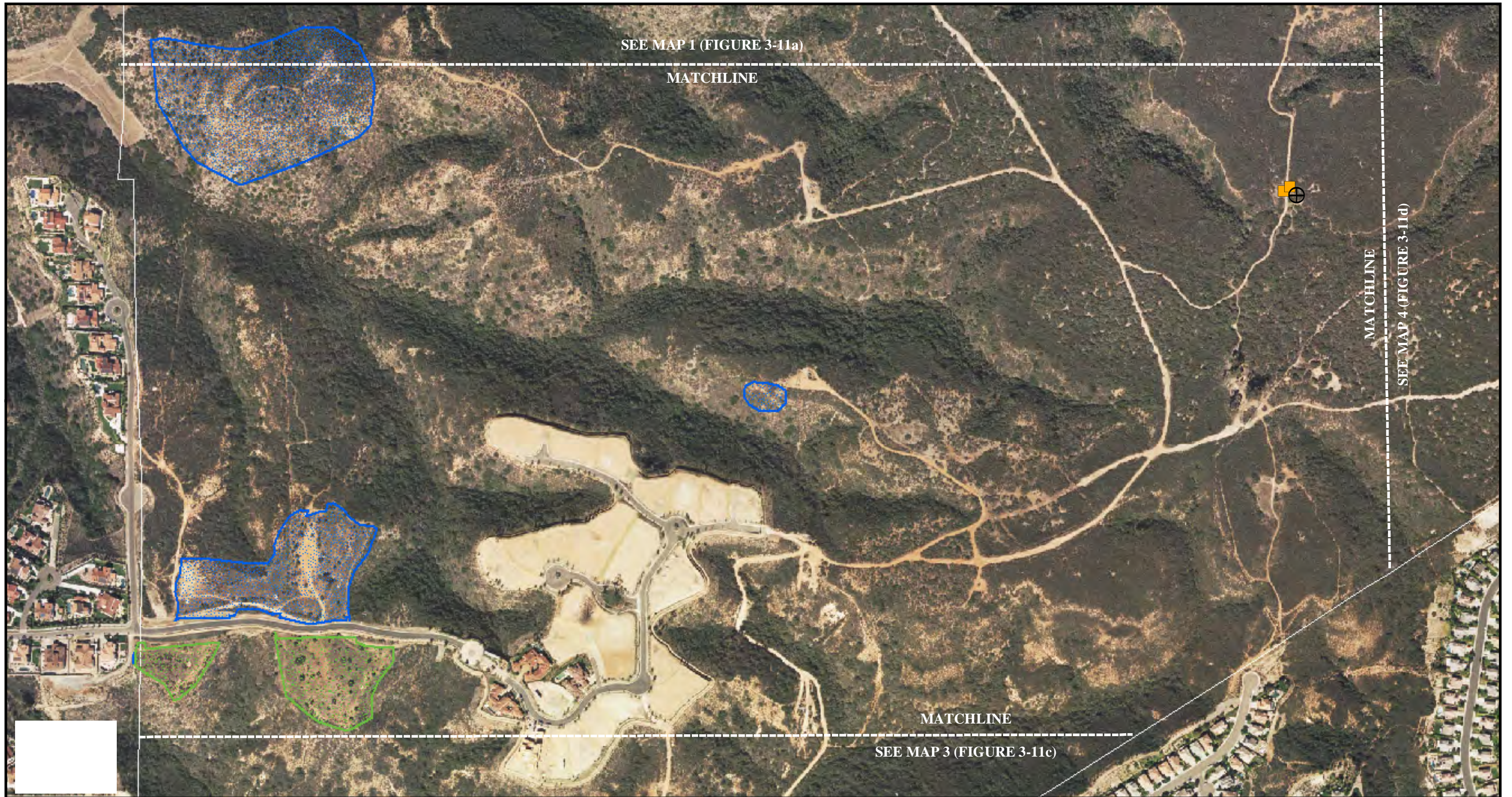
0 145 290 580
Feet



- Potential weeding and enhancement areas on private land (pending land acquisition)
- Weeding and enhancement
- Carpobrotus edulis* (Hottentot fig)
- + Trash

Potential Weeding and Enhancement Areas
on Del Mar Mesa Preserve (Map 1)

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SEE MAP 1 (FIGURE 3-11a)

MATCHLINE

MATCHLINE

SEE MAP 4 (FIGURE 3-11d)

MATCHLINE

SEE MAP 3 (FIGURE 3-11c)

0 125 250 500
Feet



- Potential weeding and enhancement areas on private land (pending land acquisition)
- Weeding and enhancement
- Carpobrutus edulis* (Hottentot fig)
- ⊕ Trash

FIGURE 7-2b

Potential Weeding and Enhancement Areas on Del Mar Mesa Preserve (Map 2)

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FIGURE 7-2c

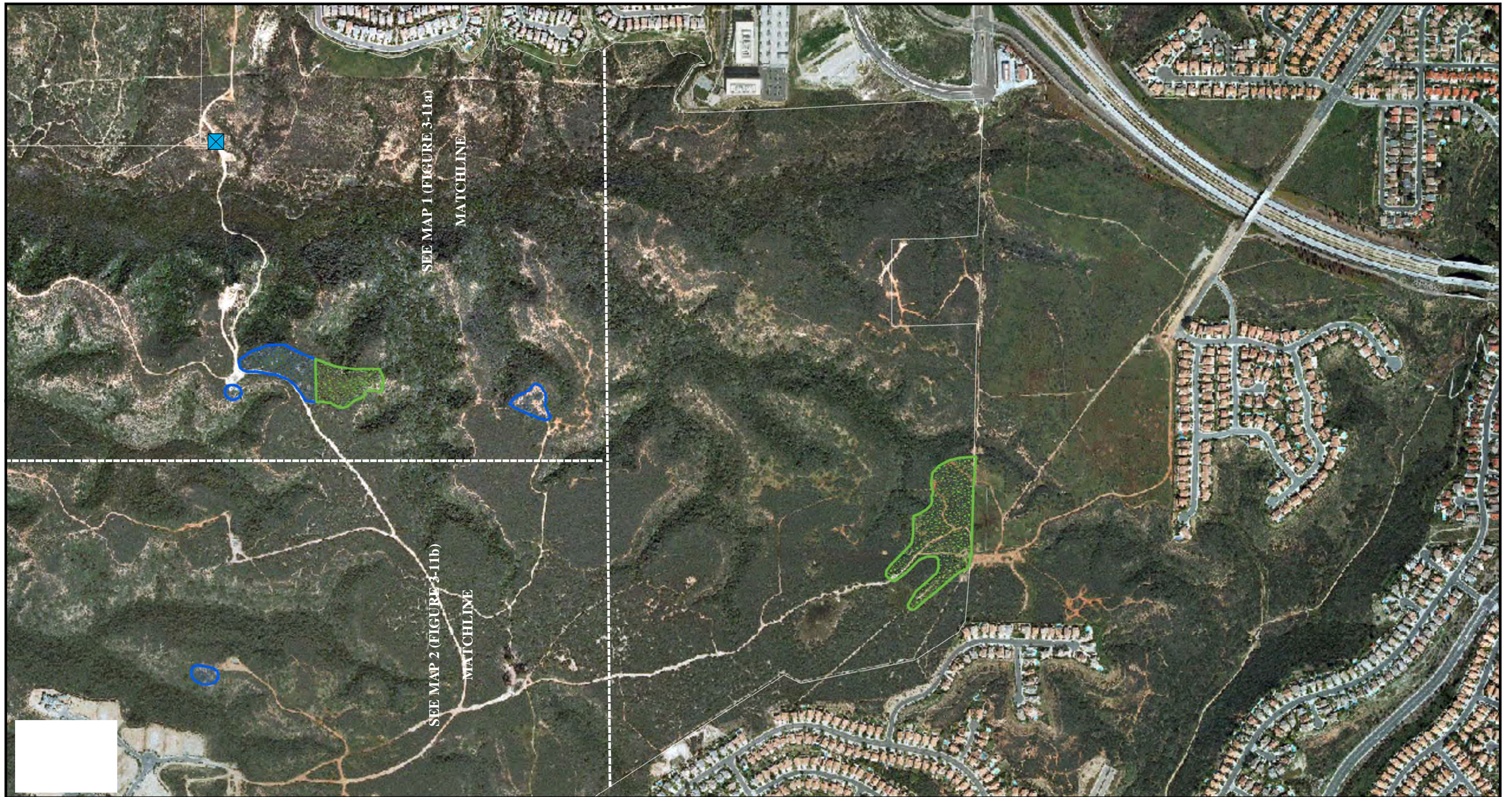
0 105 210 420
Feet



- Potential weeding and enhancement areas on private land (pending land acquisition)
- Weeding and enhancement
- Carpobrutus edulis* (Hottentot fig)
- ⊕ Trash

Potential Weeding and Enhancement Areas
on Del Mar Mesa Preserve (Map 3)

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0 200 400 800
Feet



- Potential weeding and enhancement areas on private land (pending land acquisition)
- Weeding and enhancement
- Carpobrotus edulis* (Hottentot fig)
- ⊕ Trash

FIGURE 7-2d

Potential Weeding and Enhancement Areas
on Del Mar Mesa Preserve (Map 4)

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7.3.2.5 Exotic Animal Species

Exotic animals typically present a much more difficult control problem than do exotic plants. There is a potential for the Argentine ant to occur within the proposed open space. Cats and dogs from adjacent developments are expected to enter the Preserve. These activities may be subject to CEQA and therefore require additional environmental review.

1. The Habitat Manager should make note of the occurrence of Argentine ants and imported fire ants during other scheduled maintenance and monitoring visits. As funding becomes available, control measures should be implemented based on methods prescribed by County and state agencies with approval by the Habitat Manager.
2. Removal of trash, an unwanted food source, and control of irrigation runoff from outside the Preserves and excess water inside the Preserves, will help discourage establishment of Argentine ants, which displace native ants, the main prey of the San Diego horned lizard. To minimize irrigation runoff into the Preserves, irrigation and runoff control plans for adjacent development projects should be reviewed by appropriate City staff to ensure designs direct runoff into storm drains and away from the Preserves.
3. The use of pesticides is discouraged on the Preserves. If deemed necessary by the Habitat Manager, pesticides are to be used at the discretion of the Habitat Manager, who shall be responsible for any permits per City, county, state and federal guidelines.

An inclusion to the exotic species group is uncontrolled pets. Dogs and cats can be major predators on native species. Steps shall be taken to prevent the predation of native species by dogs, cats, and other non-native predators. Predator control should be initiated as necessary on a case-by-case basis and as funding permits. The following are specific guidelines for controlling predators:

1. Trapping of non-native predators should be limited to strategic locations where determined feasible to protect ground and shrub-nesting birds, lizards, and other sensitive species from excessive predation.
2. Predator control should be considered to be a temporary, short-term activity.
3. A predator control program should only be implemented to address a significant problem that has been identified and is needed to maintain balance of wildlife within the preserves.
4. Predator control methods shall be humane. Adequate shade and water should be provided and traps should be checked twice daily.
5. If a predator control program becomes necessary, signs at access points should be installed to notify adjacent residents that trapping will occur and how to retrieve their pets.

6. Any domestic animal inadvertently trapped should be taken to the nearest animal shelter.
7. Any predator control activities should be coordinated with MSCP staff to ensure that the activity is in compliance with MSCP regulations.
8. The Habitat Manager shall promote education of the open space users (those using the hiking/biking/equestrian trails) to the potential impacts of uncontrolled pets, using signs posted at the trailhead locations.
9. Leash laws shall be enforced within the preserves in order to control pets.
10. The Habitat Manager shall report to the County Animal Control Officers if persistent and chronic problems in the open space from particular uncontrolled pets occur.
11. Eradication and control efforts shall be done at the most effective and efficient time of year; these efforts shall reflect the latest information in the field on control of the target species.
12. If any non-native predators are observed within the preserve area (i.e., brown-headed cowbirds, feral cats, etc.), it should be reported as soon as possible to senior park staff and MSCP staff. A qualified biologist should verify any observations by unqualified staff or the public. If funding is available, the ranger should begin predator control at that location in accordance with the guidelines given above.

7.3.3 Native Pollinator Population Enhancement

Providing adequate habitat for pollinator assemblages is critical to the success of any restoration project. Fortunately the Carmel Mountain and Del Mar Mesa areas have significant areas where weeds have not yet invaded and these areas probably support viable populations of native pollinators. Pollinators are required to ensure that plants have high seed set and persist long term. In arid environments, many potential pollinators, including native bee species, require open ground for nesting (Buchmann and Nabhan 1996). Extensive non-native plant cover continues to invade and dominate many habitats in Southern California, resulting in a loss of open ground suitable for ground nesting pollinators. By reducing available nesting sites, the non-native plant growth is causing a decline in pollinator numbers and diversity, with negative implications for entire ecosystems.

In addition to the rapid reduction in the extent of open areas required for ground nesting pollinators, competitive interactions between non-native and native plant species are causing declines in the biological diversity of natural communities in southern California. In order to support a diverse assemblage of potential pollinators and native plant species, areas of open ground within associated native vegetation communities should be restored to support ground nesting bees and other invertebrates. The goal of having open ground for pollinators is compatible with rare herbaceous plant restoration efforts for the short-leaved dudleya and bulb

species that tend to occur in openings within the matrix of surrounding maritime chaparral vegetation.

Restoration plantings should include nectar-producing plant species with overlapping flowering periods that extend throughout the typical Southern California growing season. Although there are exceptions, in general many of the nectar producing plants of arid Southwest environments (including chaparral, coastal sage, grasslands and vernal pools habitats in southern California) are visited by generalist pollinating insects (Buchmann and Nabhan 1996). Generalist pollinators visit more than one plant species for their nectar and pollen. To support pollinator assemblages throughout the flowering season, reestablishment and enhancement of nectar-producing plant populations should be one of the goals of restoration efforts. Generalist pollinators may require temporally overlapping nectar resources to support their populations throughout the year. At a minimum, several nectar-producing plant species should be included in restoration plantings, which in combination flower from early spring through late summer, as seen in relatively undisturbed natural ecosystems in southern California.

For example, species that provide good nectar resources include goldfields (*Lasthenia* sp.) and tidy tips (*Layia* sp.), which flowers in early spring; gumplant (*Grindelia* sp.), which flowers later but overlaps with goldfields; and other herbs such as tarplants (*Hemizonia*) and shrubby species such as goldenbush (*Isocoma* sp.), which flower in late spring and during the summer. The reestablishment of these or other appropriate species on a restoration project site will provide a continuous nectar source to keep local pollinator assemblages supplied with resources until the fall, when many pollinating insects become dormant or enter another phase of their life cycle. Each region has its own set of nectar-producing plants, and restoration programs should be designed on a site-specific basis with the goal of supporting viable populations of potential pollinators.

7.3.4 Microbiotic Crust Enhancement and Restoration

Although the science of restoring microbiotic crusts is still in its infancy and the regeneration process requires a long time for full development, there are known techniques to promote conditions that are appropriate for the growth of these microbiotic crusts. Observations of older disturbed habitat in San Diego County and elsewhere indicate that microbiotic and other soil crusts can recover following a disturbance. The process takes many years and proceeds more slowly in xeric environments than in more mesic sites. Microbiotic crust redevelopment on disturbed sites is likely to be more species diverse when intact crusts exist adjacent to the disturbed area. Moisture and soil conditions a long with levels of disturbance are the most important factors to consider when promoting crust growth.

Belnap et al. (1999) listed these five factors that increase moisture on the soil surface and therefore promote crust development: (1) closely spaced plants; (2) flat areas (depositional surfaces rather than erosional surfaces); (3) limited surface rocks, roots, or light plant litter to slow water and wind; (4) soils with inherently high stability (silt/clay>sandy>shrink-swell clay);

and (5) stable microhabitats (under shrubs, away from small drainages). As soil stability increases and human-related disturbances decrease, rich communities of cyanobacteria, mosses, and lichens become more widespread, covering all surfaces not occupied by vascular plants and rocks.

Recent attempts have been made to reintroduce crust organisms to restoration sites on Otay Mesa, in San Diego County. Crust organisms such as ashy spike-moss and other associated crust flora such as liverworts, mosses, fungi, and lichens have been salvaged from recently developed areas and planted into restoration sites (RECON 1999). One way to translocate crust organisms such as ashy spike-moss from development impact areas is to cut squares of spike-moss about the size of a greenhouse flat using hand tools and place the squares into the flats for transport or temporary storage. When soils at the restoration site are moist, the spike-moss can be planted into shallow holes excavated in the shape of the flat. The spike-moss is planted in the hole so that it is flush with or slightly below the surrounding soil surface. This placement reduces the chance that erosion will break apart the crust. New crust organisms have been grown on a small scale by placing salvaged native topsoil in greenhouse flats and then keeping them continually moist in a shaded growing structure.

These small-scale microbiotic crust restoration trials have produced actively growing liverworts, mosses, and a shy spike-moss. Large-scale production could be used to grow many units of crust, which can be planted at the restoration sites after non-native plants are removed or under control. Salvaged brush is also being used to promote the growth of crusts by placing branches on open ground after weeds have been controlled. The branches alter the soil moisture conditions by reducing evaporation. Mosses and algae have been observed growing under the branches within one year after the branches have been put in place. Future efforts to promote crust development will include crust salvage from development impact sites during the summer dry season and then using the powdered dry soils to sprinkle over stable soil areas that are lightly covered with branches.

7.3.5 Seed Collection Guidelines

Seeds of native plant species used in each restoration project should be locally collected whenever possible. If a plant species was historically present in an area but can no longer be found, it should be reintroduced from the locality nearest the restoration site. It has been shown that locally adapted plants are better competitors than plants introduced from a different climate zone (Knapp and Rice 1998). Seed collections should generally occur within five miles of a proposed restoration or enhancement site. If collecting within the five mile of the site is not possible, research has demonstrated that it is best to collect seeds as close as possible within the same general climate zone. General climate zones outlined in the Sunset Western Garden Book (Sunset Publishing Corporation 1995) can be used as a guide. Reciprocal transplant experiments have shown that plants of genotypes that are not locally adapted are inferior competitors when they are moved to a different climate zone. In addition, introducing plants that are not locally adapted can be detrimental to local herbivorous insects.

Some species, particularly annuals, will be difficult to collect from the wild in sufficient quantity to seed the restored areas. Collecting from the wild must be limited such that it will not adversely affect source plant populations. To ensure that adequate seed is available, seed bulking (growing seed in cultivation to increase the amount of seeds) of annuals may be necessary. This seed bulking should be done at growing areas that can provide reproductive isolation from related plants from different regions. Plants from different source regions should not be allowed to hybridize at a common growing facility. Locally adapted genotypes for plants should be maintained as much as possible. It can take three years to grow native bulbs from seed to a size large enough to plant and still have high survivorship when they are planted out. Therefore, restoration of diverse grassland sites, for instance, can require several years of planting and preparation.

7.3.6 Plant and Soil Salvage and Use Guidelines

7.3.6.1 Topsoil

Salvaged topsoil can also be used from nearby construction sites to enhance the restoration areas, including bringing in native plant propagules and soil fauna. Opportunities for topsoil translocation include areas where existing roads or trails would be closed and the sites do not already have native plants present. The most likely location for topsoil should only be salvaged from areas that are not infested with non-native plants. Salvaged topsoil must be placed at the recipient site as soon as possible to maintain the maximum diversity of seeds and other soil organisms. The greatest chance of success in using salvaged topsoil is to collect soil in the summer or early fall dry period. If soils are wet when moved and spread greater damage to the native seed bank and soil organisms will occur than if the soil is dry and organisms are dormant. Soil should be stockpiled only if absolutely necessary because the longer the soil is stored the greater the loss of seeds and soil fauna. If soil must be stockpiled, it should be kept dry. The depth of piles in storage should not exceed three feet to avoid composting effects, and a depth of one to two feet is preferable for maintaining seed banks. Any topsoil recipient sites should be prepared prior to topsoil delivery.

7.3.6.2 Brush and Rocks

The following techniques can be used to increase the structural diversity of the restoration area to provide cover sites for wildlife and to promote microbiotic crust redevelopment. Brush piles, scattered sticks, branches, and rock cobbles can be brought to the restoration site to increase the available cover for many animals. Brush can be obtained from nearby construction sites, either from brushed habitat impacted by development or from brush management activities adjacent to structures. Because brush material is considered a waste product and has to be chipped and removed to a landfill, most construction supervisors will truck the material to a restoration site if it is nearby the construction area. This can save the developer on costs

associated with trucking the material to a landfill. Creative partnerships with developers can result in increased structural diversity of restoration sites.

Placement of decaying wood and brush in the restoration site can provide immediate cover for many animals. By bringing in brush and rocks (if appropriate to the specific site) you can “jump start” restoration by providing cover that would take many years to develop or accumulate otherwise. The use of one or two restoration enhancement techniques, such as placement of brush and rocks, can benefit multiple species when done using an integrated ecosystem approach. For example, brush piles and sticks that provide nest sites for native woodrats and other wildlife can also provide food for termites that are the primary food source for orange-throated whiptails, a covered MSCP species.

7.4 Cultural Resources Management

This section is intended to provide technical information specific to the laws pertaining to preservation and protection of prehistoric and historic properties and the appropriate methods to avoid, reduce, or otherwise mitigate adverse impacts resulting from programs and activities relating to the management of the Preserves.

Current and future activities at the Carmel Mountain and Del Mar Mesa Preserves may have the potential to damage or alter historic properties (historic or prehistoric cultural resource sites) eligible for the National Register of Historic Places or resources considered significant under CEQA and/or City of San Diego Historical Resource Guidelines. ~~These activities are considered an undertaking under the National Historic Preservation Act (NHPA). An undertaking is defined as:~~

A project, activity, or program funded in whole or part under the direct jurisdiction of a federal agency (NHPA section 301[7]). This includes projects:

- Carried out by or for the agency;
- Carried out with Federal financial assistance;
- Requiring Federal permits, licenses, or approval;
- Subject to State or local regulations administered pursuant to a delegation or approval by a state or Federal agency.

All procedures in an undertaking must be in compliance with the City's historic resource regulations and guidelines as well as 36 CFR 800 guidelines. The area of potential effect (APE) and any areas associated with the undertaking must be developed in consultation with the State Historic Preservation Officer (SHPO) and other consulting parties, including Native Americans, public agencies, and private property owners.

An undertaking is determined to have an effect when it:

Deleted: These activities include a variety of trail construction, maintenance programs, and potential increase use of the areas by the general public, which can result in differing effects of direct and indirect impacts to cultural resources. ¶

1. May alter characteristics of the property, including relevant features of its environment or use, which qualify the property for inclusion in the National Register of Historic Places (NRHP) and /or is considered significant under CEQA or the City of San Diego Guidelines; and
2. May diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

Effects can be determined as beneficial or adverse. For example, beneficial effects of an undertaking can include restoration of an historic building or features, or enhancement or protection of an archaeological site. Adverse effects can include but are not limited to:

- Physical destruction, damage, or alteration of all or part of the property;
- Alteration of the character of the property's surrounding environment where that character contributes to the property's eligibility;
- Neglect of a property resulting in its deterioration or destruction;
- Alteration of a drainage or erosion pattern;
- Creation of access into previously inaccessible areas;
- Unauthorized collection; and
- Off-road vehicle use.

7.4.1 Process

The cultural resource management process consists of two parts: (1) identification and evaluation and (2) treatment.

7.4.1.1 Identification and Evaluation

The first step is identification and evaluation of cultural properties subject to potential impacts. Resource identification and evaluation are conducted within research contexts that provide the criteria by which individual cultural properties can be assigned scientific or social significance. Those resources not meeting significance criteria receive no further management treatment, except for possible construction monitoring. Resources that are determined to be significant are provided protection under existing statutory and regulatory authorities.

Deleted: project

7.4.1.2 Treatment

Mitigation of Significant Sites. If a resource is significant or NRHP eligible, the nature and extent of impacts are determined and a plan is developed for mitigating the adverse effects. Often impact avoidance, through project redesign, is not possible or practical and alternative mitigation measures (rehabilitation, data recovery, and analysis) must be instituted. All alternatives to preservation in place cause some loss of resource integrity. Therefore, the nature of this loss and any data recovered through mitigation activities must be documented.

Deleted: resulting from a project

Monitoring of Potentially Significant Sites. On-site monitoring is undertaken during any ground-disturbing activity if potential for subsurface deposits exists. Monitoring conducted as part of construction verifies that mitigation measures are effective and ensures against loss of any previously undiscovered significant resource(s) uncovered during construction activities. Long-term operational monitoring may be required to identify any changes in the physical status of a resource that results in the loss of integrity.

7.4.1.3 Priorities

Long-term priorities are in effect for more than four years or extend into more than one funding cycle. Long-term priority goals relate to the consistent implementation of the procedures for accomplishing the cultural resource management objectives of the two Preserves. Resource Management Goals are to:

1. Protect and Manage Identified Cultural Resources. Maintain cultural resource protection measures through proper planning for avoidance of adverse effects, maintain site markings as appropriate, enforce historic preservation regulations for all Preserve users, and develop and maintain an archaeological site monitoring program.
2. Encourage Public Involvement. Cooperate with interested local historical and archaeological groups, local Native American tribes, and educational institutions in developing a plan to promote public participation in historic preservation and enjoyment of cultural resources at the two preserves.

7.4.2 Management Guidelines

7.4.2.1 Evaluating Significance

Establishing historic contexts is the first standard outlined in the *Secretary of the Interior's Standards for Preservation Planning* section of the NHPA (Section 110). The historic context of a cultural resource is used to determine the significance of a resource under Section 106 of the NHPA. A cultural resource's historic context is a combination of the geographic location and surrounding area, time period of resource significance, historical themes or research questions the resource can address, and potential Native American significance. Historic contexts are derived from recorded site information and from prehistoric and historic background information.

The historic context organizes information based on cultural themes and their geographical and chronological limits, describing significant broad patterns of development that may be represented by individual archaeological sites.

Significance assessments are designed to systematically quantify those values that make archaeological resources important to historic preservation, to scientific research, to Native Americans, and to the public. Assigning significance levels for individual cultural resources and

in some cases, classes of site types (e.g., prehistoric trails, hearths, lithic workshops, sparse lithic scatters) is also a useful step towards organizing.

Site-specific contexts should include time period of occupation, identification of occupants, and site function. Additional context can be established by assessing how the site fits into broad regional themes. These can include Native American, transportation, ranching, exploration, and military. The historical context is used to generate research questions needed to evaluate individual sites.

Section 106 of the National Historic Preservation Act significance criteria states that:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association, and:

Criterion A – That are associated with events that have made a significant contribution to the broad patterns of our history; or

Criterion B – That are associated with the lives of persons significant in our past; or

Criterion C – That embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

Criterion D – That have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

A National Register eligible site must meet one or more of the above criteria. Each criterion must be justified. In most cases, prehistoric sites are justified under Criterion D; historic era properties may also qualify for listing under Criteria A, B, or C. Suggested procedures for evaluating resources under NRHP guidelines are listed in Appendix 8.

Under special conditions, religious properties, moved properties, birthplaces and graves, cemeteries, reconstructed properties, commemorative properties, and properties less than 50 years old are eligible for listing in the National Register. These conditions/criteria include:

- Religious property may be eligible if it derives its primary significance from architectural or artistic distinction or historical importance;
- Property removed from its original or historically significant location can be eligible if it is significant primarily for architectural value or it is the surviving property most importantly associated with a historic person or event;
- Birthplace or grave of a historical figure may be eligible if the person is of outstanding importance and if there is no other appropriate site or building directly associated with his or her productive life;

- Cemetery may be eligible if it derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from associations with historic events;
- Reconstructed property may be eligible when it is accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan and when no other building or structure with the same associations has survived;
- Property primarily commemorative in intent can be eligible if design, age, tradition, or symbolic value has invested it with its own historic significance; and
- Property achieving significance within the last 50 years may be eligible if it is of exceptional importance.

Traditional Cultural Properties (TCP) are often associated with Native American resources and properties that are associated with cultural practices or beliefs of a living community. However, a TCP may also include traditions, beliefs, practices, lifeways, arts, crafts, and social institutions of any community. Examples of TCPs include:

- A location associated with the traditional beliefs of a Native American group about its origins, cultural history, or the nature of the world;
- A rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents;
- An urban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices;
- A location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice; and
- A location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historical identity (National Register Bulletin #38).

Significant prehistoric and historic sites or resources are defined by the Historical Resources Regulations in the City's Land Development Code.

The significance of the resource is based on the potential for the resource to address important research questions documented in a site-specific technical report prepared as part of the environmental review process. An archaeological site must consist of at least three associated artifacts/ecofacts (within 50-square-meter area) or a single feature and must be at least 45 years of age. Archaeological sites containing only a surface component are generally considered not significant, unless demonstrated otherwise. Such site types may include isolated finds, bedrock milling stations, sparse lithic scatters, and shell processing stations. All other archaeological sites are considered potentially significant.

The evaluation program for prehistoric sites includes surface collection (diagnostic artifacts) and subsurface testing (e.g., shovel test pits [STPs], excavation units, remote sensing). Evaluation of historic archaeological sites requires research as well as some form of subsurface testing. If a site is determined to be significant and if a proposed undertaking will have an adverse effect on the site, a treatment plan will be required.

The treatment plan will detail the undertaking, significance of the site(s), and level of impact to the site. The habitat manager will consult with SHPO or the Tribal Historic Preservation Officer (THPO) and other consulting parties to seek ways to avoid, minimize, or mitigate any adverse effects.

Assessment of significance can be determined in two ways depending on the depth and detail of site-specific data. Significance values must be scored by a professional archaeologist prior to initiating any action other than site avoidance. Four categories of significance (Levels 1 through 4) have been developed as a management tool. They are not part of a federal or state law. For administrative purposes, four levels of site significance are given below:

Significance Level 1: Very complex archaeological sites with substantial buried deposits (e.g., midden); known or high potential for Native American cremations; potential for stratigraphic integrity and preserved subsurface features; high potential to yield information to address numerous research questions from many research domains; for historic sites, archaeological research potential is greater when corresponding archival documentation is poor or lacking.

Significance Level 2: Archaeological sites with the potential for buried deposits; potential to address several research questions; potential for stratigraphic integrity and preserved subsurface features.

Significance Level 3: Surface or relatively shallow archaeological deposits; probable absence of stratigraphic integrity and chronological indicators; limited potential to address research questions.

Significance Level 4: Surface or relatively shallow archaeological deposits or scatters; limited data potential to address a few narrowly defined research questions, and where questions are resolved mostly or entirely through documentation.

Resources that are determined not significant do not require data recovery or additional documentation.

7.4.2.2 Monitoring

An important part of the management plan is development of a monitoring program for use during undertakings, and a treatment plan for unanticipated discoveries, to ensure that trails, land use, and other elements of the Preserve will not have an adverse effect on cultural resources. If there is an undertaking, ~~s~~, the boundaries of cultural resources determined to be

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significant should be clearly flagged and possibly fenced to avoid any inadvertent impacts to the site. If avoidance is not possible, a treatment plan will be developed.

The objective of a cultural resource monitoring program is to provide an immediate, educated on-site archaeological response and evaluation for any resources that are revealed during an ground disturbing activity in areas that have the potential for significant cultural resources. Monitoring also provides a means of maintaining protective buffers around previously identified cultural resources that have been determined to be important.

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Archaeological monitors record archaeological remains exposed during ground disturbing activities and document and ensure proper treatment of any "new" finds discovered during any ground disturbance. The role of the in-field cultural resource monitor is diagnostic and advisory. The monitor(s) will be prepared to evaluate discoveries and to advise the agency of their needs.

The definition of a qualified cultural resource monitor is an individual with a bachelor's degree in anthropology or archaeology and one year of field experience in southern California. The Principal Investigator will satisfy the requirements for enrollment on the Register of Professional Archaeologists and must meet the Secretary of the Interior's professional standards.

Deleted: The individuals tasked with field monitoring will coordinate with the construction contractor or regulatory agency for scheduling and their corresponding field presence requirements. Proposed project plans should also be marked with requirements for monitoring. Preconstruction meetings will allow the cultural resource monitor to establish protocol and point of contact information with the construction contractor(s). The role and responsibilities of the monitor will also be presented at this initial meeting. ¶

7.4.2.3 Unanticipated Discoveries

In the event that a "new" or unanticipated archaeological site is discovered or a previously unknown locus or buried component is found at a recorded site, the archaeological monitor will immediately report the discovery so that appropriate treatment measures can be implemented.

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Unanticipated discoveries are defined as:

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- Previously unidentified archaeological sites, as defined by CEQA and professional guidelines; or
- Artifacts or cultural materials within archaeological sites previously determined to be ineligible for further treatment that are qualitatively distinct from artifacts and cultural materials previously identified at the site and that indicate that the site has the potential to qualify as eligible for further treatment based on its potential to provide data; or
- Artifacts or cultural materials within archaeological sites previously determined to be eligible for further treatment that are qualitatively different from artifacts and cultural materials previously identified and/or investigated in the impacted portion of the site and that indicate that the impacted portion of the site has the potential to contribute to the eligibility of the site based on its potential to provide data relevant to the sorts of research issues defined in the project research design; or
- Any evidence of human remains regardless of context of discovery. All discoveries of bone will be treated as potential human remains until a determination can be made by the field archaeologist and/or project manager.

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Discoveries that do not qualify as unanticipated discoveries include prehistoric and historic era isolates:

- Isolated prehistoric flaked stone and groundstone artifacts, burned rock, or non-human bone outside the boundaries of a previously defined archaeological site. The field archaeologist may be able to determine if any discovered bone is non-human; in this event, the find does not qualify as a discovery unless accompanied by other materials justifying its identification as an unanticipated discovery. If there is any question that the bone may be human, it must be treated as an unanticipated discovery.
- Isolated historic artifacts outside the boundaries of a previously defined archaeological site.
- Artifacts or materials within an archaeological site previously evaluated as ineligible for either the California Register or the National Register, which are qualitatively consistent with materials previously identified at the site.

Not all archaeological deposits (historic properties) are possessed of the same data potential. Some sites, such as stratified midden deposits, can yield a diverse and rich assemblage of artifacts, ecofacts, and possibly features. Data sets of this type can be used to address research questions regarding cultural chronology, paleoenvironmental reconstruction, site formation processes, and past lifeways. An appraisal is made of recovered archaeological materials from these sites to determine their potential in this regard. Other sites, such as sparse lithic scatters, are anticipated to contain a narrow variety of archaeological data with the result being limited research applications. A critical element of evaluation by the archaeological consultant is the research potential, or, in legal terminology, the significance of newly discovered sites.

Following the discovery of unanticipated archaeological deposits, construction activities will be redirected to other work areas, with an assigned monitor, while the horizontal limits of the discovery are determined.

Determination of the horizontal limits will be assessed as precisely as possible through completion of both surface and subsurface examination. A temporary exclusion zone will be marked around the assessed deposit limits using posts and survey ribbon of a predetermined color. Signs will also be placed to identify the exclusion zone. Subsurface probes will be used to aid in determining the horizontal and the vertical extent of the deposit. The subsurface probes may be excavated by hand or by mechanical means.

The proposed approaches for unanticipated resource deposits will vary according to the types of sites found. At sites with limited data potential (e.g., low-density/low-diversity artifact or ecofact scatters), the management will focus on recording the attributes of the deposit and its stratigraphic context. In addition, sampling may be reduced to judgmental removal of trench sidewall materials for descriptive information or for radiocarbon samples. More complex deposits will be treated through a data recovery program in a manner consistent with their

perceived potential and by using a sampling design that maximizes the recovery of meaningful data.

7.4.2.4 Protecting Cultural Resources During Restoration

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Although no specific plans for management or improvement have been developed, basic rules for procedures are proposed to cover potential situations. As specific plans for restoration are proposed, a literature search should be conducted through the South Coastal Information Center and the San Diego Museum of Man to inventory recorded prehistoric and historic cultural resources in the area of work if the area has not already been surveyed. In addition to this archival research, a field survey should be conducted by a qualified archaeologist to determine if unrecorded cultural resources are present. Since initial site mapping can be inaccurate, a field survey will also confirm or adjust recorded site boundaries to conform to current conditions. In the event cultural resources are found on the proposed area of impact, plans can be modified to reduce or remove potential impacts. If restoration designs cannot feasibly be modified to remove impacts, an evaluation plan should be proposed and implemented by a qualified consultant.

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7.4.2.5 Siting Trails and Facilities Away from Significant Cultural Resources

Roads such as SDG&E access roads will be kept open for necessary utility maintenance. In addition to protecting and enhancing biological resources, the proposed trail system has been designed to avoid sensitive cultural resources. This is especially true of CA-SDI-4904, which presently has a dirt road running through its western edge. Work to restore native vegetation on abandoned trails and roads near archaeological sites should be planned to limit impacts to within the disturbed areas only. Erosion control measures on retained trails should also be planned and carried out without impacting cultural resources. These measures are compatible with the goal of preserving the native vegetation on the Preserves.

Any proposed buildings or other visitor-related facilities should be sited with cultural resources in mind. Facilities should be planned to avoid existing site locations and their immediate vicinity. Locating facilities near sites increases the potential for impacts from foot traffic and vandalism. Locating facilities in areas that have already been disturbed will avoid new impacts to cultural resources. If there is an undertaking, such as trail improvement or new facility construction, the boundaries of adjacent significant cultural resources should be clearly flagged and fenced, if possible, to avoid any impacts to the site. If avoidance is not possible, a treatment plan should be developed to address impacts.

7.4.2.6 Maintain a Database of Cultural Resources

An important aspect of Preserve management will be the development and implementation of a geographic information system (GIS)-based resource information program for the floral, faunal,

and cultural resources of the Preserves. An initial program of field surveys to relocate and refine site boundaries should be conducted to add up-to-date information on site sizes and conditions. A comprehensive database will provide information for evaluating known contents and locations of culturally sensitive areas. With such information available to Habitat Managers, it will be easier to protect cultural resources.

7.4.2.7 Establishing a Cultural Resources Educational and/or Interpretive Program

Cultural resources should be included in any educational/interpretive program implemented for the Preserves. Interpretive signs or displays can be used to explain prehistoric uses of the Preserves' natural resources. This information could be installed either in a central visitors' center, if one is proposed, or as signs along the trails. A visitors' center display should contain photographs of the cultural resources on the Preserve shown in such a way that their specific location cannot be discerned. A visitor's center could also exhibit artifacts used to procure resources from the area. Trail signage could be used to identify specific plants used by Native Americans. Signs with information about the cobble and other geologic resources can also be informative, but should not be placed near actual quarries or flaking stations.

Local Native American input should be solicited at the development stage of the educational/interpretive program.

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- Deleted: at the initial planning stage of a specific project
- Deleted: In particular, trail redesign and new trail planning can be checked with mapped site locations to insure these resources are avoided. This information will also be valuable in long-range management planning.

8.0 Fire Management

This section of the RMP is the Fire Management Plan for the Preserves.

8.1 Preserve Setting for Fire Management

8.1.1 The Wildland/Urban Interface

Much of the land surrounding the Preserves has been developed into residential communities and commercial establishments. This interface between the wildlands of the Preserves and the urban development creates several management issues regarding fire, sensitive species and habitats, and conflicts between those who want to preserve San Diego's wildlands and those who buy homes adjacent to the wildlands.

The need to control and manage wildfire is caused by the encroachment of development into wildlands. A vegetation management program, strong prevention effort, fire suppression, and fire-resistant building practices are needed to protect development.

San Diego County suffered intense and widespread fires in October 2003 that have caused fire managers to reassess their approach to fire management. Fire has always played a major role in southern California. Fire suppression forces have a good record of controlling brush fires under normal weather conditions; however, the fires of 2003 and 2007 illustrated that the suppression strategies used were ineffective on the wind driven fires under Santa Ana weather conditions.

The other alternative in the reduction of the fuel load may be accomplished by thinning or removal of vegetation near and adjacent to development, though prescribed burning as a method of controlling wildfires is not permitted within City limits. Fire management tasks for the preserves, including brush management, are discussed in this section and are in accordance with the MSCP and adopted City regulations.

The 2003 fires instigated updates of fire management plans and a new awareness of fire conditions. The Department of Homeland Security's Federal Emergency Management Agency (FEMA) began a new "2004 Wildland Update" webpage (www.usfa.fema.gov/fire-service/wildfire/update_2004.shtm) to help firefighters and community leaders locate important and up-to-date wildland fire information. The webpage features a collection of links to critical wildland web sites as well as weather predictions, current aviation strategy, community programs, and a daily "Six Minute Safety Briefing" (U.S. Fire Administration 2004).

Recent research indicates that fuel load is not the main ingredient for catastrophic fires. Climate, weather, and wind conditions affect wildfires much more than the fuel load.

Deleted: In addition, any proposed development would undergo review to determine adequate fire management and access as part of the development review process.

does. Those variables cannot be controlled at a local level, but the effects of wildfires can be minimized. Climate change, greenhouse effect, changing local conditions (such as irrigation that can increase humidity), long-term human effects of burning, and fire suppression have all affected the current condition of the wildlands in southern California.

8.1.2 Wildland Fire Management Condition

Vegetation on the Carmel Mountain Preserve is dense southern maritime chaparral and Diegan coastal sage scrub, with small patches of grasslands interspersed within the chaparral on the flattest portions of the mesa top. The grassland areas are generally along dirt roads. On the Del Mar Mesa Preserve, the vegetation is Diegan coastal sage scrub, scrub oak chaparral, southern maritime chaparral, and southern mixed chaparral, with a small eucalyptus woodland sided by non-native grassland.

These vegetation types represent the fuel on the Preserves. The coastal sage scrub and chaparral shrubs are adapted to the Mediterranean climate of southern California. The shrubs survive in the summer dry conditions by being either drought-deciduous (drop their leaves during the dry season), or sclerophyllous (having thick leaves that resist desiccation). Other plants survive by being annuals that germinate, mature, and set seed before the dry season, or by having succulent, thick-skinned stems, such as cacti.

Wildfires generally burn in these vegetation types during the late summer and fall when the plants are extremely dry. Non-native annual grasses that often compose the understory can help spread fire along the ground. The fires may be excessively fanned and spread by Santa Ana winds. These extreme winds sustain ignition and can cause wildfires to spread by spotting, or dropping hot embers into the dry vegetation. The high winds also allow the wild fire to spread so rapidly that the fires are beyond control or suppression.

The following information about Santa Anas is from the Meteorology Department of the University of California San Diego (2005). The Santa Ana is a dry, sometimes hot and dusty, wind in southwestern California that blows westward through the canyons toward the coastal areas. Santa Anas are seasonal phenomena, occurring mostly during fall, winter and spring. Many associate Santa Anas with autumn because at that time the winds often spread wildfires across areas that have gone months with little or no rain.

The wind usually has its origin when cold air spills southward into the Great Basin, trapped between the Rockies to the east and the Sierras and Southern California coastal range to the west (Figure 8-1). This cold air mass is characterized by unusually high pressure near the land surface. Winds are driven into Southern California when the pressure of this interior air mass exceeds the pressure along the California coast. Winds are often strongest in mountain passes, which are ducts for the continental airflow. Because the air over the higher elevations of the Great Basin sinks as it flows into

coastal California, it is heated adiabatically, and temperatures are often quite warm. This



Figure 8-1. Santa Ana Winds.
Source: www.meteora.ucsd.edu/cap/santa_ana.html

continental air mass is invariably dry, so humidity in Santa Anas is low, often less than 25 percent relative humidity.

Santa Ana's have occurred irregularly over the time period since about 1950 when we have collected detailed wind and humidity observations, with some months experiencing Santa Ana conditions 30 percent the time, and other months less than 5 percent of the time.

8.2 Historic Role of Fire

Fire is a natural part of the earth's ecosystems and almost every landscape has a history of fire. Some prehistoric fires were caused by lightning strikes, but ancient cultures also used fire to manipulate the plant and animal life around them. Several tribes of Prehistoric Californians used fire to drive rabbits for hunting, to improve forage for game animals, and to increase the availability of certain plants for human use. No one knows what southern California would look like if humans had not affected the region. Some say that San Diego County would look like Baja California, Mexico; however, we can assume that aboriginal fires also affected the vegetation there.

In southern California, Friar Crespi, a member of Portola's expedition, in 1770 documented that the prehistoric peoples burned the vegetation. Friar Crespi described vast expanses of grasslands and wildflowers with little sage scrub or chaparral and oak savannas without shrubs. The first fire control regulation in Alta California was proclaimed by Governor Jose Joaquin de Arrillaga in 1793 when he prohibited intentional burning "...not only in the vicinity of the towns, but even at the most remote distances...to uproot this very harmful practice of setting fire to pasture lands...", from the Santa Barbara area southward along the coast.

Vegetation burning, as well as other aspects of prehistoric culture, was lost underneath the missions. Suppression of fires by the Spaniards and their successors contributed to the decline in productivity of the native grassland and to the encroachment of coastal

sage scrub, and perhaps of chaparral, into grassland and savanna habitats (Aschmann 1976 in Timbrook 1982) and to the invasion of European grasses, broadleaved weeds, and large herbivores, and the practice of agricultural cultivation, completed the destruction of the native grassland in coastal southern California (Burcham 1957 in Timbrook 1982). This drastic alteration probably contributed to a gradual abandonment of traditional seed foods by the native people (Cook 1941 in Timbrook 1982). Native southern Californians interviewed in the 1910s and 1920s spoke of wild seeds and greens as things the old people used to eat, but which were no longer in common use. By then, burning as a food procurement technique was apparently unknown (Timbrook 1982).

Fire suppression was the preferred management tool in the early part of the twentieth century. Eventually, research showed that fire suppression increased fuel loads and, by the 1970s fire management had taken another direction, where land managers worked to minimize the risks associated with fire while allowing fire to play a more natural role in maintaining ecological processes and communities. Burns were “prescribed” to reduce the fuel loads and prevent unexpected and intense fires by developing age class mosaics within native vegetation. The different age classes of vegetation within the mosaic would significantly reduce suppression costs, wildfire damage, related flood damage, and sediment reduction while providing optimum benefits to wildlife, water, timber, range, and recreation by reducing the extent of old vegetation with high fuel load (Rogers 1982).

Prescribed burns adjacent to the wildland/urban interface presented problems, such as the potential health effects of the smoke, reduced visibility, potential danger of the controlled fire escaping and endangering residences, and compliance with air quality regulations. With these constraints, wildland/urban prescribed burnings were limited, and escaped controlled burns in Los Alamos, New Mexico, in 2000 convinced many people that prescribed burning is not a responsible way to control wildfire.

Prescribed burning is not feasible at the Preserves, where the vegetation is near and adjacent to homes and businesses.

8.3 Fire Management Objectives

This chapter describes fire and fuel management strategies and tactics that support land and resource management goals, one of which is to manage wildfires. The plan takes into account fire management as directed by agency (USFWS, CDFG, County of San Diego, and City of San Diego) landowners of the Preserves, and by the City of San Diego, which has jurisdiction over the private inholdings.

The Carmel Mountain and Del Mar Mesa Preserves both consist primarily of southern mixed chaparral, and chamise chaparral vegetation communities. The chaparral-covered hills combined with the long, dry summers make wildfires inevitable.

The objectives for managing wildfire at the Preserves are:

1. The highest priority of fire management is to firefighter and public safety.
2. Providing access to fight fires.
3. Appropriate management responses for wildland fires will be rapid containment and suppression to protect the public, avoid fire spreading onto adjacent lands, and protect the natural and cultural resources of the Preserves.
4. Interaction with adjacent land managers through participation in prevention programs will be encouraged.
5. Employ minimum impact suppression tactics.
6. No off road vehicle use unless approved by the Habitat Manager, unless an emergency situation exists and waiting for approval would risk life or serious injury.
7. No dozer or grader use unless approved by the Habitat Manager, unless an emergency situation exists and waiting for approval would risk life or serious injury.
8. Fires should be extinguished using water, unless the Fire Marshal deems retardant as necessary to protect human life and developed property. Fire fighters should avoid using fire retardant on the vernal pools and dudleya populations, unless such avoidance would endanger human lives.
9. The Preserves will be closed at the discretion of the Habitat Manager, unless an emergency situation exists and waiting for approval would risk life or serious injury.
10. Fire management operations will be carried out by qualified individuals who will promote the safe and skillful application of fire management strategies and techniques.
11. Fire management operations will support land and resource management plans and their implementation.
12. Fire management tactics that are economically viable, based upon values to be protected, costs, and land and resource management objectives, will be employed.
13. Fire management tactics will be based on the best available science.
14. The methods of fire suppression and management that are the least damaging to resources and the environment, after considering safety, will be used.

The Fire Management Plan provides the following items to local Fire Department authorities:

1. Maps of sensitive resources to be avoided as much as possible on Carmel Mountain and Del Mar Mesa Preserves, such as listed and otherwise sensitive plant and animal species, vernal pools, sandstone cliffs, steep slopes, and cultural resources.
2. Maps indicate preferable staging areas, access routes, and the most important fire suppression areas.
3. Basic guidance for minimizing impacts to biological resources when fighting a fire on Carmel Mountain and/or Del Mar Mesa Preserves, including preferred access routes and natural and cultural resource priorities (i.e., Is it better to allow an area to burn than to risk soil disturbance adjacent to an archaeological site or a federally listed endangered plant species?).
4. Contact information in the event fire management activities may affect natural and cultural resources.

8.4 Post-fire BMPs and Revegetation Efforts

To minimize excessive runoff and siltation into sensitive habitat or to prevent erosion of trails, areas affected by fire should be monitored for erosion during the subsequent rainy season. If erosion problems occur, Best Management Practices (BMPs) such as fiber rolls should be installed, as needed, to slow the flow of water.

Post-fire weed control may also be necessary in areas that are subject to invasion by non-natives. Non-native species should be controlled to prevent annual grasses and other weeds from invading burn areas. When uncontrolled, non-native grasses and other weedy annuals provide flash fuels that increase the probability of repeat fires. Increased fire frequency due to type conversion to non-native grassland has the potential to significantly reduce the biological diversity of the Preserves over time.

In cases where all native vegetation has been removed by fire, revegetation with native species may be recommended by the Habitat Manager. If post-fire seeding is necessary, all seeds used for erosion control or revegetation should be native and collected from adjacent open space to maintain the local population genetics. Under no circumstances should non-native grasses be used in erosion control seed mixes for the Preserves.

8.5 Fire Management Units

The two Preserves represent two fire management units (FMUs): the Carmel Mountain Preserve is Unit 1 and the Del Mar Mesa Preserve is Unit 2.

8.5.1 Carmel Mountain Preserve, FMU 1

8.5.1.1 Fire Suppression

All fires on the Preserve will be suppressed, controlled, and put out.

8.5.1.2 Vegetation

Vegetation on the Carmel Mountain Preserve is dense southern maritime chaparral and Diegan coastal sage scrub, with small patches of grasslands interspersed within the chaparral on the flattest portions of the mesa top. The grassland areas are generally along dirt roads.

8.5.1.3 Access

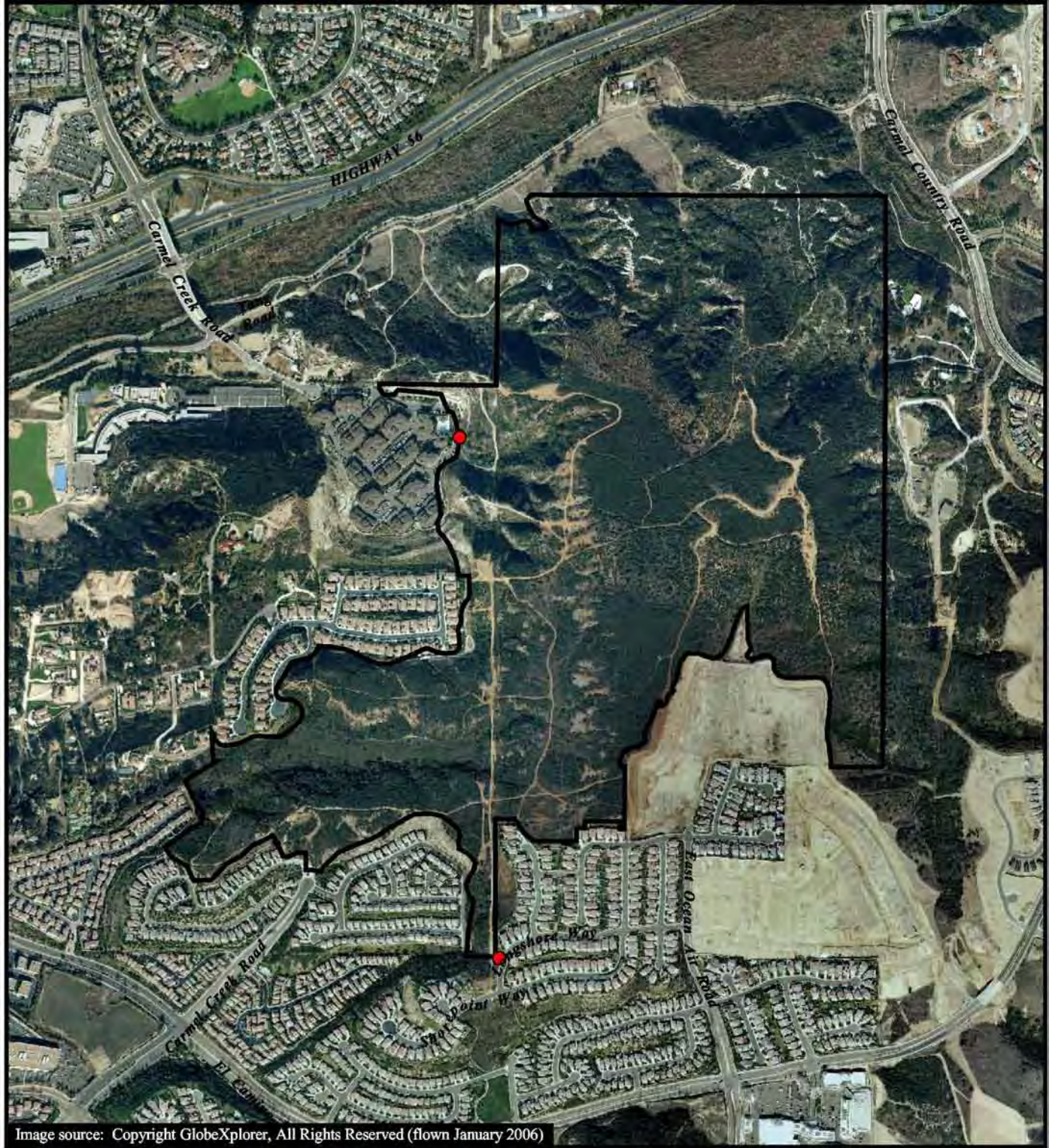
SDG&E easement roads are wide enough to allow access to Fire Department trucks. The SDG&E easement, which will have an SDG&E standard lock, can be accessed at two locations (Figure 8-2). One is at the northwest corner of the Preserve where the easement road can be accessed from Carmel Creek Road, which ends within The Pinnacle at Carmel Creek apartment complex. The other existing access site for the SDG&E easement road is from the intersection of Longshore Way and Shorepoint Way. Other access sites are single-track trails that are too narrow for trucks. Once on the Preserve via the SDG&E easement access road, various dirt roads are available for accessing fire locations.


As part of the development review process, any development proposed adjacent to the Preserves would undergo review to ensure that adequate fire fighting access to the Preserves is incorporated into the project design.


8.5.2 Del Mar Mesa Preserve, FMU 2

8.5.2.1 Fire Suppression

All fires on the Preserve will be suppressed.



 Carmel Mountain Preserve

 Fire Truck Access Points

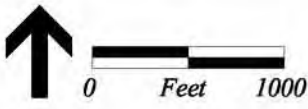


FIGURE 8-2
Fire Truck Access Points
for the Carmel Mountain Preserve

8.5.2.2 Vegetation

Vegetation on the Del Mar Mesa Preserve includes Diegan coastal sage scrub, scrub oak chaparral, southern maritime chaparral, and southern mixed chaparral, with a small eucalyptus woodland sided by non-native grassland.

8.5.2.3 Access

SDG&E easement roads, which will have an SDG&E standard lock, provide access to the Del Mar Mesa Preserve (Figure 8-3). The west side of the Preserve can be accessed from Rancho Toyon Place. The south side of the Preserve can be accessed from the west end of Park Village Road.

8.6 Reporting a Fire

To report a fire on either of the Preserves, or the areas surrounding the Preserves:

DIAL 911

Your call will be reported to the appropriate department.

8.7 Fire Management Responsibilities

8.7.1 San Diego Fire-Rescue Department Fire Suppression Roles and Responsibilities

The San Diego Fire-Rescue Department is a paramilitary organization operating under a "Chain of Command". The source of the following information is www.sandiego.gov/fireandems/about/suppressroles.shtml.

8.7.1.1 Senior Staff

The Fire Chief and Deputy Chief positions are "Straight Day", meaning the men and women who fill those positions work normal business hours and are on 24-hour call for any incidents that demand their attention.

Fire Chief. The Fire Chief is the Administrative Officer of the entire Fire-Rescue Organization. The Fire Chief reports to the Mayor.

Deputy Chief. A Deputy Chief is a Chief Officer who assists in the administration of the San Diego Fire-Rescue Department and directs the operation of a division within the organization. The San Diego Fire-Rescue Department has assistant Chiefs and Deputy Chiefs overseeing such divisions as Communications, Emergency Medical Services, Field Operations, Fire & Hazard Prevention Services, Employees Services, Emergency Management, Maintenance and Materiel Services, and Lifeguard Services.

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Map Source: USGS 7.5 Minutes topographic map series
Del Mar Quadrangle

 Del Mar
Mesa Preserve

 Fire Truck Access Points



FIGURE 3-7
Topography on
Del Mar Mesa Preserve

8.7.1.2 Field Operations

The following positions are "Shift" positions; employees work a 24-hour shift with one to six days off between shifts. Employees work a 56-hour week, insuring City residents have protection 24-hours a day 365 days a year.

Battalion Chief. A Battalion Chief supervises a Battalion of approximately 6–7 stations, 35–40 firefighters, and coordinates fire suppression activities within a designated geographical area. A Battalion Chief acts as a scene commander at large scale incidents. The Battalion Chief reports to the Deputy Chiefs of Field Operations.

Captain. Under the direction of a Battalion Chief, the Captain is in command of a Station and/or a single Fire Company (a Fire Company is an individual piece of equipment such as a fire engine or a fire truck.) The Captain is in charge of day-to-day activities at his or her station, which may include inspections, in-service training or community education events. At a fire, medical or other disaster the Captain directs the operations of his/her crew.

Engineer. Under the direction of the Captain, a Fire Engineer operates and maintains fire apparatus and associated equipment. Engineers are responsible for the safe delivery of fire crews to and from emergencies.

Firefighter. Under the direction of a Captain, a firefighter performs routine station maintenance. At the scene of a fire, firefighters are directly responsible for rescue and extinguishment of the fire. At medical calls, which make up 80 percent of total responses, firefighters are directly involved in patient care.

Fire Recruit. Fire Recruits attend a fire academy lasting approximately three months. During the academy, recruits learn fire, rescue and medical techniques. Upon completion of the academy, recruits are assigned to a fire station as probationary firefighters.

8.8 Fire Management Plans, Programs, and Policies Pertaining to the Preserves

8.8.1 MSCP Guidelines for Fire Management

Fire management on the Preserves incorporates the MSCP (City of San Diego 1997) fire management guidelines, which affect MHPA lands. Fire management in the City of San Diego primarily focuses on fuel or brush management, and is regulated by the San Diego Municipal Code and the Fire Department. The typical mesa-canyon topography and fire-adapted native vegetation of the Preserves has led to development on mesa tops that are surrounded by canyon slopes of highly flammable chaparral and other natural open space. The formation of an open space system to protect biological

resources and to preserve long-term viability introduces additional issues regarding fire management that need to be addressed in conjunction with public safety factors.

Major issues related to fire management in the MHPA include the following:

- Fire hazard reduction methods, including brush management, for public safety purposes may impact sensitive species.
- Fire hazard reduction may involve methods that increase other management concerns (e.g., exotic species invasion, erosion).
- Senescent native vegetation no longer supports the diversity of species of areas allowed to rejuvenate through periodic non-catastrophic fire.
- Catastrophic fires can destroy soil structure, seed banks, root burls and other natural regeneration components, and act to convert native vegetation communities to non-native landscapes.
- Fire management needs for particular fire-adapted species such as Del Mar manzanita.
- Fire management for human safety, protection of property, and hazard reduction.
- Fire management for biological resources.

The Fire Management Plan would maintain human safety, yet be compatible with the conservation needs of the biological resources at the Preserves. Brush must be managed to reduce fuel and protect urban uses when development is adjacent to one of the Preserves.

8.9 Fire Effects on Resources

8.9.1 Vegetation and Plant Species

Fire is a disturbance process that affects the composition, structure, and pattern of vegetation on the landscape. Disturbance is necessary to maintain a diversity of living things and processes. The old idea of vegetation communities and their broader ecological systems reaching an equilibrium or a climax community is being rejected by modern ecologists and resource managers (Botkin 1990; Morgan et al. 1994, in Brown 2000) because the communities are constantly changing from the effects of environmental conditions, whether by fire, drought, or any other change-inducing agent.

In Mediterranean vegetation communities, such as chaparral and coastal sage scrub, fire and decomposition are the two ways of recycling carbon and nutrients. Since microbes that decompose plant material generally require moist conditions, in dry summer areas, decomposition is minimized; decay is constrained by the elements and

Deleted: ~~Native vegetation communities~~ subjected to fire suppression over long periods of time often become woody and senescent, contributing to severe fire hazard for development in and adjacent to the MHPA.

Deleted: Housing bounds both Preserves and future adjacent housing developments will require brush management. Other issues are that the fuel management zone between either of the Preserves and adjacent development will vary in width and may or may not occur within the Preserve; brush management responsibility and ownership of the fuel management zones between development and either of the Preserves may vary; or, the zone may be owned and managed by the adjacent property owner or homeowners association, or it may be incorporated into the Preserve.

fire plays a dominant role in recycling plant debris (Harvey 1994). The primary effects of fire on vegetation are plant mortality and removal of organic matter.

The fire regime at the Preserves is considered a “stand-replacement” fire regime. Fires kill above ground parts of the dominant vegetation and change the above ground vegetative structure, which then re-grows from underground plant parts or from seed. In a normal fire, approximately 80 percent or more of aboveground dominant vegetation is either consumed or dies as a result of fires. The dominant shrub layer is usually killed back to growing points in or near the ground.

Fire behavior, fire duration, the pattern of fuel consumption, and the amount of subsurface heating all influence injury and mortality of plants and their recovery. Post-fire responses also depend on the characteristics of the plant species, their susceptibility to fire, and the means by which they recover after fire. For example, *Ceanothus* species can resprout from their underground burls after fire, and fire stimulates the germination of their seeds.

Most plant cells die if heated to temperatures between about 122–131 degrees Fahrenheit (50–55 degrees Celsius) (Wright and Bailey 1982). Plants can die if exposed to high temperatures for short amounts of time (Martin 1963), or low temperatures for longer exposures (Ursic 1961).

Some plant tissues, especially the growing points (meristems or buds) tend to be much more sensitive to heat when they are actively growing and their tissue moisture is high, than when their moisture content is low (Wright and Bailey 1982). Plant mortality depends on the amount of meristematic tissues killed. Susceptible tissue may not be exposed to heating by fire because it is protected by structures such as bark or bud scales, or is buried in duff or soil. Plant mortality is often the result of injury to several different parts of the plant, such as crown damage coupled with high cambial mortality. Death may not occur for several years and may be associated with the secondary agents of disease, fungus, or insects. A plant weakened by drought, either before a fire or after wounding, is more likely to die.

8.9.2 Soil Surface and Microbiotic Soil Crusts

Much of the ground on the Preserves is covered with microbiotic crusts, which are biologically active, living layers of organisms in an intimate association between soil particles and cyanobacteria, algae, lichens, fungi, and bryophytes (Hawk 2003). They can be pioneer organisms, nitrogen fixers, and contributors to soil stabilization and erosion control. Lichens on bark, rock, and soil are important biological indicators of air quality, soil quality and ecosystem health. They can provide food and nesting material for some birds and invertebrates. Soil lichens have soil-anchoring structures called rhizines that penetrate the uppermost soil layers and bind them together into a stable matrix, and

some fix nitrogen. Crusts may compose as much as 40 to 70 percent of soil cover in some parts of the west.

Fire can have a devastating impact on soil crusts but wildfires of uneven intensity and duration often leave behind a mosaic of biological soil crust patches, some of which survive unharmed (Johansen 1993). Wildfires fanned by hot Santa Ana winds can race quickly through vegetation, leaving the soil unscathed.

In extremely hot or slow fires, the soil fabric can be altered. Not only can the microbotic soil crust be changed, but the chemical composition of the soil itself can be affected. In an experiment of fire effects on soils, the upper 3–5 cm of a burned sagebrush subcanopy soil was completely charred. The formerly open fabric collapsed due to destruction of plant litter. Immediately below charred zone some mineral grains became thickly coated by dark material and the plant litter became darkened. Researchers suggested that the coatings were formed by condensation of organic vapors on the cooler soil mineral particles at depth; these are the hydrophobic compounds so often found after wildfires (DeBano et al. 1998). Another consequence of wildfires is the cleavage of biotite flakes (potassium iron magnesium aluminum silicate hydroxide fluoride), which enhances post-wildfire potassium fertility. This increased fertility, combined with the opening of the shrub canopy, allowing light to penetrate to the soil, can increase and enhance the germination of seeds.

8.9.3 Wildlife

Effects to wildlife are influenced by fire season, intensity, severity, rate of spread, uniformity, and size. Responses of wildlife to fire may include injury, mortality, immigration, or emigration. Animals with limited mobility, such as young, are more vulnerable to injury and mortality than mature animals. Changes are at the individual, population, community, and landscape levels. Fires generally kill or injure a relatively small proportion of animal populations, except for major conflagrations such as in San Diego County in October 2003 where an unusual number of animals were killed.

Habitat changes from fire affect wildlife more drastically than the fire itself (except for those individuals that are killed by fire). For animals, the vegetation structure spatially arranges the resources needed to live and reproduce, including food, shelter and hiding cover. Some fires alter the vegetation structure in relatively subtle ways, for example, reducing litter and dead herbs in variously sized patches. Other fires change nearly every aspect of vegetation structure: woody plants may be stripped of foliage and killed; litter and duff may be consumed, exposing mineral soil; and underground structures such as roots and rhizomes, may be killed or rejuvenated.

These changes affect feeding, movement, reproduction, and availability of shelter. Fires often cause a short-term increase in productivity, availability, or nutrient content of forage and browse, which can contribute to substantial increases in herbivore

populations, but potential increases are moderated by animals' ability to thrive in the altered, often simplified, structure of the post-fire environment. Fires generally favor raptors by reducing hiding cover and exposing prey. Small carnivores respond to fire effects on small mammal populations, either positive or negative. Large carnivores and omnivores are opportunistic species with large home ranges. Their populations change little in response to fire, but they tend to thrive in areas where their preferred prey is most plentiful—often in recent burns. Stand-replacing fires, such as in chaparral and coastal sage scrub, reduce habitat quality for species that require dense cover and improve it for species that prefer open sites. Often, wood-boring insects may increase after fire, leading to an increase of insect-eating birds and other insect predators.

Many animal-fire studies depict a reorganization of animal communities in response to fire, with increases in some species and decreases in others. Fire effects to ecological communities are related to the amount of structural change in vegetation. In vegetation types that come back quickly, like grasslands, the fire effects may only last one to two years, whereas in shrublands the effects last much longer. Fires in shrublands and forests can cause initial positive effects for insect-eating birds, but negative for species that require dense, closed canopy habitats. Bird abundance and diversity are likely to be greatest early in succession. When the shrub or tree canopy closes, species that prefer open sites and habitat edges decline, and species that prefer mature structures increase.

Major changes to fire regimes, such as when fires are suppressed or prescribed too frequently or not often enough, can alter landscape patterns, processes, and the function of habitat linkages. These changes can affect animal habitat and often produce major changes in the composition of faunal communities. In many western ecosystems, landscape changes due to fire exclusion have changed fuel quantities and arrangement, increasing the likelihood of large or severe fires, or both. Where fire exclusion has changed species composition and fuel arrays over large areas, subsequent fires without prior fuel modification are unlikely to restore pre-settlement vegetation and habitat. In many desert and semi-desert habitats, where fire historically burned infrequently because of sparse fuels, invasion of weedy species has changed the vegetation so that burns occur much more frequently. Many animals in these ecosystems are poorly adapted to avoid fire or to use resources in post fire communities.

Grasslands recover quickly. New stands of grass can shoot up from surviving root systems. Forbs increase during the first or second year after a fire. The grassland structure is reestablished in about three years (Bock and Bock 1990) and wildlife populations are usually reestablished to pre-burn conditions. Repeated fires can turn shrublands into grasslands and lack of fire can allow shrub seedlings to establish in grasslands, eventually converting grassland to shrubland.

In chaparral and sage scrub vegetation communities, fires (stand-replacing fires) kill aboveground vegetation, reducing the canopy cover. Initial regrowth is grasses and

forbs. Dead wood remains standing and the buried shrubs become perches for songbirds, raptors, and lizards. Burning often increases seed visibility and availability for small mammals, but increases the mammals' visibility to predators. Though forage is abundant, deer often do not use it because their cover is so reduced. Shrubs regenerate from underground parts and seed, as described above for *Ceanothus* species. Reestablishment of chaparral and sage scrub communities generally takes from 10 to 60 years.

Broad-leafed shrubs of the chaparral are well adapted to fire. In southern California, the chaparral is notorious for frequent, fast-spreading, stand-replacing fires. Many chaparral species resprout and also establish vigorously from seed. Many species have seed that germinates best after being heated by fire. Stand-replacing chaparral fires have occurred every 20 to 40 years for hundreds of years (Kilgore 1981). Annual and perennial herbs flourish after fire in chaparral, along with seedling and resprouting shrubs. Browse productivity for herbivores increases dramatically during first four to six years after burning, but declines after that. Snags and dead wood remaining after fire are important to birds and small mammals. Dead wood on the ground is essential habitat component for many birds and small mammals. Shrubland fire both destroys and creates woody debris. Herbs are eliminated as the dense overstory of large shrubs matures.

Scrub oaks, an important source of wildlife food, usually resprout vigorously after fire. Acorns are eaten by 100 species of animals in California, including California quail and deer. For a decade or two after a fire, the chaparral is quite fire resistant (Wright 1986). Chaparral's burning at every 20–30 years maintains a diverse mix of species. If fires do not occur every 10–30 years, mature shrubs will dominate and plant diversity will decrease.

8.9.4 Cultural Resources

Understanding the potential impacts of wildland fire on cultural resources is imperative to a comprehensive management plan. Damage can be from fire or actions of fighting or managing the wildfire.

As with vegetation and soils, the effects vary depending on the fire's intensity, duration, and depth of the heat's penetration into the soil. A fire's intensity, the measure of the severity of a fire, is often expressed for archaeological purposes as either low, moderate, or heavy (Lentz et al. 1996). Abundant accumulation of dry fuel, or duff, on the ground will allow the fire to burn longer and hotter. Below ground heating depends on factors such as soil moisture, soil type and coarseness, weather conditions, the accumulation of duff, organic litter, or fuel above ground.

Recent large fires in New Mexico, Mesa Verde, southern California, and even Australia, have allowed the study of fire impacts on cultural resources (Buenger 2004, Lentz 1996; Lentz et al. 1996; Traylor 1990).

Types of effects of fire on cultural resources are (Connor et al. 1989; Connor and Canon 1991; Lentz et al. 1996; Taylor et al. 1990):

- Oxidation at low, moderate and heavy severities
- Thermal spalling, leading to exfoliation of spalls (a spall is a chip, fragment, or flake from a piece of stone; usually concave on medial face), induced by expansion of the heated stone and steam pressure (Hetteima 1998 in Buenger 2004)
- Potlid fracturing (Potlid: A roundish fragment of stone, the exfoliated portion usually convex on the medial face)
- Spall scaring
- Combustive blackening
- Crazeing, or cracking of glass into irregular fragments
- Soil oxidation
- Stump and root combustion
- Bone, shell, glass and wood burning

These effects can change the dendrochronology results, thermoluminescence, archaeological dating, and the interpretation of the site.

The severity of effects are influenced by the fuel load, fire behavior, peak temperature and duration of heating, proximity of artifacts to fuels, and the type of artifact. Cool fires have less effect, while hot fires have more effect on cultural resources. Fine fuel (grass) fires are cooler, as the grasses are not able to maintain high levels of radiant heat energy during combustion.

The most common thermal alteration is oxidation where the heat induces color changes by altering the mineralogy of rocks, particularly chert. Cherts are more prone to thermal fracturing, oxidative staining, and combustive blackening compared to other lithic types (Buenger 2004).

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Experiments and observations indicate that cultural resources below the surface, unless directly exposed to a burning duff layer or burning underground roots, normally do not sustain significant damage, if any at all.

Fire fighting can cause damage to the artifacts themselves, either by moving or removing them. Removing or damaging an artifact's setting in space (its context) can be more detrimental than the fire damage itself because artifacts lose their meaning when removed from the clues that place them within a historical context. It is important that those on the front lines of fire suppression and prescriptive burning understand the

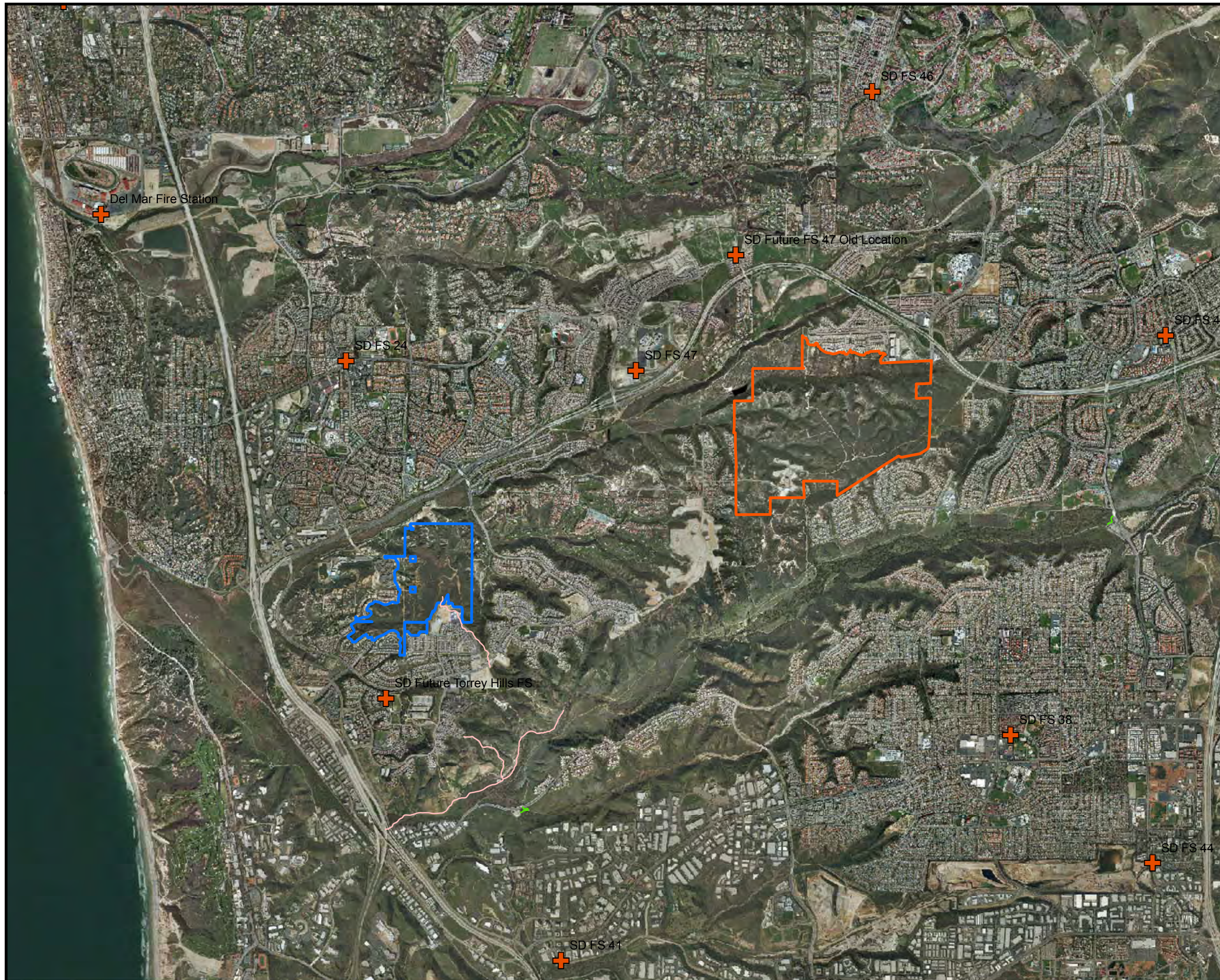
consequences of using heavy equipment such as bulldozers to fight fires or construct firelines. Care during post-fire mop-up and rehabilitation, and the potential corrosive properties of retardants must be considered.

Knowing where culturally sensitive areas lie within the Preserves, and which practices can damage those areas, will help to minimize damage on the part of the firefighters.

Artifacts on the ground are most vulnerable, and those progressively deeper below ground are less prone to damage. Temperatures over 300 degrees Celsius can damage many inorganic materials; however, ceramics, having already been fired, are not critically affected until temperatures reach 600 degrees Celsius. In addition to causing deterioration of the artifacts, such as cracking, chipping, and charring, heat can destroy artifacts made from wood or plant materials. Other culturally significant information in the form of pollen grains used to assess diet and environmental conditions of the past can be destroyed, and dating techniques can be rendered inaccurate when heat damages some artifacts.

8.9.5 Wildfire Response

The following San Diego Fire-Rescue Department Stations are within the vicinity of the Carmel Mountain and Del Mar Mesa Preserves (Table 8-1 and Figure 8-4):



Legend




-  Fire Station
-  Del Mar Mesa Preserve
-  Carmel Mountain Preserve

FIGURE 8-4
Fire Stations in the Vicinity of the Preserves



0 0.375 0.75
Miles

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**TABLE 8-1
LOCATION OF SAN DIEGO FIRE-RESCUE DEPARTMENT STATIONS**

Station Number	Service Area	Address	Apparatus Available
24	Del Mar Heights and Surrounding Areas	13077 Hartfield Ave. San Diego, CA 92130	Engine 24, Brush* 24, Medic/Rescue 24
38	Mira Mesa and Surrounding Areas	8441 New Salem St. San Diego, CA 92126 (Cross Street – Camino Ruiz)	Engine 38, Brush* 38
40	Rancho Pensacitos & Surrounding Areas	13393 Salmon River Rd., San Diego, CA 92129 (Cross Street – Camino Montalban)	Engine 40, Truck 40, Brush* 40, Brush* 140, Water Tender 40, Utility 40, Medic 40
41	Sorrento Valley and Surrounding Areas	4914 Carroll Canyon Rd. San Diego, CA 92121 (Cross Street – Mira Mesa Boulevard)	Engine 41, Truck 41, Medic 41



Photograph 8-1. Brush Rig
(Source: www.sandiego.gov/fireandems/about/suppressroles.shtml)

Brush Rig. Brush Rigs are pump per units used on grass fires and are specially adapted to fire fighting in rough (wildland) terrain where access is a problem and fire hydrants are few or non-existent. Brush Rigs carry from 600-1,500 gallons of water and are designed for off-road areas and brush fire fighting. Some of the brush rigs are four-wheel drive and carry light water or foam (light water is water that has been thinned or treated with material that allows the liquid to deeply penetrate brush.)

8.10 Fire Plan Review

This Fire Management Plan has been reviewed and approved by the City's Fire Chief.

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9.0 Interpretive and Research Guidelines

The Preserves have been set aside to protect all the natural resources within them, in particular, the vernal pools and the short-leaved dudleya, both of which are in extreme peril of extinction. Local residents and visitors are allowed to use the Preserves for pleasure or research provided the resources are not abused.

9.1 Public Use of the Preserves

The resources at the two Preserves must be protected. This management plan has presented many avenues of managing and monitoring the Preserves for the benefit of the public. However, members of the public sometimes harm resources. All recreation activities within the Preserves are permitted only during daylight hours.

Everyone who visits the Preserves and who lives in the neighboring communities should be informed on actions to be taken if they see harm being done to or at the Preserves. Following are some actions the Habitat Management and the oversight committee could take to enforce rules, regulations, and laws at the Preserves:

- One phone number, probably that of the Habitat Manager, should be identified prominently on signs, in newsletters if they are written for the Preserves, in brochures, and on the website that someone can call if they see harmful or illegal actions.
- Criminal activities should be reported immediately to the San Diego Police Department.
- The Habitat Manager should have a ready reference of other numbers to call, such as the police department, fire department, and wildlife agencies.

Park Rangers, Wardens, or other appropriate interpretive and enforcement staffs should be assigned to the Preserves and should patrol on weekdays and/or weekends, based on public use patterns. They should be empowered to issue citations for violations such as riding motorcycles on the Preserves, allowing dogs to run off leashes, and collecting plant or animal species.

9.2 Interpretive and Information Displays and Programs

Interpretation and education has become a widespread management tool of natural resources as it has the capacity to reduce inappropriate behavior voluntarily through education (Black 2002). Until the benefits of education and interpretation were recognized, management

strategies generally were focused on physical controls such as barriers, boardwalks, and the location of facilities, as well as regulatory controls (Orams 1996; Hall and McArthur 1996).

The level and type of education and interpretation will depend on the needs, interests, and expectations of the visitor and may include a wide range of interpretive media. Like the management of the Preserves, the interpretation and educational tasks need to adapt to changes and must respond to the needs of the Preserves.

The long-term success of the Preserves and the concept of habitat protection are dependent on acceptance by local community residents of the Preserves as valuable amenities and resources. A belief in open space as a part of their community may cause residents and local school children to become interested and protective of the resource. Consequently, residents and local school children not only refrain from disturbing the resource but also inform others of its importance, to prevent vandalism and unauthorized activities from occurring within the open space. In this manner, by becoming stewards of the open space preserve areas, community members provide a valuable service to the Habitat Manager and the preserve, as their vigilance affords protection to the area when the Habitat Manager is not present (Affinis 1998; Helix 2000).

It is the Habitat Manager's responsibility to work with the community as much as possible and take steps to maintain a positive working relationship between the community and the habitat management program.

9.2.1 Signs

9.2.1.1 Educational Signs

Information regarding the general ecological, faunal, and floral resources, especially those resources that are endemic, endangered, or threatened on both preserves should be adequately provided via signage, pamphlets, and at informational kiosks at major trail entrance designations. Signage is recommended at particularly sensitive habitat areas, such as at the vernal pool and the short-leaved dudleya habitat areas.

Education signs should be placed at trailheads and at other opportune locations where they will be frequently encountered. Signs should be interpretive of the open space, and cover such topics as purpose, ecological descriptions, common species, and importance of the open space in and of itself and as a part of a subregional system.

The educational signs should include space to post notices on such topics as herbicide use dates, rattlesnake warnings, scheduled trail repair or maintenance, and other items of concern.

9.2.1.2 Advisory Signs

Signs informing the public about restrictions to protect the Preserves should be posted at trailheads. Restrictions include activities such as poaching, allowing dogs to be off leashes, harassing or killing endangered or other animals, removing reptiles as pets, fires, littering, and removal of plant material.

Other advisory signs could encourage visitors to pick up trash and to notify the Habitat Manager of violation.

9.2.1.3 Trail Signs

Signage should be placed at all trailheads and throughout the Preserves showing the location of the sign in regards to the trail system and itemizing the uses allowed on each type of trail. Signs at the beginning of trails will indicate what type of trail is being accessed. View points and other points of interest will be marked on the trails with signs that point in the direction of the point of interest. Figures 9-1a and 9-1b show the trail uses, signs, fences and lookouts.

9.2.1.4 Interpretive Trail Signs

One trail at each of the Preserves should be designated for interpretation. Signs should be placed at locations along the trail briefly describing the resources (see Figures 9-1a and 9-1b). An interpretive trail brochure should be designed to provide additional information regarding the resources.

Deleted: Signs will be marked with a line with arrows at both ends or circle with an arrow indicating whether the trail is a loop or a through or connecting trail that could lead out of the preserve. ¶
The signs should also include language regarding fines for trespassing into restricted areas. ¶

9.2.2 Public Education

The following steps should be taken to facilitate both public awareness of the open space and coordination between the Habitat Managers of other properties.

9.2.2.1 Communication

The Habitat Manager will answer questions and explain the open space to local residents and students initiating inquiries.

9.2.2.2 Volunteer Services

Volunteer services are both a method of and a result of public awareness. The Habitat Manager should participate in subregional or regional programs that encourage and feasibly use volunteer services. Continual volunteer programs may be established, allowing students the opportunity to volunteer and aid the Habitat Manager in the maintenance of the open space.

Deleted: Volunteer services, while working within a particular project area, are normally developed at the subregional or regional level.

9.2.2.3 Newsletter

A newsletter should be considered as a way of informing the public about the Preserves and to engage them into supporting and protecting the Preserves. The newsletter could be distributed to local schools, residents of the adjacent properties, stakeholders, and wildlife agencies. The newsletter will serve to remind the community of the open space, its protected status, reasons for its establishment and ongoing existence, information on regional open space happenings, and any other information deemed pertinent by the Habitat Manager.

9.2.2.4 Trail Guide

A trail guide should be prepared and provided at the information kiosks at the Preserves.

9.2.2.5 Website

A website with a map to the Preserves and with trails maps of the Preserves should be established, and linked to websites of public landowners of the Preserves.

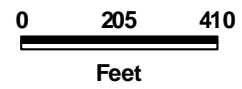
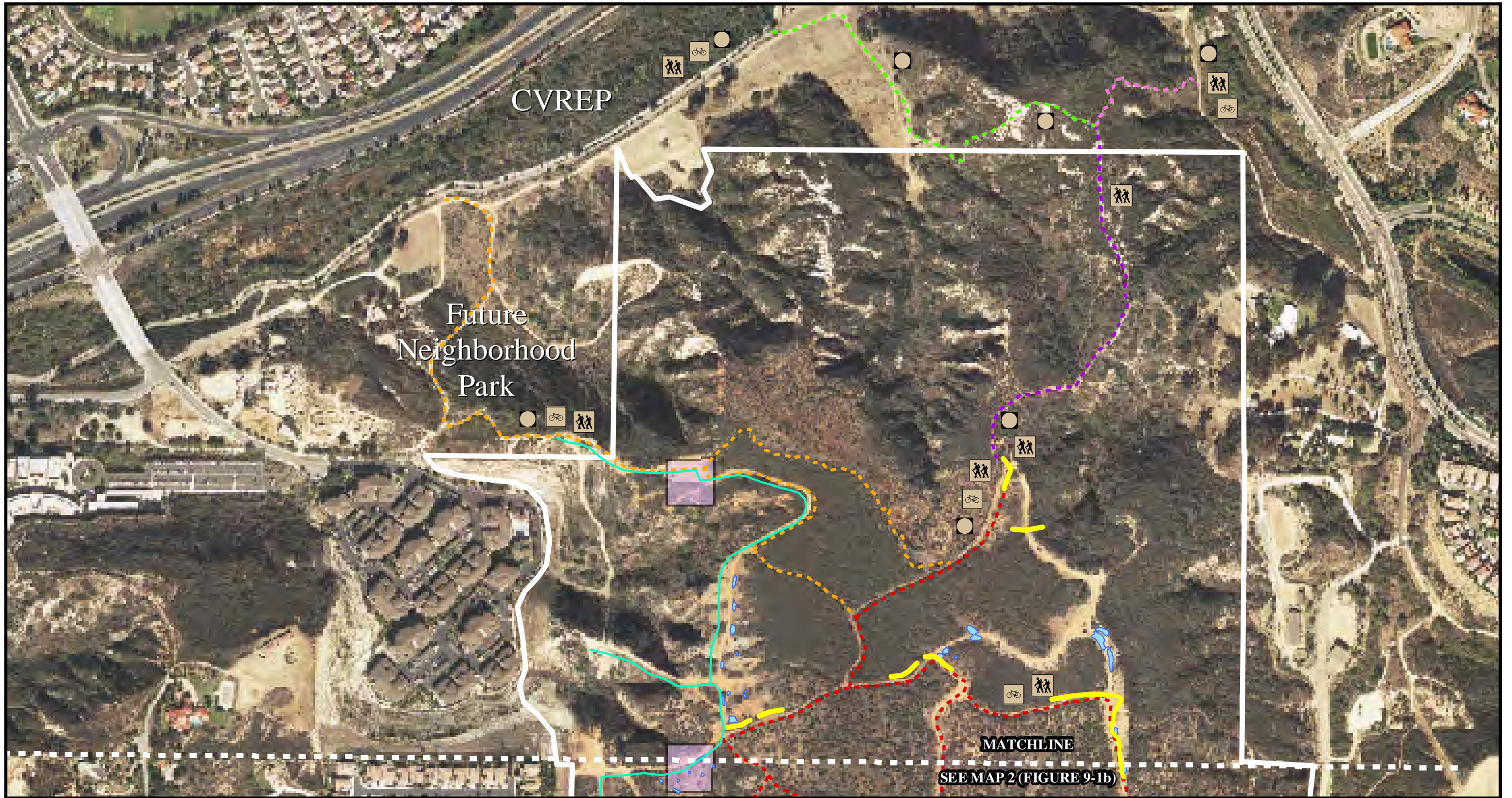
9.2.2.6 Docent Program

A docent program should be established, possibly in conjunction with the existing City of San Diego Park and Recreation Department volunteer program. Similar to current volunteers, docents could lead field trips, participate in presentations at the Preserves, monitor the trails, and generally watch over the Preserves. Docents and other volunteers provide outreach into all parts of the community through their help at the Preserves.

9.2.2.7 Adopt-a-School Program

Each Preserve could adopt a local school. Programs could be developed to teach the children about natural resources through presentations and walks, and provide hands-on experience in small habitat restoration, exotic species control, and maintenance activities.

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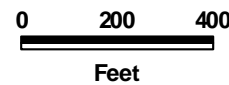


- | | | | | | | | |
|--|---------------------------------------|--|----------------------------------|--|---|--|---|
| | Proposed Multi-Use Trails | | Proposed Future Multi-Use Trails | | Utility Access Road | | Proposed Viewpoint |
| | Proposed Hike and Bike Trails | | Proposed Trail Access | | Proposed Fencing | | Vernal Pools (Source: City of San Diego revised in part by RECON 2001/2002) |
| | Proposed Hiking and Equestrian Trails | | Proposed Hiking Signage | | Seeps (Source: City of San Diego, Helix Environmental Inc. revised in part by RECON 2002) | | Private Property |
| | Proposed Hiking Only Trails | | Proposed Biking Signage | | | | |
| | Proposed Equestrian Only Trails | | Proposed Signage | | | | |

Note: Public trails will not be located on private land (pending land acquisition, MOU and/or trail easement)

FIGURE 9-1a
Proposed Trail System
on Carmel Mountain Preserve
(Map 1)

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- | | | | | | | | |
|--|---------------------------------------|--|----------------------------------|--|---|--|---|
| | Proposed Multi-Use Trails | | Proposed Future Multi-Use Trails | | Utility Access Road | | Proposed Viewpoint |
| | Proposed Hike and Bike Trails | | Proposed Trail Access | | Proposed Fencing | | Vernal Pools (Source: City of San Diego Vernal Pool Inventory 2004) |
| | Proposed Hiking and Equestrian Trails | | Proposed Hiking Signage | | Seeps (Source: City of San Diego, Helix Environmental Inc. revised in part by RECON 2002) | | Private Property |
| | Proposed Hiking Only Trails | | Proposed Biking Signage | | | | |
| | Proposed Equestrian Only Trails | | Proposed Signage | | | | |

Note: Public trails will not be located on private land (pending land acquisition, MOU and/or trail easement)

FIGURE 9-1b
Proposed Trail System
on Carmel Mountain Preserve
(Map 2)

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9.3 Nature Trails

A network of utility access roads and authorized and unauthorized paths exists within and adjacent to both the Carmel Mountain and Del Mar Mesa Preserves. Under this management plan, a multi-use trail system will be established for both Preserves to 1) accommodate a variety of recreational uses, 2) provide connections to the local and regional trail system, and 3) offer a unique natural recreation experience while protecting sensitive biological areas. The proposed Carmel Mountain/Del Mar Mesa trail plan would satisfy this area of the City-Wide Trails Master Plan.

The proposed trail system is based on existing paths and use patterns. However, many of the existing, unauthorized paths are located within sensitive habitat areas that have the potential of being adversely impacted by all recreational users. All existing, unauthorized trails will be targeted for active or passive restoration, as appropriate; please see Figure 3-11 for locations of proposed restoration areas. The identified trail system will connect to other open space areas and parks via existing roads and paths, new trails and surface streets. This Plan proposes no impacts associated with trail use (e.g. grading or cutting); any future impacts require additional review and separate permitting.

The trail plan proposes specific enforcement of the adopted trails plan within Del Mar Mesa. A significant portion of the existing paths are within biologically sensitive areas, or have been determined to be redundant, unsustainable and/or unsafe. The goal of the enforcement of the approved trail system is a reduction of human activity in critical natural resource areas (e.g. deer day-bed sites).

Trails proposed on lands not owned by the City of San Diego (e.g. private, CDFW, USFWS) will not be opened for access until the land is conserved or written permission is obtained from the landowner(s). Trails on USFWS lands will require review a Compatibility Determination as part of the Comprehensive Conservation Plan approval; if approved, they would be designated as part of this process. Trails on State of California lands would also require review and approval by the managing Department prior to being authorized for public use.

9.3.1 Carmel Mountain Preserve

9.3.1.1 Existing Conditions and Access

A network of paths and utility access easement roads exists throughout the footprint of Carmel Mountain Preserve. These areas have a long and varied history of uses, including authorized and unauthorized motor vehicle access and multi-use recreation. The paths and roads are highly variable in width, from a few feet up to fifteen feet, and often vary within a single reach.

The paths tend to widen into larger open areas where users cut corners at intersections. Many of these intersections are bare ground, non-native grasses or carpets of *Selaginella* growth, with

few or no shrubs. At some intersections, shortcuts have impacted surrounding shrub vegetation, as well. In many locations vernal pool depressions are found alongside and within the roadway. Roadside vernal pools have been previously impacted by utility maintenance and recreational use in several locations. Vehicles have made deep depressions and road ruts during the wet season and these depressions and ruts remain during the dry part of the year. These areas are now fenced as appropriate to minimize impacts.

SDG&E employees and private landowners may access the Preserve from three existing roads—two from the south and one from the northwest—through locked gates. A key to the appropriate gate will be provided to private property owners. The majority of the roads are maintained by SDG&E for access to their transmission line towers.

As stated in the Carmel Valley Neighborhood 8A Specific Plan/Precise Plan and the City of San Diego MSCP Subarea Plan, trails are a conditionally compatible use in MHPA open space when developed and operated in a manner consistent with the applicable management directives. For example, authorized trails should follow existing dirt paths and roads as much as possible, should not bisect sensitive habitat, and must be directed away from sensitive areas through signage and/or fencing, where necessary. If trails are provided through MHPA open space, the following directives shall apply.

- 1) Provide sufficient signage to clearly identify public access to the MHPA.
- 2) Locate trails, view overlooks and staging areas in public owned areas and in the least sensitive areas of the MHPA. Locate trails along the edges of urban development and follow existing dirt roads/trails and utility easements as much as possible.
- 3) Trails should not be paved, and trail widths should be minimized.

In addition, the MSCP General Management Directives (City of San Diego Subarea Plan Section 1.5.2) for trail design and maintenance are applicable.

9.3.1.2 Trail, Access Point, and View Point Plan

The proposed trail system for Carmel Mountain Preserve makes use of some of the existing roads and narrow paths to accommodate compatible recreational use, creating reasonable trail loops and connectivity to adjacent trail systems; please refer to Figure 9-1b for details of the trail plan.

Authorized trails within the Carmel Mountain Preserve were planned and are maintained consistent with the MSCP and the Carmel Valley Neighborhood 8A Specific Plan/Precise Plan. For example, fencing and signage have been used to direct human access away from vernal pools and state-endangered short-leaved dudleya populations. In addition to protective fencing and interpretive signage, regular patrols by volunteers and staff also limit human impacts, educate users and monitor sensitive habitat. In some cases, trail use is restricted to specific

user types, such as equestrians or cyclists, based on trail configuration (e.g. historic use and/or connectivity), user group input and/or sensitive natural resources. Authorized trails on Carmel Mountain are located within existing road beds or established use patterns. Trails are maintained at minimal widths where possible, and closed areas previously impacted by roads or paths are protected to allow passive restoration. The designated trail system for all use types avoids wetlands, including vernal pools; therefore this trail system fulfills the MSCP requirement to develop an equestrian use plan.

Proposed trails on Carmel Mountain are within existing use patterns and were selected to avoid identified vernal pools, and sensitive natural resources and habitat. Additionally, trail selection was based on one or more of the following trail criteria: 1) Connectivity, 2) Destination or 3) Loop trails. Trail-use designation was based on historical use, and community input (including representatives of all user groups). Trails not considered for inclusion were based on:

- Redundant trails
- Unauthorized trails, including shortcuts
- Trails not accessible to the public
- Unsafe or unsustainable trails
- Impacts of trails on MSCP covered species

Proposed trail selection was reviewed for consistency to MSCP requirements and directives, and with direction from MSCP staff on fencing and signage to direct use away from or close sensitive areas.

Vehicle access points and trail heads are provided at strategic locations for reasonable access. Vehicle access is provided at three existing locations: 1) the southwest access is located at the corner of Shorepointe Way and Longshore Way; 2) the central access is located at the corner of Fairport Way and Shorepointe Way west of Ocean Air Community Park; and 3) the northwest access point is located within the Pinnacle at Carmel Creek apartment complex at the end of Carmel Creek Road. Additional trail heads are located on the north of the Preserve, along the Carmel Valley Riparian Enhancement Project (CVREP) Trail for equestrian users, and on the southeast edge of the Preserve, east of Ocean Air Elementary School for pedestrian and equestrian users.

There are three scenic viewpoints proposed on Carmel Mountain Preserve. One is located at the northeast corner of the mesa overlooking Shaw Valley and Black Mountain Open Space Park. Two view points are proposed on the western edge of the Preserve where the land slopes downward toward a panoramic view of Torrey Pines State Park, Del Mar and the Pacific Ocean.

Several paths on the eastern side of the Preserve will be closed to protect a large population of state endangered short-leaved dudleya and several vernal pools. Additional paths will be closed throughout the Preserve to ensure the long-term viability and sustainability of native ecosystem function and natural processes and to protect the existing and restored biological

resources from disturbance. Trails may be closed at the discretion of the Park and Recreation Department due to the following reasons:

- Unsafe or unsustainable trails
- Trails initiating opportunities for illegal activity
- Trails contributing to resource impacts (i.e. erosion, biological, etc.)
- New environmental concerns
- Other issues under which closure is warranted based on professional staff opinion

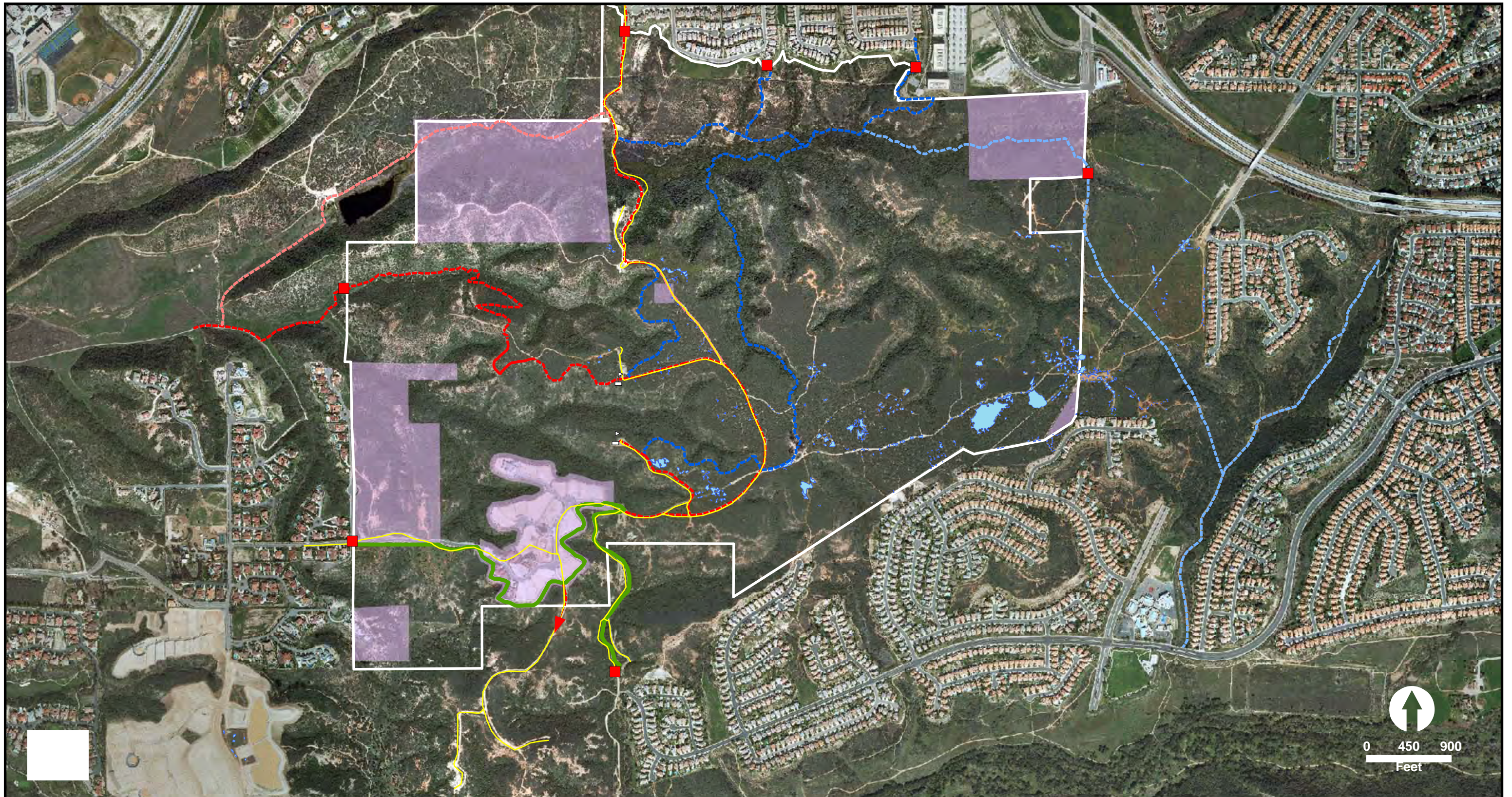
Proposed changes or additions to the trail alignments included in this document will be evaluated based on the MSCP and additional applicable regulations, if any, and the acquisition of appropriate permits. All changes must be authorized through an amendment to this plan or through concurrence of City, CDFW and USFWS staff.











9.3.2 Del Mar Mesa Preserve

9.3.2.1 Existing Conditions and Access

In addition to authorized utility access roads, a large network of unauthorized paths exist throughout the Del Mar Mesa Preserve (Figure 3-11) on both public and private lands. This network has a long and varied history of uses including authorized and unauthorized motor vehicle access, illegal encampments and multi-use recreation, with paths/roads that vary in width from a few feet up to thirty feet. A major component of this network is referred to as the “tunnels”, a connective system of over 10 miles of narrow unauthorized paths, many of which are under the canopy of chaparral vegetation.

The main utility access road runs north/south through the center of the Preserve with spurs to SDG&E transmission towers. An unauthorized road bisects the CDFW Vernal Pool Reserve and ends at the southeast corner of the Preserve. Many of the existing roads and paths bisect vernal pool habitat (see Figures 9-3a and 9-3b). Ninety-three vernal pools and depressions were mapped within the SDG&E access roads and the unauthorized east-west road on the CDFW Vernal Pool Preserve. Roadside vernal pools have been previously impacted by utility maintenance and recreational use in several locations; however, impacts associated with SDGE activities within the SDGE right-of-way are covered by the SDGE NCCP. Vehicles have made deep depressions and road ruts during the wet season (Photograph 9-1) and these depressions and ruts remain during the dry part of the year (see Appendix A6).



- | | | | | | |
|---|-----------------------|---|--------------------------|---|---|
|  | Proposed trail access |  | Proposed view point |  | Proposed future multi-use trail |
|  | SDG&E access roads |  | Proposed multi-use trail |  | Proposed future hike/bike trail |
|  | Private property |  | Proposed hike/bike trail |  | Existing trail per Del Mar Mesa Specific Plan |
| | | | |  | Vernal pools (Source: City of San Diego Vernal Pool Inventory 2004) |

Notes:
 1 - Fencing and signage will be installed as necessary
 2 - Public trails will not be located on private land (pending land acquisition, MOU and/or trail easement)
 3 - Lands not shown as private, within the boundaries of Del Mar Mesa Preserve, are in public ownership or under easement to a public agency

FIGURE 9-2
Proposed Trail System
on Del Mar Mesa Preserve

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Use and creation of unauthorized paths and roads for recreation has resulted in impact/loss of adjacent vegetation (i.e. trail widening). The CDFW Vernal Pool Reserve fence has been cut in several places to facilitate unauthorized access throughout the Preserve. The chaparral habitat has also been cut for unauthorized access, in particular within the canyon areas of the Preserve.



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Photograph 9-1.
Vernal pool impacted by vehicles.

SDG&E employees and public and private landowners can access the Preserve from the existing north, south and west roads through locked gates. A key to the appropriate gate will be provided to private property owners. The majority of the authorized roads are maintained by SDG&E for access to their transmissions line towers.

The regulatory land use document for this area is the Del Mar Mesa Specific Plan which currently identifies the west and north/south SDG&E access road as the approved trail alignment. The Del Mar Mesa Specific Plan will be amended as part of the approval process for this Plan to reflect the included trail system.

9.3.2.2 Trail, Access Point and View Point Plan

The proposed trail system makes use of authorized existing utility access roads and select single-track paths to accommodate recreational use by creating reasonable trail patterns (e.g. loops) and connectivity to adjacent trail systems as approved by regulatory agencies, public input, and City policy. Figures 9-3A through 9-3D show, in detail, the proposed trail system for Del Mar Mesa Preserve. Use of the CDFW Vernal Pool Reserve is governed by CDFW policies. These unauthorized trails may be re-vegetated based on State statutes and management policy (see Chapter 3.0 for individual vernal pool locations).

Much of the land on Del Mar Mesa has been historically impacted by many uses over the past decade and beyond. Lands acquired as mitigation are to be maintained at mitigation levels. Some of the areas previously impacted by illegal encampment, migrants, and unauthorized paths, have been recently reopened by unauthorized trail use. If the new impacts are on previously mitigated lands, all necessary steps must be taken to restore to past mitigation conditions. Restoration of impacted areas will be both active (planting, native seed broadcasting), and passive (allowing native vegetation to recover from human impacts).

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Proposed trails have been located in the least sensitive areas, and will include appropriate signage and fencing to direct users away from important natural resources. Proposed trails will be maintained and repaired as needed, including measures to minimize erosion. Due to its importance as biological habitat, Del Mar Mesa is not a planned destination for recreational users, but rather provides an important connection to the local and regional trail system. No new

trails will be developed, and areas currently impacted by unauthorized activity will be closed with native materials (brushing) and/or fencing and/or signage as needed. Authorized trail use in specified areas will be limited by user group. Proposed trail alignments were selected to avoid vernal pools and vernal pool watersheds, as well as other identified sensitive resources, and were reviewed by the U.S. Fish and Wildlife Service and California Department of Fish and Game for consistency with the MSCP. In order to fulfill the MSCP requirement for an equestrian use plan, equestrian trail use will be in areas away from vernal pools and vernal pool watersheds.

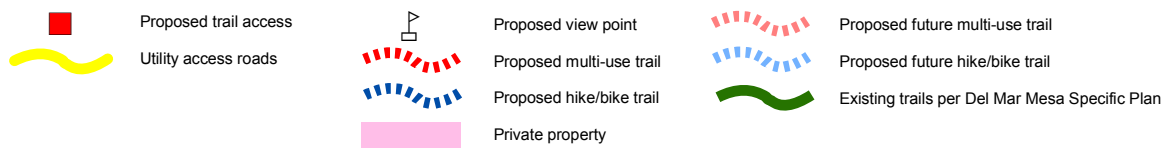
Proposed trails on Del Mar Mesa were selected to utilize existing utility access roads and old unauthorized use patterns (e.g. historic itinerant activity, illegal trespass, etc.), and to avoid any new impacts to habitat. As the Del Mar Mesa area is critical for connection to both the local and regional trail system, trails proposed were primarily based on connectivity, with the incorporation of limited large loops. There are no specific destinations within the proposed trails of Del Mar Mesa. The proposed trails were selected to both preserve and protect vernal pools and sensitive natural habitat, while allowing recreational trails in densities appropriate for the preserve. Trail use designation is based on physical constraints such as low brush canopy, natural cover and sanctuary for wildlife, and avoidance of sensitive flora. Selected trails were based on input from the community and user groups, City staff, and direction from CDFW and USFWS. Trails not considered for inclusion were based on:

- Redundant trails
- Unauthorized trails, including shortcuts
- Trails not accessible to the public
- Unsafe or unsustainable trails
- Impacts of trails on MSCP covered species

Proposed trail selection was reviewed and approved by City staff, CDFW and USFWS. Effective closure of unauthorized routes, active and passive restoration of impacted areas, and fencing and signage to close sensitive areas to public use or direct use away from sensitive areas will be implemented and maintained.

Vehicle access points and trail heads are provided at strategic locations for reasonable access. Vehicle access points are located at three existing locations: 1) the western access is located at the end of the Preserve Terrace through "The Preserve" housing development; 2) the northern access at the end of Santa Fe Canyon Place; 3) the southern access via the road from Los Peñasquitos Canyon Preserve at the end of Park Village Road. Access to private property on Del Mar Mesa will continue to be provided through existing roads. Additional trail heads will be located 1) from the west at the end of Rancho Toyon Place bordering "The Preserve" housing development, and 2) from the north at the corner of Arroyo Grande Road and Sierra Mesa Court.

There are two scenic viewpoints proposed on Del Mar Mesa Preserve (see Figure 9-3a). The southernmost view point overlooks Los Peñasquitos Canyon Preserve to the south.



Notes:
 1 - Fencing and signage will be installed as necessary
 2 - Public trails will not be located on private land (pending land acquisition, MOU and/or trail easement)
 3 - Lands not shown as private, within the boundaries of Del Mar Mesa Preserve, are in public ownership or under easement to a public agency

FIGURE 9-3
Off-site Trail Connections
for the Proposed Trail System
on Del Mar Mesa Preserve

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The second viewpoint is located northeast of "The Preserve" housing development on the southern most spur off the main road.

Many of the existing unauthorized paths within the Preserve will remain closed and will be revegetated with passive and/or active methods to restore natural processes interrupted and/or damaged by unauthorized use. In addition, restrictions based on the land purchase requirements will be enforced, e.g. lands purchased as mitigation or with restricted state bond funds. Trails may be closed at the discretion of the Park and Recreation Department due to the following reasons:

- Unsafe or unsustainable trails
- Trails initiating opportunities for illegal activity
- Trails contributing to resource impacts (i.e. erosion, biological, etc.)
- New environmental concerns
- Other issues under which closure is warranted based on professional staff opinion

Proposed changes or additions to the trail alignments included in this document will be evaluated based on the MSCP, additional applicable regulations, if any, and the acquisition of appropriate permits. All changes must be authorized through an amendment to this plan and the Del Mar Mesa Specific Plan, or through concurrence of City, CDFW and USFWS staff.

9.3.3 Connections to Other Trail Systems

The proposed trail systems on Carmel Mountain Preserve and Del Mar Mesa Preserve were designed to be part of the regional trail system, connecting to other open space trails, specifically, Los Peñasquitos Canyon Preserve (LPCP), Torrey Pines State Reserve, Black Mountain Open Space Park and the San Diego Trans-County Trail (see Figure 9-2a).

The two Preserves are connected via trails along the following surface streets: Rancho Toyon Place, Little McGonigle Ranch Road and Del Mar Mesa Road.

9.3.3.1 Carmel Mountain

Connection to Torrey Pines State Reserve is made via the CVREP trail on the north. Los Peñasquitos Canyon Preserve can be reached from the southeast corner of the Preserve past Ocean Air Elementary via Carmel Mountain Road and Wagon Wheel Crossing within LPCP. Connection to the San Diego Trans-County Trail is made by taking the trail along the surface streets mentioned above and entering Del Mar Mesa at the existing south access road toward Park Village Road to Kit Carson's Crossing within LPCP.

9.3.3.2 Del Mar Mesa

Future connection to Torrey Pines State Reserve will be made from the northwest corner of Del Mar Mesa through Carmel Valley via the CVREP trail. The connection to Black Mountain Open Space Park will be made from the north through McGonigle Canyon and Carmel Valley. The existing connection to LPCP from the south is via the existing access road. There is an additional connection to LPCP by way of the Shaw-Lorenz development down the "Side Hill Trail" just west of Sycamore Crossing. There are two proposed connections to LPCP 1) from the eastern side of Del Mar Mesa through Darkwood Canyon and 2) from the southwest corner of Del Mar Mesa connecting to "Cobbles/Queens" trail north of the waterfall.

9.3.3.3 San Diego Trans County Trail

The San Diego Trans County Trail is a 114-mile route that stretches from Torrey Pines to the Anza Borrego Desert (Figure 9-4). The trail corridor extends through several administrative jurisdictions and consists of existing and proposed trails on public lands and within the public right-of-way. Nearly 70 percent of the route exists on federal, state, county and city lands. In 1998, the expedition known as the "Spines to Pines" expedition traversed the route from the desert to the coast (San Diego Natural History Museum 2001).

The San Diego Trans County Trail is a branch of the 7,700-mile Sea-to-Sea Trail, a system of interconnected trails crisscrossing the lower 48 states. On this trail system a person will be able to ride a bicycle, ride a horse, or walk to every large or medium size town in the country. Trails will lead directly or indirectly to the nation's major trails, including the Pacific Crest Trail that extends from Mexico to Canada. The Pacific Crest Trail runs north-south through the mountains of eastern San Diego County.

The San Diego Trans County Trail is sometimes called the San Diego Sea-to-Sea Trail, connecting the Pacific Ocean to the Salton Sea, a distance of 140 miles.

9.3.4 Trail Uses

A variety of non-motorized uses will be allowed on the trails of the Carmel Mountain and Del Mar Mesa Preserves. The primary uses are recreation (hiking, walking, jogging, and running), mountain biking, and horseback riding. Figure 9-1a shows the difference trail uses, signage, fencing and lookouts.

Fencing will protect and prevent degradation of sensitive resources where trails encounter them. When brought on the Preserves, domestic animals will be leashed or otherwise constrained at all times and will be cleaned-up after by the owner or animal walker.

Encouraging multi-use activities on designated trails, rather than creating different trails for different activities, is important to maintain the biological integrity of the habitats. Trails in natural areas can significantly alter the habitat surrounding them. The opening of canopies by

TORREY PINES STATE PARK - 1,750 ACRES
State of California, Parks and Recreation Department

- Habitat: beach, lagoon, salt marsh estuary, coastal sage scrub, maritime chaparral, pine woodland
- Staging area and beach access at McGonigle Road parking lot
- Nearly 14 miles of existing trails
- Connected to Peñasquitos via public road right-of-way
- Some right-of-way trail construction is needed to connect Torrey Pines to Peñasquitos

LOS PEÑASQUITOS CANYON PRESERVE - 3,720 ACRES
City of San Diego, Parks and Recreation Department

- Habitat: freshwater marsh, grassland, riparian, oak woodland, coastal sage scrub, chaparral
- Staging area and west end trail access off Sorrento Valley Road
- Staging area and east end trail access off Black Mountain Road
- Nearly 18 miles of trails. The main trail stretches from staging area to staging area
- Abuts an open space corridor and the City of Poway
- Some trail construction is needed within Peñasquitos

CITY OF POWAY - 25,088 ACRES

- Habitat: coastal sage scrub, chaparral, neighborhood park, business park
- An existing trail connects Peñasquitos to a vast network of multi-use, non-motorized, public pathways
- Over 60 miles of a 75-mile trail master plan have been completed
- In Poway, the Trans-County Trail will run through the City and skirts a business park
- Some trail construction is needed within Poway to connect the City to Sycamore Canyon

SYCAMORE CANYON OPEN SPACE PRESERVE - 1,819 ACRES
County of San Diego, Parks and Recreation Department

- Habitat: oak woodland, coastal sage scrub, chaparral
- Staging area and north side trail access, from the City of Poway, via Sycamore Canyon Road
- Staging area and east side trail access off Highway 67
- 10 miles of trails, including several loop routes
- No more than one mile from the public property that surrounds San Vicente Reservoir

SAN VICENTE RESERVOIR - 3,405 ACRES
City of San Diego, Department of Water Utilities

- Habitat: open water, oak woodland, coastal sage scrub, chaparral
- No trails at this time
- Adjacent to Oak Oasis
- Trail construction is needed to connect Sycamore Canyon to Oak Oasis

OAK OASIS OPEN SPACE PRESERVE - 397 ACRES
County of San Diego, Parks and Recreation Department

- Habitat: oak woodland, mixed chaparral
- Staging area and trail access off Wildcat Canyon Road
- 3 miles of existing trails
- Connected to El Capitan by public trail right-of-way

ANZA-BORREGO DESERT STATE PARK - 640,000 ACRES (not all shown)
State of California, Parks and Recreation Department

- Habitat: badlands, desert floor, riparian, palm oasis, piñon pine, desert transition, chaparral, montane
- The largest state park in the contiguous United States
- Over 500 miles of trails, including dirt roads

CUYAMACA RANCHO STATE PARK - 25,000 ACRES
State of California, Parks and Recreation Department

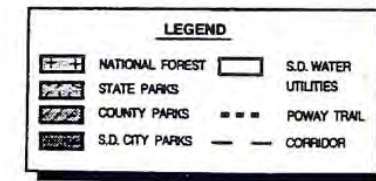
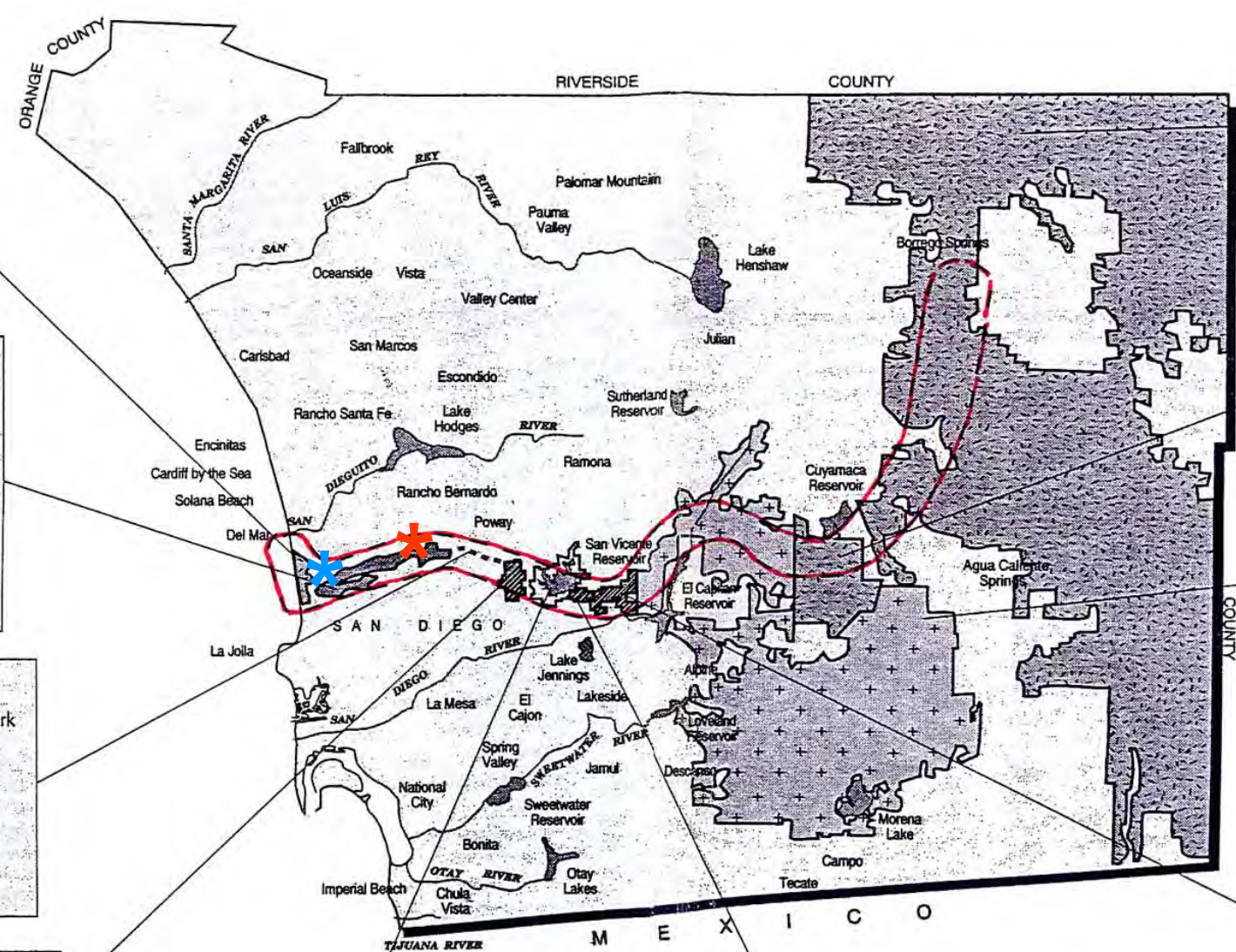
- Habitat: meadow, chaparral, oak woodland, mixed conifer forest
- 120 miles of existing trails
- Connected to Anza-Borrego by the California Riding and Hiking Trail and by the Pacific Crest Trail

CLEVELAND NATIONAL FOREST - 421,000 ACRES (not all shown)
United States of America, Department of Agriculture

- Habitat: coastal sage scrub, chamise chaparral, mixed chaparral, oak woodland, mixed conifer forest
- Nearly 358 miles of existing trails
- Adjacent to Cuyamaca Rancho
- Some trail construction is needed to connect El Capitan to Cuyamaca Rancho

EL CAPITAN OPEN SPACE PRESERVE - 2,839 ACRES
County of San Diego, Parks and Recreation Department

- Habitat: oak woodland, coastal sage scrub, mixed chaparral
- Staging area and trail access off Wildcat Canyon Road
- 8 miles of trail over rugged terrain
- Some of the most scenic vistas in San Diego County
- Abuts the Cleveland National Forest



FOR MORE INFORMATION CONTACT COUNTY PARKS AT (619) 694-3042



FIGURE 9-4
Trans-County Trail System

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vegetation removal, soil compaction, and the modification of existing drainage patterns by removal of upper soil horizons result in the modification of micro-topography that directly influences micro-climate and are direct consequences of trail construction (Cole as cited in Dehring and Mazotti 1997). In addition, off-trail use adjacent to marked trails results in increased instances of vegetation trampling and creation of unauthorized volunteer trails. Trampling causes structural damage to plants, which can lead to modified species composition and reduced cover and height. Trampling also affects trailside vegetation by changing soil conditions through compaction of soil particles and disruption of soil surface horizons. These changes in soil conditions often result in decreased nutrient, oxygen, and moisture levels, and increase the soils' resistance to root penetration (Dehring and Mazotti 1997). Short-cut trails that link two main trails opens up a wider area of habitat to disturbance, increases habitat fragmentation within the landscape, and deteriorates natural vegetation communities by creating favorable conditions for exotic species.

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9.3.4.1 Hiking, Walking, and Running

The Carmel Mountain and Del Mar Mesa Preserves are both in the vicinity of housing developments. Once the development projects are completed, the Carmel Mountain Preserve will have residential housing on three sides. The southern boundary of the Del Mar Mesa Preserve links with the Los Peñasquitos Open Space Preserve and will attract hikers coming from that Preserve. Both the Carmel Mountain and the Del Mar Mesa Preserves are already being used by people hiking and walking their pets.

9.3.4.2 Horseback Riding

To protect sensitive biological resources while maintaining equestrian use within the Preserves, sensitive resources will be fenced, and the trails modified to allow the co-existence of sensitive resources and equestrian use. Sections 1.5.8 of the MSCP requires that the placement of equestrian use areas for both the Del Mar Mesa and Carmel Mountain Preserves minimize equestrian contact with wetland areas, including the vernal pool areas, and other highly sensitive biological areas (City of San Diego 1997).

Equestrian use on trails can contribute to the deterioration trails by loosening the soil, trampling the vegetation, and encouraging avoidance behavior in native animals (Dehring and Mazotti 1997). By remaining on designated trails, the horseback riding impacts in the surrounding habitat will be avoided. In addition, the City may pursue agreements with local commercial stables to conduct manure removal within the Preserves, and licensing of horses to fund management activities.

9.3.4.3 Mountain Biking

Those sensitive resources located near potentially impactful activities, such as mountain biking and other uses, will be protected by fencing. The City may pursue licensing of non-motorized vehicles, such as bikes, used within the Preserves to fund management activities.

9.3.4.4 Access for Private Landowners

Access to private property on Del Mar Mesa can be obtained through existing SDG&E access roads. Additional environmental review will be required for access and development of private lands.

9.3.5 Trail Management

9.3.5.1 Trail Implementation

a. City of San Diego MSCP Subarea Plan Guidelines

The following requirements are taken from the City of San Diego's MSCP Subarea Plan (Section 1.5.2, 1997) in regards to general management directives for trails:

- Provide sufficient signage to clearly identify public access to the MHPA. Barriers such as vegetation, rocks/boulders or fencing may be necessary to protect highly sensitive areas. Use appropriate type of barrier based on location, setting and use. For example, use chain link or cattle wire to direct wildlife movement, and natural rocks/boulders or split rail fencing to direct public access away from sensitive areas. Lands acquired through mitigation may preclude public access in order to satisfy mitigation requirements.
- Locate trails, view overlook, and staging areas in the least sensitive areas of the MHPA. Locate trails along the edges of urban land uses adjacent to the MHPA, or the seam between land uses (e.g. agriculture/habitat), and follow existing dirt roads as much as possible rather than entering habitat or wildlife movement areas. Avoid locating trails between two different habitat types (ecotones) for longer than necessary due to the typically heightened resource sensitivity in those locations.
- In general, avoid paving trails unless management and monitoring evidence shows otherwise. Clearly demarcated and monitor trails for degradation and off-trail access and use. Provide trail repair/maintenance as needed. Undertake measures to counter the effects of trail erosion including the use of stone or wood crossjoints, edge plantings of native grasses, and mulching of the trail.
- Minimize trail widths to reduce impacts to critical resources. For the most part, do not locate trails wider than four feet in core areas or wildlife corridors. Exceptions are made when appropriate and necessary, to safely accommodate multiple uses or disabled access. Provide trail fences or other barriers at strategic locations when protection of sensitive resources is required. The existing fence design is shown in Photograph 9-2, a fence on the Carmel Mountain Preserve.
- Limit the extent and location of equestrian trails to the less sensitive areas of the MHPA. Locate staging areas for equestrian uses at a sufficient distance (e.g. 300–500 feet) from

areas with riparian and coastal sage scrub habitats to ensure that the biological values are not impaired.

- Off-road or cross-country vehicle activity is an incompatible use in the MHPA, except for law enforcement, preservation management or emergency purposes. Restore disturbed areas to native habitat where possible or critical, or allow to regenerate.



Photograph 9-2. Fence design.

- Limit recreational uses to passive uses such as bird watching, photography and trail use. Locate developed picnic areas near MHPA edges or specific areas within the MHPA, in order to minimize littering, feeding of wildlife, and attracting or increasing populations of exotic or nuisance wildlife (opossums, raccoons, skunks). Where permitted restrain pets on leashes.
- Remove homeless and itinerant worker camps in habitat areas as soon as found pursuant to existing enforcement procedures.
- Maintain equestrian trails on a regular basis to remove manure (and other pet feces) from the trails and preserve system in order to control cowbird invasion and predation. Design and maintain trails where possible to drain into a gravel bottom or vegetated (e.g. grass-lined) swale or basin to detain runoff and remove pollutants.

b. Specific Management Policies and Directives

The City of San Diego Subarea Plan (Section 1.5.8) also provides specific management directives for the Northern areas. Both the Carmel Mountain Preserve and Del Mar Mesa Preserve are subject to the specific guidelines as stated in the Carmel Valley Neighborhood 8A, and North City Future Urbanizing Area (NCFUA) Subarea 5 Plan. The following guidelines are taken directly from City of San Diego Subarea Plan Section 1.5.8.

The goals and objectives of the MHPA in the Northern area consists primarily of regional wildlife corridors providing linkages to the core areas of Del Mar Mesa, Los Peñasquitos Canyon Preserve, Los Peñasquitos lagoon, Torrey Pines State Park, the proposed San Dieguito River Valley Regional Park and the Black Mountain area. These linkages and core areas provide an important network of viable native habitats and plant communities, support the full range of native species, and provide functional wildlife connections over the long-term.

Table 9-1 is a complete list of covered species in the Northern Area.

**TABLE 9-1
COMPLETE LIST OF COVERED SPECIES IN THE NORTHERN AREA**

Plants Covered	Animals Covered
Del Mar Manzanita	Belding's savannah sparrow
Encinitas baccharis	Burrowing owl
Orcutt's brodiaea	California brown pelican
San Diego barrel cactus	California gnatcatcher
San Diego button-celery	California least tern
San Diego goldenstar	California rufous-crowned sparrow
San Diego mesa mint*	Canada goose
San Diego thorn-mint	Coastal cactus wren
Shaw's agave	Coopers hawk
Short-leaved dudleya	Golden eagle
Variiegated dudleya	Mountain lion
Wart-stemmed ceanothus	Southern mule deer
Willow monardella	Northern harrier
	Belding's orange-throated whiptail
	Riverside fairy shrimp
	San Diego horned lizard
	Southwestern pond turtle
	Western snowy plover
	White-faced ibis

*The City relinquished federal coverage for this species.

NCFUA Subarea 5 provides for the following specific management directives, as described in Section 1.5.8:

- All trails through the Del Mar Mesa area shall be clearly demarcated and provide split rail fencing or barriers and signage along sensitive portions to discourage off-trail use. Trails through this area should use the existing disturbed roads as much as possible. No new trails should be cut through the existing habitat. Over the long-term, evaluate existing dirt and disturbed roads and trails for restoration.
- Establish an equestrian use plan for the Del Mar mesa area that avoids vernal pool habitat and a associated watershed areas. If possible, this area should be managed as a single unit, avoiding being split into separate entities according to ownership.
- Sensitive areas of Del Mar Mesa should be protected from impacts via adjacent development. Signage should be used to inform people of sensitive resources such as vernal pools, and restriction of off-road vehicle use in the area.
- Occasionally monitor the corridor from Shaw Valley through the Bougainvillea golf course development to the Walden Pond area for wildlife usage (to include mesopredators like opossums, skunks, and raccoons), and feral animals and invasive plant species.

c. Coastal Zone Guidelines for Subarea 5

Carmel Valley Neighborhood 8A area should adhere to the following specific management directives, as described in Section 1.5.8 of the MSCP (1997), which is applicable to Carmel Mountain Preserve:

- Use signage and fencing to delineate and protect sensitive species, and to redirect human access from vernal pools and dudleya populations.
- Develop an equestrian use plan to include a trail system that will avoid wetlands and other highly sensitive areas as much as possible.
- Monitor sensitive areas for off-road/off-trail use. Take necessary measures to prevent such use, and repair damage (at minimum, closure of areas) as soon as feasible, including invasive plant removal.
- Use some of the existing dirt roads for trails. Avoid cutting new trails through habitat areas. Restore/revegetate dirt roads (not used as trails) and other disturbed areas to the appropriate habitat (maritime chaparral, vernal pool, grassland, coastal sage scrub), as determined by biologists.

9.3.6 Trail Features Requiring Maintenance

The following features indicate that the trail has degraded and needs maintenance:

- **Deep Trenching.** A trail that has sunken, causing hikers to feel as though they are walking in a trough. Deep trenching may cause users to walk/ride on level ground to the left or right of the trail, thus widening the trail and causing impacts to adjacent vegetation and soil crusts.
- **Widening.** The trail has become widened from a single or double track to an unattractive wilderness "freeway" of several parallel tracks, each trenched to a varying degree.
- **Short Cuts.** Trail users sometimes travel the shortest distance between two points (a straight line), disregarding the designated trails and creating a web of steep erosive trails.
- **Steepness.** When a trail exceeds a comfortable level of steepness over a long distance, users will either discontinue using the trail or they will not enjoy their excursion.
- **Impacts to Natural and Cultural Resources.** Sensitive plant and animal species, and archaeological sites can be impacted by erosive trails.

Deleted: <#>Tripping Hazards. Tree roots, rocks, and other natural objects are exposed from normal recreational use and erosion. ¶

9.3.6.1 Designing the Trail System to Minimize Maintenance

The original trail design and its alignments are the most integral component of trail maintenance. A well-designed trail will be easier to maintain, will deteriorate less rapidly, and

will provide a more pleasant recreational experience. On the other hand, a poorly designed trail is difficult to maintain, deteriorates quickly and, once you lose it, there is not much that can be done to restore it. In addition, a poorly designed trail will always be less pleasant to hike or ride.

a. Gradient

The Preserves sit atop erosive sandstone strata; therefore, gradients should be low. Trails along the steep slopes require switchbacks to keep gradients low and to minimize erosion. Generally, the linear gradient of a trail in either Preserve should be less than 2–5 percent. Since the sandstone soils are highly erosive, a 5 percent slope may be excessive.

b. Relationship to Existing Contours

On a map, a contour is a line of points that are at the same elevation. If you walk precisely parallel to a contour, you are walking at a level (0 percent) grade. If you walk perpendicular to a contour, you are walking either straight uphill or straight downhill. A well-designed trail is laid out to traverse a hillside, closer to parallel than perpendicular to the contours.

When a trail runs perpendicular to the contours, water runs down the middle of the trail, causing trenching, even at a 10 percent gradient. The only way to get water off the trail is for the route to traverse the natural slope, because then there is always a lower side of the trail. When there is a lower side of the trail, it becomes a simple matter to redirect water across and off the trail, rather than allowing it to cut a channel down the trail's centerline.

c. Outslope

A well-designed trail should be constructed to have a 3 to 4 percent cross-slope grade, tilting toward the outside (downhill side) of the trail to get the water off the trail as soon as possible. Outsloped trails are the easiest to construct if the original trail alignment traverses the natural slope.

d. Switchbacks

A "switchback" is any place where the alignment of a trail traverses a slope in one direction and then abruptly "switches back" toward the opposite direction. Switchbacks are often used to run a trail up a steep slope in a constrained location. Although switchbacks are often the only solution to the problems of rock outcrops and steep slopes, they should be avoided where possible. Unless they are perfectly designed and constructed, switchbacks present an irresistible temptation to people to shortcut the trail and cause erosion over a web of indiscriminately created volunteer routes.

9.3.7 Trail Maintenance

The following maintenance guidelines are summarized from the Park and Recreation Department Open Space Division Trail [Policies and Standards](#) (City of San Diego 2010).

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Inspection of the trail is the first step in trail maintenance. When erosion problems are evident, water may be the cause, and where to divert it is an important issue. The following elements represent the primary mechanisms to be used in the maintenance of trails. They are generally listed in priority order, but each has its own special application and purpose. Maintaining the outslope and the drainage dips represent the most important issues of trail maintenance.

9.3.7.1 Outslope

This is the first order of business in trail maintenance. It is the simplest, but most labor intensive trail maintenance tool.

Normal trail use will build up a berm along the outside (downhill) edge of the trail. If allowed to continue, the berm will grow and prevent water from flowing off the trail, causing the centerline of the trail to become entrenched. If this centerline trench is allowed to continue unchecked, the trail will trench deeper and deeper. Entrenching can be repaired using rolling slopes, which are alternating, multiple, cross-slopes that slow water and reduce erosion.

The outslope is maintained by simply pulling the berm back into the trail tread. This must be done consistently by trail crews. In many cases, if the outslope is restored on a regular basis, little or no maintenance is needed of any other kind. However, some use patterns (extensive equestrian use), soil conditions (sandy), and climate conditions (high precipitation) combine to minimize the effectiveness of this maintenance tool.

9.3.7.2 Drainage Dips

A drainage dip is built into the original trail alignment and is a change in gradient (a "dip" in the trail) that dissipates and diverts water flow. It only remains effective at preventing erosion as long as regular maintenance keeps it unplugged.

9.3.7.3 Pruning Overhanging Vegetation

Pruning vegetation may be necessary, as part of regular trail maintenance. Multi-use trails should have 10-foot vertical clearance. There may be specific considerations for trail dimensions depending on the location of the trail, to comply with the proper jurisdictions of the region.

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Too often, trail pruning is accomplished in the most expeditious manner possible—a branch intrudes within the walking/riding space of the trail and is quickly lopped-off so that it does not intrude and the debris is indiscriminately tossed aside. However, our goal in trail maintenance is

to maintain a trail in as natural appearance as possible. A quick pruning job deals only with the function of trail maintenance, not the aesthetics.

These elements of pruning are utilized by California State Parks and may be useful to incorporate into maintenance activities. Each of these elements makes pruning a more tedious maintenance task, but results with a trail that is compatible with the natural environment.

- **Do not toss debris:** Branches that are randomly discarded usually end up hanging from adjacent shrubs or trees. The se dead br anches are bot h un sightly and create a fire hazard.
- **Place debris out of view.** This element requires the extra effort of dragging branches under and around shrubs.
- **Place the butt (cut) end away from the trail.** This will help disguise the debris.
- **Each cut branch should be touching the ground to promote decomposition.** This means that brush piles are not appropriate.
- **Pruning should be done sensitively so that the trail appears natural** and not as if a chain saw was used without regard. Ideally, trail users should not be aware that maintenance work has recently been done.
- **Prune to the collar of any branch stem** for the health of the shrub and a more natural looking result. At the base of any branch there is a wide section that contains a plant's natural healing agents. Any pruning performed away from this collar will expose the plant to a greater risk of infection. A cut at the collar will naturally heal. For large branches over two inches in diameter, cut from the bottom, then cut down from the top. This prevents tearing of the bark, reducing infection.

9.3.7.4 Signing/Mapping

Adequate signing and mapping keeps trail users on the trail. Uncertainty about which trail to use may lead to new trails being created by trail users. These new trails will become maintenance problems and will ultimately need to be abolished.

9.3.7.5 Rolling Slopes

Rolling slopes are alternating, multiple, cross-slopes that can be used to divert water from the trail. At each change in slope, the water is slowed, allowing it to drop sediment. By reducing erosion and allowing sediment to drop on to the trail, an entrenched trail can be repaired. Depending on conditions, this method may effectively rebuild the trail over time.

9.3.7.6 Imported Fill Material

A deeply trenched trail can be restored by importing dirt or decomposed granite, compacting it, and recreating a well-drained outsloped trail. However, in most situations, this approach is usually both cost prohibitive and far too labor intensive.

9.3.7.7 Rerouting Trails

Trail rerouting is beyond the responsibilities of a trail maintenance crew. New trail alignments must be flagged by experienced park staff and then reviewed by resource specialists for compliance with [applicable regulations \(e.g., California Environmental Quality Act\)](#). Trail maintenance crews can provide valuable assistance by alerting park staff to those trail routes that may need to be rerouted.

9.3.8 Trail Monitoring

Trail monitoring is extremely important in evaluating environmental impacts resulting from a variety of uses on the trails. Some activities will impact the integrity of the trails more so than others, and will need to be actively monitored more closely. It is therefore beneficial to track when activities occur more frequently than others (there may be seasonal differences).

The following guidelines may contribute to keeping track of how many people are actively using the trails, and for what kinds of recreation.

- Identify the impacts being monitored, including impacts to water quality, soils, wildlife, flora, and other users (accidents, injuries, enjoyment of the trail).
- Establish quantitative and qualitative measurement scales for impacts.
- Establish impact thresholds that, if reached, trigger correction or closure of the trail to bicycles, equestrian, or other activity.
- Establish a schedule for monitoring activities.
- Establish a written reporting system.
- Train personnel to follow the monitoring program.
- Reliable trained persons from user groups may be used to supplement monitoring by staff.
- Specify baseline inventories to allow for monitoring of trends.
- Secure the resources to carry out the monitoring plan.

The best enforcement of regulations will come from regular patrolling combined with effective education and an active monitoring program.

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Deleted: There are three measurements that dictate that trail relocation is needed: ¶
 <#>When the maintenance crew is dealing with a poorly designed trail that has deteriorated to the extent that remedial measures will not work or will constantly need repair or replacement; ¶
 <#>A significantly better route is available; and ¶
 <#>To avoid sensitive habitat/species. ¶
 The telltale signs of a trail that needs to be relocated are deep trenching and a gradient exceeding 20 percent over about 100 feet of trail. ¶

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Trail monitoring provides organizations and individuals a sense of what is occurring within the Preserves and a method to document degradation and damage to public lands. Trails receive impact from all authorized user groups and unauthorized use such as motorized trespass.

The City Park and Recreation Department, Open Space Division staff reserves the right to restrict the use of and/or close any public trail or access point on Carmel Mountain or Del Mar Mesa to protect public health, safety and welfare. An example of such conditions would include, but is not limited to, restrictions/closures during inclement weather, trail overuse, landform deterioration, and other adverse conditions.

9.4 Research

Research that would require going off the official trails and roads or would require collection of resources from either of the Preserves requires approval from City staff. Research must avoid adverse environmental effects by the researchers' presence and activities. Researchers who apply to conduct their research in the Preserves must present a research design and evidence of their qualifications to conduct such research, including professional training, publications, and experience.

Research on federally listed species must also be approved in writing by the USFWS Carlsbad Field Office. Results of research on federally listed species will be provided to the Carlsbad Field Office and the City of San Diego, MSCP program.

10.0 RMP Preparers

This Resource Management Plan was prepared for the City of San Diego, located at 202 C Street, Fifth Floor, San Diego, California. The following professional staff participated in its preparation.

City of San Diego MSCP and Open Space Staff

Randy Rodriguez
Josh Garcia
Gina Washington
Rick Thompson
Kristy Forburger
Chris Zirkle
Betsy Miller

RECON (Job Number 3493B)

Charles S. Bull, President
Amy E. Clark, Associate Biologist
Mark W. Doderer, Senior Biologist
Stacey Higgins, Production Specialist
Frank McDermott, GIS Coordinator
Vince Martinez, Graphic Designer/Cartographer
Harry Price, Archaeologist
Lee Sherwood, Project Director
Bobbie Stephenson, Subcontractor

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APPENDIXES

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APPENDIX 1

Public Scoping Meeting Attendees, Introduced Issues, and Management Plan

**Carmel Mountain and Del Mar Mesa Management Plan
Public Scoping Meeting
February 27, 2001**

Attendees

Susan Anuskiewicz, Parcel owner
Holly Boessow, City of San Diego MSCP
Slader Buck, U.S. Fish and Wildlife Service, Refuges Division
Kathryn Burton, Sorrento Hills Community Planning Board and Friends of Carmel Mountain
Chuck Corum, Pardee Homes
Mark Doderer, RECON
Beth Fischer, Pardee Homes
Paul Fromer, RECON
Marvin Gerst, Del Mar Mesa Planning Board
Diana Gordon, Carmel Mountain Conservancy
Keith Greer, City of San Diego MSCP
David Hogan, Center for Biological Diversity
Jan Hudson, Del Mar Mesa Planning Board
Robert Hutsel, City of San Diego Mayor's Office
Isabelle Kay, Carmel Mountain Conservancy
Mike Kelly, Environmental Conservation Foundation
Bill Lawrence, City of San Diego Park and Recreation
Jeanette DeAngelis, City of San Diego Park and Recreation
Todd Philips, City of San Diego Council District 1
John Quirk, State Parks
Allison Rolfe, San Diego Audubon Society
Lisa Ross, Friends of Carmel Mountain
Oliver Ryder, La Jolla Friends Meeting
Thomas Steinke, SCMU/Pardee Homes
Bobbie Stephenson, RECON
Mark Webb, County of San Diego Park and Recreation
Mike Wells, State Parks
Susan Wynn, U.S. Fish and Wildlife Service, Ecological Services

Scoping meeting issues

Multiple Jurisdiction Requirements

- Plan should address what is prohibited by all the different jurisdictions. (Mark Webb)
- Land should be managed in accordance with the NWR requirements and the NWR designations for that unit. (Slader Buck)
- Management plan will ultimately be used by Refuges to satisfy their management plan requirements for these areas and the action items incorporated into the plan will need to be compatible with the federal system. (Slader Buck)
- Refuges is mandated to analysis the potential for hunting and fishing in all NWR areas, however, it is anticipated that resource protection will be an appropriate priority for this area and hunting/fishing will not be allowed. (Slader Buck)
- The Carmel Mountain vernal pools should be included within the NWR Vernal Pool Stewardship Project. (Isabelle Kay)
- In order to bring Carmel Mountain into the NWR, an act of Congress would be needed. However, the management plan can recommend that Carmel Mountain be managed like a NWR if appropriate. (Slader Buck)
- Cooperative agreement between agencies should be addressed in the management plan. If developed, cooperative agreements can help achieve consistency in management. (Slader Buck)

Restoration

- Restoration potential of the management plan areas should be addressed. (Keith Greer)
- Plan should evaluate restoration potential (i.e. Dudleya) and the possibility of reintroduction of appropriate species (i.e. Orcutt's spineflower). (David Hogan)
- Management plan should address the potential for active mitigation/restoration projects. (Bill Lawrence)
- Management plan should prioritize corridors for revegetation and monitoring. (Bill Lawrence)

Enforcement

- Management plan/working group should explore the possibility of improving City ordinances in order better enforce open space protection. For example, there is

no City ordinance requirement to stay on trails and there are no dog free areas in the City of San Diego. (Bill Lawrence)

- City ordinance requires that no bikes be allowed on single track trails, only designated park service roads. All applicable City ordinances should be referenced in the management plan. (Bill Lawrence)
- Enforcement section of the management plan should address limitations. For example, violations must be seen by the officer in order to enforce, there are a limited number of officers, and police cannot be called for “minor” crimes, only “major” crimes such as illegal ORV use. (Bill Lawrence)
- Encroachment issues should be addressed including adjacent developments dropping fences into the preserve. Can encroachment violations be enforced through the project tentative map?

Trails/Access

- Maintain trails and access for a variety of uses. (Keith Greer)
- GIS should be used to identify existing roads and trails. Redundant trails should be identified. (David Hogan)
- Plan should required that trails be clearly delineated. (David Hogan)
- Plan should address where trails will be and what users groups will be permitted on which trails. Mountain bike use must be address included which uses will be allowed on hard trails versus soft trails. (Marvin Gerst)
- Trails need to link to other off-site trail systems. (Marvin Gerst)
- Plan should address whether staging areas is needed, if one will be provided, and if one will not be provided, how undesirable parking and staging will be prevented. (Marvin Gerst)
- Critical linkages to the Trans County Trail should be maintained. (John Quirk, Mike Wells)
- Management plan should address the potential to provide a connecting trail to CVREP. Currently Carmel Mountain and CVREP are separated by a fence. (Isabelle Kay)
- Management plan should thoroughly address trails. No trails should be allowed in vernal pools. (Anne Harvey for Kathryn Burton)
- The park location should be discussed in the management plan. Management plan should discuss whether the park location is appropriate taking into account that it will be a main trail head for three communities. (Anne Harvey)
- Management plan should address the context of the trails as part of a system of trails that continue off-site. (Robert Hutsel)

- If trails are closed, management plan should recommend that a sign be posted stating the reason for closure. (Robert Hutsel)
- CVREP access is limited making access difficult for horse riders. In turn, the horse riders can cause damage by developing new trails to get around. Management plan should consider the potential for a connection to CVREP. (Lisa Ross/Marvin Gerst)
- Management plan should clearly identify access points in regard to adjacent development. (David Hogan)
- Management plan should identify standard widths of trails for each use. (Marvin Gerst)
- Management plan should address maintenance requirements that SDG&E has for their access easements. The management plan should also consider if these access easements can double as trails.
- Trail requirements for horse riders should be considered in the management plan. Paving cannot be used for horse trails because it can result in horseshoe damage and slippage. Decomposed granite or some sort of dirt surface is required for horses. Surface also needs to be able to hold up under the weight of the horses. The width standards that the City has developed for horse trails are not necessary. Trail does not need to be very wide, only needs good drainage. Single track trails can work for horse riders as long as there are no conflicting uses (i.e. bikes). Turnouts can be used to accommodate multiple uses on narrow trails. City requires that trails be safe and maintainable.
- Some feel that trail redundancy should be reduced. Others feel that trail redundancy can give a feeling of being in the open space "on your own".
- Management plan should identify trails based on allowed usage (who goes where).
- The northeastern area of Carmel Mountain is being accessed by horses taking advantage of the recent burn area. Management should address the damage caused by the new horse trails created. (Diana Gordon)

Natural Resource Protection

- Protect endangered species. (Keith Greer)
- Open space areas should be managed like Torrey Pines, with an emphasis on resource protection and only accommodating access where appropriate. (David Hogan)
- Plan should address the responsibility of MSCP to facilitate recovery of covered species. (Oliver Ryder)

- Plan should address the requirements and needs of MSCP, including covered species management and monitoring. (Susan Wynn)
- Active management of the site will require a certain level of knowledge since this area is unique and has more endangered species per square foot than any other area. Therefore, the plan will need a basis for informed decision making. (Oliver Ryder)
- Management plan should address the biotic and non-biotic factors that effect the animal and plant populations on-site. (Oliver Ryder)
- Management plan should focus on the ecosystem and population viability. (Oliver Ryder)
- Management plan areas should be managed for the resources like Torrey Pines. (John Quirk, Mike Wells)
- Management plan should determine if we will have enough land to support the species within the management plan areas and recreational uses. Protection of the species should be the primary goal of the management plan. (Isabelle Kay)
- Management plan should include a feasibility study for bobcat monitoring. (Isabelle Kay)
- Sensitive species monitoring protocols should be included in the management plan. (Mike Kelly)
- Management plan's emphasis should be on natural resources. (Allison Rolfe)

Cultural Resources

- Management plan should emphasize the identification of natural and cultural resources within the management plan areas. (Bill Lawrence)
- Cultural resources should be identified and provisions for their protection should be included in the management plan. (Mike Kelly)
- Management plan should address historical preservation. For example, pickets from historic development on-site that should be preserved have been removed from the open space areas. (Diana Gordon)

Recreational Uses

- If preservation of ecosystem function is a goal of the plan, recreation must be compatible with that goal. (John Quirk, Mike Wells)
- Management plan should address controlled use while incorporating as many uses as possible. All activities should be considered. For example, the management plan should discuss how to incorporate mountain bikers but still control their use on the site. (Chuck Corum)

- Management plan should address the decline of horse riders in open space areas and the apparent increase of mountain bikers. Management plan should also address that mountain bikers typically like to ride on steep trails which can result in erosion and damage. (Jan Hudson)
- Potential commercial recreation uses should be planned for in the management plan. Examples include various running races, hiking groups such as Happy Trails, etc. Commercial recreation uses can also be considered a potential source of funding. (Robert Hutsel)
- Try to evaluate a wide variety of activities in the management plan even if they are not currently being pursued in the management plan areas. A position on whether each activity or activity type will be allowed should be clearly stated in the management plan (i.e. hang gliding). Management plan should also explore potential group activities (i.e. races) to determine if such uses will be allowed and if a permit will be required for those uses. If group activities are currently allowed to use the site without permits, the management plan should discuss a possible permit system for such activities. (Mike Kelly)
- When the voters approved the acquisition of Carmel Mountain, they were told that it would be a recreational area. Carmel Mountain is considered an important park area, especially for Carmel Valley. This should be considered when developing the management plan and considering which uses will be allowed on-site. (Lisa Ross)
- A oversight group on recreation use should be developed for Carmel Mountain and Del Mar Mesa. The oversight group would consider new proposed uses and determine if they can be accommodated within the open space areas.

Private Property

- Provide access for private properties using the least environmentally damaging alternative. (Keith Greer)
- Plan should allow private property to be folded into the plan if ultimately conserved. (Keith Greer)
- Management plan should address access for private property owners. Land swaps might also be an option. (Susan Anuskiewicz)
- Access easement to Schlacter should be vacated.

Format

- Incorporate City and other agencies management plan formats. (Keith Greer)

- Plan should not be vague. If there is not enough money to do all the sections in a detailed manner, those sections should be completed at a later date when funding is available. (David Hogan)
- Since there will be a lot of pressures from user groups, the management plan should have a clear statement of purpose and intent. For example, the intent of the plan could be to implement the MSCP or to protect the species within the management plan areas. If so, the management plan statement must be clear to this effect in order to defend against incompatible uses. (John Quirk, Mike Wells)
- Management plan should be designed so it can be actively used in the field. (Bill Lawrence)
- This management plan should provide more specific direction for management than other open space management plans that have been developed in the past (i.e. Penasquitos Preserve management plan). Plan specificity should be taken down to the species level. (Mike Kelly)

Funding

- Plan development should best utilize limited grant funds and plan should address limited management resources when discussing management plan implementation. (Keith Greer)
- Management plan should allow for funding through such sources as grants, fines, and settlements. (Bill Lawrence)
- Opportunities and funding will open up when management plan is in place so it is important to get it completed as soon as possible so implementation can begin. (Bill Lawrence)
- Additional funds may be available if all issues cannot be addressed adequately with the funding provided. This management plan should be a “gold plated” management plan. (Mike Kelly)
- The level of management needed to accomplish the goals of the management plan should be addressed. A financing plan should be included in the management plan and the management plan should identify what resources will be needed to accomplish management goals. (Mike Kelly)
- If resources are pooled, costs can be lower. Management plan should address pooling of resources and cost sharing methods when considering the cost and resources needed for management. (Slader Buck)

Fire Management

- Plan should incorporate a fire management plan, similar to Irvine (Mark Webb)

- Plan should incorporate a prescribed burn plan. (David Hogan)
- Management plan should address the use of controlled fire for resource management. (Isabelle Kay)
- Management plan should include a fire suppression plan which would instruct fire fighters on precautions to take when fighting fires in order to protect the resources (i.e. avoid vernal pools). (Mike Kelly)
- Prescriptive fire should also be addressed in the management plan, but should be carefully evaluated. Prescriptive fire is not always good. (Mike Kelly)

Education

- Plan should include a public education component for the surrounding neighborhoods. (David Hogan)
- Management plan should consider developing education plans with adjacent schools (i.e. San Diego Jewish Academy). (Lisa Ross)
- Horse community is getting smaller and there are only a few horse ranches in the area. Management plan should explore an education program on environmental awareness for nearby horse ranches. (Lisa Ross)
- A education program with local schools for open space areas is already in place. It is called Site Stewardship. The management plan should discuss this program and it's potential use within the management plan areas.

Interim planning

- Interim planning should be done to ensure that areas are properly protected during the plan development process. For example, there is a great potential for ORV use as surrounding developments come in and provide access to the site. (David Hogan)
- Management plan and interim measures should identify immediate threats to management plan areas. (Isabelle Kay)
- Action should be taken in the interim before the management plan is completed to protect the management plan open space area. For example, gates are unlocked on Del Mar Mesa. (Jan Hudson)
- Management plan and interim measures should address damage to short-leaved dudleya by horses, damage to vernal pools by adjacent development, and damage to open space by new horse trails. (Diana Gordon)

Management Monitoring

- Use objective data to support health and persistence of the community. Monitoring data should provide robust figures that can be used to guide management. (Oliver Ryder)
- There should be quantitative management goals and a monitoring program should be established in order to determine if management goals are being achieved. (John Quirk, Mike Wells)
- Management plan should provide guidance for monitoring recreational use on-site. Open space use will increase over time and the management plan should provide guidance in order to adequately protect the open space areas.

Adjacent Development/Edge Effects

- Management plan should analyze the high rate of development in recent years and its effect on the management plan areas. (Isabelle Kay)
- Management plan should address preserve edges. Recommended practices for adjacent developments include: controlling lighting, drainage, pet intrusion, etc. (Anne Harvey)
- Management plan should address threats that potential developments could have on wildlife and wildlife connections. (Isabelle Kay)
- The drainage from Torrey Surf and other developments should be discussed. (Anne Harvey)
- Projects will border the natural open space areas. Management plan should address measures to protect against edge effects. For example, fencing should protect from pet intrusion and, in some cases, the fences should be buried to prevent domestic animals from crawling under. (Allison Rolfe)
- Wrought iron fences allow for cat access to natural open space areas. Management plan should consider an improved barrier system to protect against edge effects. (David Hogan)

Threats

- Damage to open space areas has occurred due to inadequate horse access (horse riders making their own trails or using eroded trails). Management plan should identify how to stop this damage. (Isabelle Kay)
- Management plan should identify exotic plant and animal species within management plan areas. (Isabelle Kay)
- Management area land should be properly used. Management plan should address trail usage, trash, migrant worker camps, etc. (Chuck Corum)

- Management plan should address control of illegal off-road vehicle use. (Robert Hutsel)

Volunteers

- Management plan should encourage a high level of citizen involvement. The potential for volunteer patrols or park watch programs (residents who have a view of the park from their homes would call in violations) to be developed should be addressed in the plan. (Bill Lawrence)
- Management plan should discuss the potential for management of the open space areas by volunteer groups. (Robert Hutsel)
- Management plan should include positive language for management of open space areas by volunteers. (Mike Kelly)
- Current volunteer force is small and not effective. Management plan should discuss how volunteer force and other protection measure can be made more effective. (Diana Gordon)

Design Issues

- Management plan should promote design which prevents a suburban/urban experience within the open space areas. Minimal signs, fences, chains, etc. should be used. (Lisa Ross)
- Management plan should address placement of interpretive signs from various environmental groups (i.e. San Diego Audubon). (Allison Rolfe)

Miscellaneous

- The project consultants should not be afraid to make recommendations to the working group or in the plan. (Anne Harvey)
- A copy of the management plan developed by Carmel Mountain Conservancy should be given to the project consultants. (Isabelle Kay)
- City should look at incorporating Del Mar Mesa into Los Penasquitos Preserve. (Robert Hutsel)
- Other groups not represented at the scoping meeting should be included (i.e. trails coalition, bikes coalition). (Robert Hutsel)
- Pardee has established a conservation bank on Carmel Mountain which must be protected and allowed to function properly. (Beth Fischer)
- Acquisition targets should be identified in the management plan. (Allison Rolfe)

Preserve Management Issues

1.0 Issues

A Public Scoping Meeting was held by the City of San Diego on February 27, 2001 to hear the issues of concern by agencies, jurisdictions, and public stakeholders. At the meeting, City staff described the intention of preparing a management plan for the Carmel Mountain and Del Mar Mesa Preserves and each person in attendance identified the issues they thought should be addressed in the plan.

A list of attendees and issues introduced was prepared by the City (Attachment 1). The Management Plan addresses these issues and others identified after the scoping meeting.

Issues introduced fall into these categories:

- Multiple jurisdictions having different requirements
- Habitat restoration
- Open space protection enforcement
- Trails and access
- Natural resource protection
- Cultural resource protection
- Allowable recreational uses
- Private property access
- Format of the plan
- Funding for implementing the plan
- Fire management
- Education program
- Interim planning
- Management monitoring
- Adjacent development and other edge effects
- Threats to the natural and cultural resources
- Volunteer involvement
- Park design
- Public use
- Urban encroachment
- Easements
- Erosion and sedimentation
- Brush management
- Miscellaneous

The issues introduced at the scoping meeting are described below.

1.1 Multiple Jurisdictions Having Different Requirements

The properties within the Preserves are owned by many different public and private entities. For example, the USFWS National Wildlife Refuge system has management directives for their unit that falls within the Del Mar Mesa Preserve, and other entities have prohibitions against certain activities. The issue was raised that the management plan must take all these items into consideration to be ultimately useful to all property owners. Cooperative agreements between agencies should be addressed in the plan.

Utility easements across the preserves often require maintenance which need to be integrated with Preserve management tasks.

1.2 Habitat Restoration

The restoration of the management plan area should be addressed, in particular, the plan should evaluate the restoration potential for small-leaved live-forever (*Dudleya blochmaniae* ssp. *brevifolia*) and the possibility of reintroduction of other appropriate species such as Orcutt's spineflower (*Chorizanthe orcuttiana*). Active mitigation and habitat restoration projects should be considered, and areas for habitat restoration and monitoring should be prioritized.

1.3 Open Space Protection Enforcement

The issues of enforcing ordinances and Preserve rules, and enforcement limitations was requested to be addressed in the plan.

1.4 Trails and Access

The major issue concerning the trails and access to them is that the trail system must be developed for a variety of uses. Existing roads and trails, redundant trails, and where trails link to off-site trails systems, such as the Trans County Trail, and to the CVREP (Carmel Valley Riparian Enhancement Program), and trail access points should be identified and clearly delineated on maps in the plan. Trail characteristics of various activities should be considered.

1.5 Natural Resource Protection

The overriding issue of the Preserves is how to protect endangered species while allowing the public to use and enjoy them.

1.6 Cultural Resource Protection

As with natural resources, the issue is how to protect the cultural resources while allowing the public to use and enjoy the recreational uses of the Preserves.

1.7 Allowable Recreational Uses

The issue is how to integrate recreational uses with the protection of biological and cultural resources. The plan needs to address allowable and prohibited uses.

1.8 Private Property Access

A few private parcels are surrounded by Preserve lands; the property owners require access to their property.

1.9 Format of the Plan

Specificity and compatibility with agency management plan formats was requested for this plan.

1.10 Funding for Implementing the Plan

Implementing a management plan for the two Preserves will be costly. Funding possibilities, such as grants, fines, and settlements, should be considered and discussed in the plan.

1.11 Fire Management

The concern is the implementation of fire management on both Preserves.

1.12 Education Program

Incorporation of an environmental awareness education program with schools of surrounding neighborhoods, such as the Site Stewardship program, should be addressed in the plan and made part of the Preserve management program.

1.13 Interim Planning

At the scoping meeting, implementing interim protection measures to protect resources before the plan is completed was requested.

1.14 Management Monitoring

Quantitative monitoring should be used to guide management of the Preserves.

1.15 Edge Effects and Urban Encroachment

The effects of the adjacent developments on the Preserves, and the urban/wildland interface should be addressed in the plan.

1.16 Threats to the Natural and Cultural Resources

Existing threats to the resources were identified at the scoping meeting: inadequate trail, access for horseback riders, exotic plant and animal invasion, and off-road-vehicle use.

1.17 Volunteer Involvement

It was suggested that volunteer citizen involvement be encouraged in the plan.

1.18 Erosion and Sedimentation

Erosion along the trails and within disturbed areas is of concern.

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APPENDIX 2

General Management Plan for MSCP Areas

1.0 General Management Plan for MSCP Areas

1.1 Description of Northern Area

The City has about two-thirds of the Los Penasquitos Lagoon/Canyon and Del Mar Mesa core area within its subarea. This core resource area encompasses one of the few intact natural open space areas in coastal San Diego County that is still linked to larger expanses of habitat to the east. Los Penasquitos Canyon is a regional corridor linking coastal habitats to inland habitats on Black Mountain and in Poway. Important resources in this area include saltmarsh, coastal sage scrub, and southern maritime chaparral. Covered species include San Diego thorn-mint, Shaw's agave, Del Mar manzanita, Encinitas baccharis, Orcutt's brodiaea, wart-stemmed ceanothus, short-leaved dudleya, variegated dudleya, San Diego button-celery, San Diego barrel cactus, willow monardella, San Diego goldenstar, Torrey pine, San Diego mesa mint, Riverside fairy shrimp, southwestern pond turtle, San Diego horned lizard, orange-throated whiptail, California brown pelican, white-faced ibis, Canada goose, northern harrier, Cooper's hawk, golden eagle, western snowy plover, California least tern, burrowing owl, coastal cactus wren, California gnatcatcher, California rufous-crowned sparrow, Belding's savannah sparrow, grasshopper sparrow, mountain lion, and mule deer.

The northern area encompasses a large amount of developed and undeveloped land stretching from the Black Mountain Ranch area of the North City Future Urbanizing Area (NCFUA) south to Lopez Canyon in Los Penasquitos Canyon Preserve in Mira Mesa, and from the coast to Interstate 15. The area encompasses the communities of Carmel Valley, Sorrento Hills, Torrey Pines, Rancho Penasquitos, a portion of Mira Mesa, the Via de la Valley Specific Plan area, and the entire 12,000-acre NCFUA. In addition, the area also includes Torrey Pines State preserve, the Los Penasquitos Lagoon, and Los Penasquitos Canyon Preserve. The majority of the undeveloped private land is disturbed habitat, much of it having been farmed or grazed for decades or longer.

The MHPA in this area is largely comprised of regional linkages leading to biological core areas within existing reserves and parks. In the north lies the area surrounding Black Mountain Park, much of which serves as core area immediately in and surrounding the park, with the remainder of the lands allowing connections to the San Dieguito River Valley to the north and west, and providing one end of a lengthy regional corridor to the south. The core area contains valuable native habitats: mixed and chamise chaparral, coastal sage scrub, and native grassland. The corridor/linkage areas currently contain much non-native and disturbed habitat, including invasive exotic

species, and are in need of enhancement/restoration. The corridors also contain areas with non-native grasslands that are considered important raptor foraging habitats.

The central portion of the northern area is comprised of the heart of the City's North City Future Urbanizing Area, known as NCFUA Subareas 2, 3, 4, and 5. These encompass the San Dieguito Lagoon area, Gonzales Canyon, and most of the area lying between the communities of Carmel Valley and Rancho Penasquitos. NCFUA Subareas 3 and 4 contain only extended regional corridors, linking to the north, west, and south. These corridors primarily lie in canyons or drainages (e.g. La Zanja Canyon, McGonigle Canyon, and Gonzales Canyon), and the majority require restoration to enhance their long-term habitat value, as they are currently in agriculture and disturbed lands. NCFUA Subarea 5 contains core habitat area on the Del Mar Mesa north of Los Penasquitos Canyon Preserve as well as linkages containing disturbed lands and habitat leading toward Carmel Valley and Carmel Creek. NCFUA Subarea 2 contains a portion of the San Dieguito Lagoon enhancement area east of the I-5 freeway. The proposed MHPA boundary in this area is consistent with the open space configuration of the NCFUA Framework Plan, and contains wetlands including the San Dieguito River, limited coastal sage, chaparral, grasslands, and agriculturally disturbed lands.

The southwestern portion of this area contains Torrey Pines State Park, Crest Canyon, Los Penasquitos Lagoon, and Los Penasquitos Canyon Preserve which are core biological resource areas with high to moderate habitat values. Los Penasquitos Canyon Preserve contains large expanses of non-native grassland, and contains some restoration opportunities within its boundaries. This portion of the MHPA also contains linkages and habitat within the southern Carmel Valley neighborhoods (e.g. 8, 8A, and 10) and the Carmel Valley Restoration and Enhancement Project (CVREP), which is intended to serve as a wildlife linkage to the Los Penasquitos Lagoon and Torrey Pines State Park. Carmel Valley Neighborhood 10 contains two major wildlife corridors that converge at CVREP, where they link to adjacent core habitat and north of Neighborhood 8A. Neighborhood 8, where CVREP is located, also contains existing houses, ranches, and rural-oriented businesses. These are incorporated within the MHPA boundary as low-density areas conditionally compatible with the MHPA.

The linkages to Torrey Pines State Reserve and Los Penasquitos Lagoon from the east are tentative at best. In the south, a rip-rap channel winds west from Los Penasquitos Canyon, underneath freeways, local roads, and railroad tracks to gain access to the Lagoon and State Park. The northern connection to the lagoon is located at the western terminus of CVREP, with 6-8 feet of clearance under the I-5 freeway to allow for Carmel Creek to drain into the lagoon. This wildlife connection is constrained as well.

The eastern portion of the Northern area includes linkages and open space within the Rancho Penasquitos, Mira Mesa, Sabre Springs, Scripps Ranch and Miramar Ranch communities, Miramar Lake and the General Dynamics property/Beeler Canyon area. This area includes core habitat in the Miramar-Poway areas as well as linkages that

extend from Los Peñasquitos Canyon Preserve east through Sabre Springs into the Miramar Lake area, MCAS Miramar and Sycamore Canyon Regional Park. The proposed MHPA in this area is consistent with the open space of the existing communities, and includes a large block of habitat in the easternmost portion. This block of habitat is a mixture of chaparral and coastal sage scrub and is located immediately west of Sycamore Canyon Regional Park and north of MCAS Miramar.

1.1.1 General Management Plan for MSCP Areas

1.1.1.1 Management Goals and Objectives

The habitat management aspect of the City of San Diego's MHPA is an important component of the MSCP, related to the goal of the Program. The overarching 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 habitats, thereby preventing local extirpation and ultimate extinction, and minimizing the need for future listings, while enabling economic growth in the region.

Where land is preserved as part of the MSCP through acquisition, regulation, mitigation or other means, management is necessary to continue to ensure that the biological values are maintained over time, and that the species and habitats that have been set aside are adequately protected and remain viable.

The City will be responsible for and will continue the management and maintenance of its existing public lands (including those with conservation easement), at current levels. The City will also manage and maintain lands obtained as mitigation where those lands have been dedicated to the City in fee title or easement, and land acquired with regional funds within the City's MHPA boundaries. Likewise, the Federal and State agencies will manage, maintain and monitor their present land holdings, as well as those they acquire on behalf of the MSCP, consistent with the MSCP. Lands in the MHPA which are set aside as open space through the development process but are not dedicated in fee to the City, or other acceptable entity, will be managed by the landowner consistent with approved Mitigation, Monitoring and Reporting Programs or Permit conditions. Private owners of land within the MHPA, who are not third party beneficiaries, will have no additional obligations for the management or maintenance of their land.

In order to assure that the goal of the MHPA is attained and fulfilled, management objectives for the City of San Diego MHPA are as follows:

1. To ensure the long-term viability and sustainability of native ecosystem function and natural processes throughout the MHPA.

2. To protect the existing and restored biological resources from intense or disturbing activities within and adjacent to the MHPA while accommodating compatible public recreational uses.
3. To enhance and restore, where feasible, the full range of native plant associations in strategic locations and functional wildlife connections to adjoining habitat in order to provide viable wildlife and sensitive species habitat.
4. To facilitate monitoring of selected target species, habitats, and linkages in order to ensure long-term persistence of viable populations of priority plant and animal species and to ensure functional habitats and linkages.
5. To provide for flexible management of the preserve that can adapt to changing circumstances to achieve the above objectives.

This section lists general management guidelines relevant to the entire City MHPA system, followed by specific guidelines and recommendations for each planned area of the MHPA, including the Otay Mesa area, the Otay River Valley, the Tijuana River Valley, the Eastern Area, Urban Areas, the Northern Area, Lake Hodges and the San Pasqual Valley, and the other Cornerstone Lands. Each area is unique in terms of its existing conditions, MHPA configuration, public or private ownership of land, the existence and location of sensitive species, and management needs.

Based on the above management objectives, the recommended management directives that follow have been identified in order of priority. It is recognized that many of these directives cannot be implemented on approval of the Plan, but will instead occur over the life of the Plan. The ability to implement many of the management directives will be directly related to the availability of funding. In addition, some of the management directives may be implemented as part of mitigation requirements for development projects both within and adjacent to the MHPA. Some of the tasks are also expected to be implemented as research efforts by the scientific and academic community at large.

The management directives are organized by priority into the following two categories. The priorities are intended to assist in the decisions on where to spend limited funds and direct mitigation efforts:

a. Priority 1

Directives that protect the resources in the MHPA, including management actions that are necessary to ensure that the Covered Species are adequately protected. Refer to Appendix A “Species Evaluated for Coverage under the MSCP.”

b. Priority 2

Directives other than those required for covered species status and other long-term items that may be implemented during the life of the plan as funding becomes available.

The management directives listed in this section are a preliminary view of the management requirements of the MHPA within the City of San Diego. It is expected that modifications will be needed over time, based on realities encountered in the field as the MHPA is assembled. Monitoring of selected target species and other sensitive or constrained areas within the MHPA will occur as described in the MSCP Biological Monitoring Plan (under separate cover) with a general description of the Monitoring Plan provided in Section 1.5.13. The Monitoring Plan will inform MHPA (preserve) managers and staff of the general trends of wildlife use and species preservation, as well as indicate areas where special management focus is needed. Cooperation between the field managers, MSCP habitat management technical committee, and the wildlife agencies, is expected to occur to review and discuss existing and new management issues and to respond with practical, case-sensitive solutions. These solutions should be documented, and this management plan should be revised as needed to reflect new information.

An integral part of the management component is the previous section on Land Use Considerations that lists compatible land uses and states policies and guidelines related to the development of land uses within and adjacent to the MHPA. These policies and guidelines should be incorporated into projects during the land development review process. It should be noted that some of the management directives listed in the following sections may already be included as conditions of approved projects within or adjacent to the MHPA and are therefore considered part of this Subarea Plan.

1.1.1.2 General Management Directives

The following general management directives apply to all areas of the City of San Diego's MSCP Subarea Plan, as appropriate.

1.1.1.3 Mitigation

Mitigation, when required as part of project approvals, shall be performed in accordance with the City of San Diego Environmentally Sensitive Lands Ordinance and Biology Guidelines.

1.1.1.4 Restoration

Restoration or revegetation undertaken in the MHPA shall be performed in a manner acceptable to the City. Where covered species status identifies the need for

reintroduction and/or increasing the population, the covered species will be included in restoration/revegetation plans, as appropriate. Restoration or revegetation proposals will be required to prepare a plan that includes elements addressing financial responsibility, site preparation, planting specifications, maintenance, monitoring and success criteria, and remediation and contingency measures. Wetland restoration/revegetation proposals are subject to permit authorization by federal and state agencies.

1.1.1.5 Public Access, Trails, and Recreation

a. Priority 1

1. Provide sufficient signage to clearly identify public access to the MHPA. Barriers such as vegetation, rocks/boulders or fencing may be necessary to protect highly sensitive areas. Use appropriate type of barrier based on location, setting and use. For example, use chain link or cattle wire to direct wildlife movement, and natural rocks/boulders or split rail fencing to direct public access away from sensitive areas. Lands acquired through mitigation may preclude public access in order to satisfy mitigation requirements.
2. Locate trails, view overlooks, and staging areas in the least sensitive areas of the MHPA. Locate trails along the edges of urban land uses adjacent to the MHPA, or the seam between land uses (e.g. agriculture/habitat), and follow existing dirt roads as much as possible rather than entering habitat or wildlife movement areas. Avoid locating trails between two different habitat types (ecotones) for longer than necessary due to the typically heightened resource sensitivity in those locations.
3. In general, avoid paving trails unless management and monitoring evidence shows otherwise. Clearly demarcate and monitor trails for degradation and off-trail access and use. Provide trail repair/maintenance as needed. Undertake measures to counter the effects of trail erosion including the use of stone or wood crossjoints, edge plantings of native grasses, and mulching of the trail.
4. Minimize trail widths to reduce impacts to critical resources. For the most part, do not locate trails wider than 4 feet in core areas or wildlife corridors. Exceptions are in the San Pasqual Valley where other agreements have been made, in Mission Trails Regional Park, where appropriate, and in other areas where necessary to safely accommodate multiple uses or disabled access. Provide trail fences or other barriers at strategic locations when protection of sensitive resources is required.
5. Limit the extent and location of equestrian trails to the less sensitive areas of the MHPA. Locate staging areas for equestrian uses at a sufficient distance (e.g.

300-500 feet) from areas with riparian and coastal sage scrub habitats to ensure that the biological values are not impaired.

6. Off-road or cross country vehicle activity is an incompatible use in the MHPA, except for law enforcement, preserve management or emergency purposes. Restore disturbed areas to native habitat where possible or critical, or allow to regenerate.
7. Limit recreational uses to passive uses such as birdwatching, photography and trail use. Locate developed picnic areas near MHPA edges or specific areas within the MHPA, in order to minimize littering, feeding of wildlife, and attracting or increasing populations of exotic or nuisance wildlife (opossums, raccoons, skunks). Where permitted restrain pets on leashes.
8. Remove homeless and itinerant worker camps in habitat areas as soon as found pursuant to existing enforcement procedures.
9. Maintain equestrian trails on a regular basis to remove manure (and other pet feces) from the trails and preserve system in order to control cowbird invasion and predation. Design and maintain trails where possible to drain into a gravel bottom or vegetated (e.g. grass-lined) swale or basin to detain runoff and remove pollutants.

1.1.1.6 Litter/Trash and Materials Storage

a. Priority 1

1. Remove litter and trash on a regular basis. Post signage to prevent and report littering in trail and road access areas. Provide and maintain trash cans and bins at trail access points.
2. Impose penalties for littering and dumping. Fines should be sufficient to prevent recurrence and also cover reimbursement of costs to remove and dispose of debris, restore the area if needed, and to pay for enforcement staff time.
3. Prohibit permanent storage of materials (e.g. hazardous and toxic chemicals, equipment, etc.) within the MHPA and ensure appropriate storage per applicable regulations in any areas that may impact the MHPA, due to potential leakage.
4. Keep wildlife corridor and crossings free of debris, trash, homeless encampments, and all other obstructions to wildlife movement.

b. Priority 2

1. Evaluate areas where dumping recurs for the need for barriers. Provide additional monitoring as needed (possibly by local and recreational groups on a "Neighborhood Watch" type program), and/or enforcement.

1.1.1.7 Adjacency Management Issues

The following management directives are in addition to those outlined in Section 1.4.3, and refer more specifically to management and monitoring requirements.

a. Priority 1:

1. Enforce, prevent and remove illegal intrusions into the MHPA (e.g. orchards, decks, etc.) on an annual basis, in addition to complaint basis.
2. Disseminate educational information to residents adjacent to and inside the MHPA to heighten environmental awareness, and inform residents of access, appropriate plantings, construction or disturbance within MHPA boundaries, pet intrusion, fire management, and other adjacency issues.
3. Install barriers (fencing, rocks/boulders, vegetation) and/or signage where necessary to direct public access to appropriate locations.

1.1.1.8 Invasive Exotics Control and Removal

a. Priority 1

1. Do not introduce invasive non-native species into the MHPA. Provide information on invasive plants and animals harmful to the MHPA, and prevention methods, to visitors and adjacent residents. Encourage residents to voluntarily remove invasive exotics from their landscaping.
2. Remove giant reed, tamarisk, pampas grass, castor bean, artichoke thistle, and other exotic invasive species from creek and river systems, canyons and slopes, and elsewhere within the MHPA as funding or other assistance becomes available. If possible, it is recommended that removal begin upstream and/or upwind and move downstream/downwind to control re-invasion. Priorities for removal should be based on invasive species' biology (time of flowering, reproductive capacity, etc.), the immediate need of a specific area, and where removal could increase the habitat available for use by covered species such as the least Bell's vireo. Avoid removal activities during the reproductive seasons of sensitive species and avoid/minimize impacts to sensitive species or native habitats. Monitor the areas and provide additional removal and apply herbicides if

necessary. If herbicides are necessary, all safety and environmental regulations must be observed. The use of heavy equipment, and any other potentially harmful or impact-causing methodologies, to remove the plants may require some level of environmental or biological review and/or supervision to ensure against impacts to sensitive species.

b. Priority 2

1. If funding permits, initiate a baseline survey with regular follow-up monitoring to assess invasion or re-invasion by exotics, and to schedule removal. Utilize trained volunteers to monitor and remove exotic species as part of a neighborhood, community, school, or other organization's activities program (such as Friends of Penasquitos Preserve has done). If done on a volunteer basis, prepare and provide information on methods and timing of removal to staff and the public if requested. For giant reed removal, the Riverside County multi-jurisdictional management effort and experience should be investigated and relevant techniques used. Similarly, tamarisk removal should use The Nature Conservancy's experience in the Southern California desert regions, while artichoke thistle removal should reference The Nature Conservancy's experience in Irvine. Other relevant knowledge and experience is available from the California Exotic Pest Plant Council and the Friends of Los Penasquitos Canyon Preserve.
2. Conduct an assessment of the need for cowbird trapping in each area of the MHPA where cattle, horses, or other animals are kept, as recommended by the habitat management technical committee in coordination with the wildlife agencies.
3. If eucalyptus trees die or are removed from the MHPA area, replace with appropriate native species. Ensure that eucalyptus trees do not spread into new areas, nor increase substantially in numbers over the years. eventual replacement by native species is preferred.
4. 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. This management directive may be considered a Priority 1 if necessary to meet the conditions for species coverage. If implemented, the program would only be on a temporary basis and where a significant problem has been identified and therefore needed to maintain balance of wildlife in the MHPA. The program would be operated in a humane manner, providing adequate shade and water, and checking all traps twice daily. A domestic animals release component would be incorporated into the program. Provide

signage at access points and noticing of adjacent residents to inform people that trapping occurs, and how to retrieve and contain their pets.

1.1.1.9 Flood Control

The following management directives are in addition to the General Planning Policies and Guidelines outlined in Section 1.4.2.

a. Priority 1

1. Perform standard maintenance, such as clearing and dredging of existing flood channels, during the non-breeding or nesting season of sensitive bird or wildlife species utilizing the riparian habitat. For the least Bell's vireo, the non-breeding season generally includes mid-September through mid-March.

b. Priority 2

1. Review existing flood control channels within the MHPA periodically (every 5-10 years) to determine the need for their retention and maintenance, and to assess alternatives, such as restoration of natural rivers and floodplains.

1.2 Specific Management Policies and Directives for the MSCP Northern Area

Including the North City Future Urbanizing Area (NCFUA), Carmel Valley, Rancho Penasquitos, Beeler Canyon, Scripps Ranch, Los Penasquitos Canyon and Lagoon, Torrey Pines State Park, Sorrento Hills, and portions of the University and Mira Mesa communities.

1.2.1 Background

1.2.1.1 Goals and Objectives

The MHPA in the Northern area consists primarily of regional wildlife corridors providing linkages to the core areas of Del Mar Mesa, Los Penasquitos Canyon Preserve, Los Penasquitos Lagoon, Torrey Pines State Park, the proposed San Dieguito River Valley Regional Park and the Black Mountain area. These linkages and core areas provide an important network of viable native habitats and plant communities, support the full range of native species, and provide functional wildlife connections over the long-term.

1.2.1.2 Covered Species

Covered species in the Northern area include:

Plants

Del Mar manzanita
Orcutt's brodiaea
Encinitas baccharis
San Diego barrel cactus
San Diego button-celery
San Diego goldenstar
San Diego mesa mint
San Diego thorn-mint
Shaw's agave
Short-leaved dudleya
Torrey pine
Variegated dudleya
Wart-stemmed ceanothus
Willow monardella

Animals

Belding's savannah sparrow
Burrowing owl
California brown pelican
California gnatcatcher
California least tern
California rufous-crowned sparrow
Canada goose
Coastal cactus wren
Cooper's hawk
Golden eagle
Mountain lion
Mule deer
Northern harrier
Orange-throated whiptail
Riverside fairy shrimp
San Diego horned lizard
Southwestern pond turtle
Western snowy plover
White-faced ibis

1.2.1.3 Major Issues

The major issues for management in the Northern area based on existing conditions, are the following, in order of priority:

1. Intense land uses and activities adjacent to and in covered species habitat and linkages.
2. Itinerant living quarters.
3. Enhancement and restoration needs.
4. Exotic (non-native), invasive plants and animals.
5. Water drainage issues, including water quality, urban runoff, erosion, sedimentation, and flood control.
6. Utility, facility and road repair, construction, and maintenance activities.

1.3 Specific Management Directives for the Northern Area

The following policies and directives for the Northern area are described in the following text, generally from north to south and east to west.

1.3.1 North City Future Urbanizing Area:

1.3.1.1 NCFUA Subarea 5

a. Priority 1:

1. Clearly demarcate all trails through the Del Mar Mesa area and provide split rail fencing or barriers and signage along sensitive portions to discourage off-trail use. Trails through this area should use the existing disturbed roads as much as possible. No new trails should be cut through existing habitat. Assess existing dirt and disturbed roads and trails for restoration over the long-term.
2. Develop an equestrian use plan for the Del Mar Mesa area that avoids the vernal pool habitat and their associated watershed areas. If possible, the Del Mar Mesa area should be managed as a single unit rather than split into separate entities according to ownership (County, various City departments, easements).

1.3.1.2 Carmel Valley Neighborhood 8A

a. Priority 1:

1. Redirect human access from vernal pools and dudleya populations through signage and fencing as necessary to delineate and protect the sensitive areas.

2. Develop an equestrian use plan including a trail system so as to avoid as much as possible wetlands and other highly sensitive areas.
3. Monitor this sensitive area for off-road and off-trail use, and take necessary measures to prevent such use, and repair damage (at minimum, closure of areas) as soon as feasible. Also assess for invasive plant species and remove as soon as possible.

b. Priority 2:

1. Use some of the existing dirt roads for trails, and avoid cutting new trails through habitat areas. Restore/revegetate dirt roads (not used as trails) and other disturbed areas to the appropriate habitat (maritime chaparral, vernal pool, grassland, coastal sage scrub), as determined by biologists.

APPENDIX 3

Wildlife and Plant Species Lists for Carmel Mountain and Del Mar Mesa Preserves

APPENDIX 3a
PLANT SPECIES OBSERVED ON CARMEL MOUNTAIN

Scientific Name	Common Name	Origin
<i>Achnatherum coronatum</i> (Thurber) Barkworth	Giant needlegrass	N
<i>Adenostoma fasciculatum</i> Hook. & Arn.	Chamise	N
<i>Adolphia californica</i> Wats.	California adolphia, spineshrub	N
<i>Allium praecox</i> Bdg.	Wild onion	N
<i>Ambrosia psilostachya</i> DC.	Western ragweed	N
<i>Anagallis arvensis</i> L.	Scarlet pimpernel, poor-man's weatherglass	I
<i>Antirrhinum nuttallianum</i> Benth. in DC.	Snapdragon	N
<i>Arctostaphylos glandulosa</i> Eastw. ssp. <i>crassifolia</i> (Jepson) Wells	Del Mar manzanita, Costa Baja manzanita	N
<i>Artemisia californica</i> Less.	California sagebrush	N
<i>Atriplex semibaccata</i> R.Br.	Australian saltbush	I
<i>Avena</i> sp.	Wild oats	N
<i>Avena barbata</i> Link	Slender wild oat	I
<i>Baccharis pilularis</i> DC.	Coyote bush	N
<i>Baccharis salicifolia</i> (Ruiz Lopez & Pavón) Pers.	Mule fat, seep-willow	N
<i>Baccharis sarothroides</i> A. Gray	Broom baccharis	N
<i>Bloomeria crocea</i> (Torrey) Cov.	Common goldenstar	N
<i>Brassica nigra</i> (L.) Koch.	Black mustard	I
<i>Brodiaea orcuttii</i> (E. Greene) Baker	Orcutt's brodiaea	N
<i>Bromus hordaceus</i> L.	Smooth brome	I
<i>Bromus madritensis</i> L. ssp. <i>rubens</i> (L.) Husnot	Foxtail chess	I
<i>Calandrinia maritima</i> Nutt.	Seaside calandrinia	N
<i>Callitriche marginata</i> Torrey	Water-starwort	N
<i>Calystegia macrostegia</i> ssp. <i>arida</i> (E. Greene) Brum	Finger-leaf morning morning-glory	N
<i>Calystegia macrostegia</i> ssp. <i>tenuifolia</i> (Abrams) Brum	Chaparral morning-glory	N
<i>Camissonia bistorta</i> (Torrey & A. Gray) Raven	California sun cup	N
<i>Carex triquetra</i> Boott.	Triangular-fruit sedge	N
<i>Castilleja affinis</i> Hook. & Arn. ssp. <i>affinis</i>	Indian paint brush	N
<i>Castilleja exserta</i> (A.A. Heller) Chuang & Heckard	Purple owl's clover	N
<i>Ceanothus verrucosus</i> Nutt.	Wart-stemmed ceanothus	N
<i>Centaurea melitensis</i> L.	Tocolote, star-thistle	I
<i>Centaureum venustum</i> (A. Gray) Rob.	Canchalagua	N
<i>Centunculus minimus</i> L.	Chaffweed	N

APPENDIX 3a
PLANT SPECIES OBSERVED ON CARMEL MOUNTAIN
(continued)

Scientific Name	Common Name	Origin
<i>Cercocarpus minutiflorus</i> Abrams	Mountain-mahogany	N
<i>Chamaesyce polycarpa</i> (Benth.) Millsp.	Spurge	N
<i>Chenopodium</i> sp.	Goosefoot	I
<i>Chlorogalum parviflorum</i> Wats.	Amole, soap plant	N
<i>Chorizanthe staticoides</i> Benth.	Turkish rugging	N
<i>Claytonia perfoliata</i> Willd.	Miner's lettuce	N
<i>Collinsia heterophylla</i> Buist.	Chinese houses	N
<i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i> (Parry) E. Greene	Summer holly	N
<i>Conyza canadensis</i> (L.) Cronq.	Horseweed	N
<i>Coreopsis maritima</i> (Nutt.) Hook.f.	Sea-dahlia	N
<i>Corethrogyne filaginifolia</i> var. <i>linifolia</i>	Del Mar sand aster	N
<i>Cortaderia jubata</i> (Lemoine) Stapf	Pampas grass	I
<i>Cotula coronopifolia</i> L.	Brass-buttons	I
<i>Crassula aquatica</i> (L.) Schoen.	Stone-crop	N
<i>Croton californicus</i> Muell.-Arg.	California croton	N
<i>Cryptantha</i> sp.	Cryptantha	N
<i>Datura wrightii</i> Regel	Jimson weed	N
<i>Dicentra chrysantha</i> (Hook. & Arn.) Walp.	Golden ear-drops	N
<i>Dichelostemma capitatum</i> Alph. Wood	Blue dicks	N
<i>Dichondra occidentalis</i> House	Western dichondra	N
<i>Dodecatheon clevelandii</i> E. Greene ssp. <i>clevelandii</i>	Shooting star	N
<i>Dudleya blochmaniae</i> ssp. <i>brevifolia</i> (Eastw.) Moran	Short-leaved dudleya	N
<i>Dudleya edulis</i> (Nutt.) Moran	Lady fingers	N
<i>Dudleya lanceolata</i> (Nutt.) Britt. & Rose	Live-for-ever	N
<i>Dudleya pulverulenta</i> (Nutt.) Britt. & Rose ssp. <i>pulverulenta</i>	Chalk lettuce	N
<i>Elatine</i> sp.	Waterwart	N
<i>Eleocharis macrostachya</i> Britton	Pale spikerush	N
<i>Encelia californica</i> Nutt.	Common encelia	N
<i>Eremocarpus setigerus</i> (Hook.) Benth.	Dove weed	N
<i>Erigeron foliosus</i> Nutt.	Leafy fleabane	N
<i>Eriogonum fasciculatum</i> Benth. var. <i>fasciculatum</i>	California buckwheat	N

APPENDIX 3a
PLANT SPECIES OBSERVED ON CARMEL MOUNTAIN
(continued)

Scientific Name	Common Name	Origin
<i>Eriophyllum confertiflorum</i> (DC.) A. Gray var. <i>confertiflorum</i>	Golden-yarrow	N
<i>Erodium</i> sp.	Filaree, storksbill	I
<i>Erodium botrys</i> (Cav.) Bertol.	Pin-clover	I
<i>Eschscholzia californica</i> Cham.	California poppy	N
<i>Ferocactus viridescens</i> (Torrey & A. Gray) Britt. & Rose	Coast barrel cactus	N
<i>Festuca</i> sp.	Fescue	N
<i>Festuca rubra</i> L.	Red fescue	N
<i>Filago gallica</i> L.	Narrow-leaf herba impia	I
<i>Foeniculum vulgare</i> Mill.	Fennel	I
<i>Galium angustifolium</i> Nutt. <i>angustifolium</i>	Narrow-leaf bedstraw	N
<i>Galium nuttallii</i> A. Gray	San Diego bedstraw	N
<i>Gnaphalium bicolor</i> Bioletti	Bicolored cudweed	N
<i>Gnaphalium californicum</i> DC.	Green everlasting	N
<i>Hazardia squarrosa</i> (Hook. & Arn.) E. Greene	Sawtoothed goldenbush	N
<i>Helianthemum scoparium</i> Nutt.	Peak rush-rose	N
<i>Hemizonia fasciculata</i> (DC.) Torrey & A. Gray	Golden tarplant	N
<i>Heteromeles arbutifolia</i> (Lindley) Roemer	Toyon, Christmas berry	N
<i>Heterotheca grandiflora</i> Nutt.	Telegraph weed	N
<i>Holocarpha virgata</i> (A. Gray) Keck	Tarplant	N
<i>Hypochaeris glabra</i> L.	Smooth cat's-ear	I
<i>Isocoma menziesii</i> (Hook. & Arn.) G. Nesom	Coast goldenbush	N
<i>Isoetes howellii</i> Engelm.	Howell quillwort	N
<i>Jepsonia parryi</i> (Torrey) Small	Mesa saxifrage	N
<i>Juncus bufonius</i> L.	Toad rush	N
<i>Juncus dubius</i> Engelm.	Mariposa rush	N
<i>Juncus mexicanus</i> Willd.	Mexican rush	N
<i>Lasthenia californica</i> Lindley	Goldfields	N
<i>Lessingia filaginifolia</i> (Hook. & Arn.) M.A. Lane var. <i>filaginifolia</i>	California-aster	N
<i>Leymus condensatus</i> (C. Presl) A. Love	Giant ryegrass	N
<i>Lilaea scilloides</i> (Poir) Haum.	Flowering quillwort	N
<i>Lonicera subspicata</i> Hook. & Arn. Var. \square <i>enudate</i> Rehd.	Wild honeysuckle	N

APPENDIX 3a
PLANT SPECIES OBSERVED ON CARMEL MOUNTAIN
(continued)

Scientific Name	Common Name	Origin
<i>Lotus scoparius</i> (Nutt. In Torrey & A. Gray) Ottley var. <i>scoparius</i>	California broom	N
<i>Lupinus bicolor</i> Lindl.	Miniature lupine	N
<i>Lythrum hyssopifolium</i> L.	Grass poly	N
<i>Malacothamnus fasciculatus</i> (Torrey & A. Gray) E. Greene	Chaparral mallow	N
<i>Malosma laurina</i> (Nutt.) Abrams	Laurel sumac	N
<i>Marah macrocarpus</i> (E. Greene) E. Greene	Wild cucumber	N
<i>Mesembryanthemum crystallinum</i> L.	Crystalline ice plant	I
<i>Mesembryanthemum nodiflorum</i> L.	Slender-leaved ice plant	I
<i>Mimulus aurantiacus</i> Curtis	Bush monkeyflower	N
<i>Mirabilis bigelovii</i> A. Gray var. <i>bigelovii</i>	Wishbone bush	N
<i>Muhlenbergia rigens</i> (Benth.) A. Hitchc.	Deergrass	N
<i>Muilla clevelandii</i> (Wats.) Hoover	San Diego Goldenstar	N
<i>Nassella lepida</i> (A. Hitchc.) Barkworth	Foothill needlegrass	N
<i>Nassella pulchra</i> (A. Hitchc.) Barkworth	Purple needlegrass	N
<i>Navarretia hamata</i> E. Greene	Hooked navarretia	N
<i>Nicotiana glauca</i> Grah.	Tree tobacco	I
<i>Ophioglossum californicum</i> Prantl.	California adder's-tongue	N
<i>Opuntia littoralis</i> (Engelm.) Cockerell.	Shore cactus	N
<i>Opuntia prolifera</i> Engelm.	Cholla	N
<i>Phacelia grandiflora</i> (Benth.) A. Gray	Large-flowered phacelia	N
<i>Phacelia minor</i> (Harvey) Thell	Wild canterbury-bell	N
<i>Phalaris lemmonii</i> Vasey	Lemmon canary grass	I
<i>Pickeringia montana</i> Nutt. var. <i>tomentosa</i> (Abrams) J.M. Johnston	Chaparral-pea	N
<i>Pinus torreyana</i> Carriere	Torrey pine	N
<i>Plagiobothrys</i> sp.	Popcornflower	N
<i>Plantago elongata</i> Pursh	Plantain	N
<i>Plantago erecta</i> Morris	Dot-seed plantain	N
<i>Polypodium californicum</i> Kaulf.	California polypody	N
<i>Psilocarphus brevissimus</i> Nutt. var. <i>brevissimus</i>	Dwarf woolly-heads	N
<i>Psilocarphus tenellus</i> Nutt. var. <i>tenellus</i>	Woolly-heads	N
<i>Quercus dumosa</i> Nutt.	Nuttall's scrub oak	N

APPENDIX 3a
PLANT SPECIES OBSERVED ON CARMEL MOUNTAIN
(continued)

Scientific Name	Common Name	Origin
<i>Raphanus sativus</i> L.	Radish	I
<i>Rhus integrifolia</i> (Nutt.) Brewer & Watson	Lemonadeberry	N
<i>Ribes speciosum</i> Pursh.	Fuchsia-flowered gooseberry	N
<i>Rumex crispus</i> L.	Curly dock	I
<i>Salix lasiolepis</i> Benth.	Arroyo willow	N
<i>Salvia apiana</i> Jepson	White sage	N
<i>Salvia mellifera</i> E. Greene	Black sage	N
<i>Sambucus mexicana</i> C. Presl	Blue elderberry	N
<i>Scrophularia californica</i> Cham. & Schldl.	California figwort	N
<i>Selaginella bigelovii</i> L. Underw.	Bigelow clubmoss	N
<i>Selaginella cinerascens</i> Maxon	Ashy spike-moss	N
<i>Senecio californicus</i> DC.	California groundsel	N
<i>Silene gallica</i> L.	Windmill pink	I
<i>Sisyrinchium bellum</i> Wats.	Blue-eyed-grass	N
<i>Solanum parishii</i> A.A. Heller	Parish's nightshade	N
<i>Sonchus oleraceus</i> L.	Common sow thistle	I
<i>Stephanomeria virgata</i> (Benth.) ssp. <i>virgata</i>	Slender stephanomeria	N
<i>Stylocline gnaphaloides</i> Nutt.	Everlasting nest straw	N
<i>Trifolium</i> sp.	Clover	N
<i>Xanthium strumarium</i> L.	Cocklebur	N
<i>Xylococcus bicolor</i> Nutt.	Mission manzanita	N
<i>Yucca schidigera</i> K.E. Ortgies	Mohave yucca	N
<i>Zigadenus fremontii</i> (Torrey) S. Watson	Star-lily	N

HABITATS

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

APPENDIX 3b
WILDLIFE SPECIES OBSERVED/DETECTED ON THE CARMEL MOUNTAIN PROJECT SITE

Common Name	Scientific Name	Status
<u>Fairy Shrimp</u> (Nomenclature from Eriksen and Belk 1999)		
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	FE, MSCP (state coverage), *
<u>Amphibians</u> (Nomenclature from Crother 2001 and Crother et al. 2003)		
Western spadefoot	<i>Spea hammondi</i>	CSC
Pacific treefrog	<i>Pseudacris regilla</i>	
<u>Reptiles</u> (Nomenclature from Crother 2001 and Crother et al. 2003)		
Two-striped garter snake	<i>Thamnophis hammondi</i>	*
San Diego horned lizard	<i>Phrynosoma coronatum blainvillii</i>	CSC,*,MSCP
Western fence lizard	<i>Sceloporus occidentalis</i>	
Side-blotched lizard	<i>Uta stansburiana</i>	
Belding's orange-throated whiptail	<i>Aspidoscelis hyperythra beldingi</i>	CSC,MSCP
Northern Red diamond rattlesnake	<i>Crotalus ruber</i>	CSC
<u>Birds</u> (Nomenclature from American Ornithologists' Union 1998 and Unitt 1984)		
Turkey vulture	<i>Cathartes aura</i>	
White-tailed kite	<i>Elanus leucurus</i>	CFP, *
Northern harrier	<i>Circus cyaneus hudsonius</i>	CSC,MSCP
Cooper's hawk	<i>Accipiter cooperi</i>	CSC,MSCP
Red-shouldered hawk	<i>Buteo lineatus elegans</i>	
Red-tailed hawk	<i>Buteo jamaicensis</i>	
American kestrel	<i>Falco sparverius</i>	
California quail	<i>Callipepla californica californica</i>	
Killdeer	<i>Charadrius vociferus vociferus</i>	
Mourning dove	<i>Zenaida macroura marginella</i>	
Rock dove	<i>Columbina livia</i>	
Greater roadrunner	<i>Geococcyx californianus</i>	
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	CSC,MSCP
White-throated swift	<i>Aeronautes saxatalis</i>	
Anna's hummingbird	<i>Calypte anna</i>	

APPENDIX 3b
WILDLIFE SPECIES OBSERVED/DETECTED ON THE CARMEL MOUNTAIN PROJECT SITE
(continued)

Common Name	Scientific Name	Status
Rufous hummingbird	<i>Selasphorus rufus</i>	
Nuttall's woodpecker	<i>Picoides nuttallii</i>	
Pacific slope flycatcher	<i>Empidonax difficilis</i>	
Ash-throated flycatcher	<i>Myiarchus cinerascens cinerascens</i>	
Cassin's kingbird	<i>Tyrannus vociferans vociferans</i>	
Western kingbird	<i>Tyrannus verticalis</i>	
California horned lark	<i>Eremophila alpestris actia</i>	CSC
Cliff swallow	<i>Hirundo pyrrhonota tachina</i>	
Western scrub-jay	<i>Aphelocoma californica</i>	
Common raven	<i>Corvus corax clarionensis</i>	
Loggerhead shrike	<i>Lanius ludovicianus</i>	CSC
Bushtit	<i>Psaltriparus minimus minimus</i>	
Bewick's wren	<i>Thyromanes bewickii</i>	
House wren	<i>Troglodytes aedon parkmanii</i>	
Northern mockingbird	<i>Mimus polyglottos polyglottos</i>	
California thrasher	<i>Toxostoma redivivum redivivum</i>	
Wrentit	<i>Chamaea fasciata henshawi</i>	
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	
Coastal California gnatcatcher	<i>Polioptila californica californica</i>	FT,CSC,MSCP
Lesser goldfinch	<i>Carduelis psaltria hesperophilus</i>	
Lawrence's goldfinch	<i>Carduelis lawrencei</i>	
House finch	<i>Carpodacus mexicanus frontalis</i>	
Orange-crowned warbler	<i>Vermivora celata</i>	
Yellow-rumped warbler	<i>Dendroica coronata</i>	
Common yellowthroat	<i>Geothlypis trichas</i>	
Black-headed grosbeak	<i>Pheucticus melanocephalus maculatus</i>	
Spotted towhee	<i>Pipilo maculatus</i>	
California towhee	<i>Pipilo crissalis</i>	
Bell's sage sparrow	<i>Amphispiza belli belli</i>	CSC
Southern California rufous-crowned sparrow	<i>Aimophila ruficeps canescens</i>	CSC,MSCP
Grasshopper sparrow	<i>Ammodramus savannarum perpallidus</i>	MSCP
Song sparrow	<i>Melospiza melodia</i>	

APPENDIX 3b
WILDLIFE SPECIES OBSERVED/DETECTED ON THE CARMEL MOUNTAIN PROJECT SITE
(continued)

Common Name	Scientific Name	Status
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	
Dark-eyed junco	<i>Junco hyemalis</i>	
Western meadowlark	<i>Sturnella neglecta</i>	
Oriole	<i>Icterus</i> spp.	
<u>Mammals</u> (Nomenclature from Jones et al. 1997)		
California ground squirrel	<i>Spermophilus beecheyi</i>	
Southern pocket gopher	<i>Thomomys umbrinus</i> (= <i>bottae</i>)	
Pacific (= agile) kangaroo rat	<i>Dipodomys agilis</i>	
Deer mouse	<i>Peromyscus maniculatus</i>	
Woodrat	<i>Neotoma</i> spp.	
San Diego desert woodrat	<i>Neotoma lepida intermedia</i>	CSC
Brush rabbit	<i>Sylvilagus bachmani</i>	
White-footed mouse	<i>Peromyscus</i> sp.	
Coyote	<i>Canis latrans</i>	
Gray fox	<i>Urocyon cinereoargenteus</i>	
Mountain lion	<i>Felis concolor</i>	CFP, MSCP
Southern mule deer	<i>Odocoileus hemionus fuliginata</i>	MSCP

STATUS

- CFP = California fully protected species
CSC = California Department of Fish and Game species of special concern
FE = Listed as endangered by the federal government
FT = Listed as threatened by the federal government
MSCP = Multiple Species Conservation Program covered species
* = Taxa listed with an asterisk fall into one or more of the following categories:
- Taxa considered endangered or rare under Section 15380(d) of CEQA guidelines
 - Taxa that are biologically rare, very restricted in distribution, or declining throughout their range
 - Population(s) in California that may be peripheral to the major portion of a taxon's range, but which are threatened with extirpation within California
 - Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands)

APPENDIX 3c
SENSITIVE PLANT SPECIES OBSERVED ON THE CARMEL MOUNTAIN PRESERVE

Species	State/Federal Status	CNPS List	CNPS Code	Typical Habitat/Comments
<i>Adolphia californica</i> California adolphia	-/-	2	1-2-1	Chaparral/observed on-site
<i>Arctostaphylos glandulosa</i> ssp. <i>crassifolia</i> Del Mar manzanita	-/FE	1B	3-3-2	Coastal chaparral/observed-on site
<i>Brodiaea orcuttii</i> Orcutt's brodiaea	-/-	1B	1-3-2	Closed-cone coniferous forest, meadows, cismontane wood-land, valley and foothill grass-land, vernal pools/observed on-site
<i>Calandrinia maritima</i> Seaside calandrinia	-/-	4	1-2-1	Coastal bluff scrub, valley and foothill grassland/observed on-site
<i>Ceanothus verrucosus</i> Wart-stemmed ceanothus	-/-	2	1-2-1	Chaparral
<i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i> Summer holly	-/-	1B	2-2-2	Chaparral/observed on-site
<i>Coreopsis maritima</i> Sea dahlia	-/-	2	2-2-1	Coastal sage scrub/observed on-site
<i>Dichondra occidentalis</i> Western dichondra	-/-	4	1-2-1	Chaparral, cismontane wood-land, coastal sage scrub, valley and foothill grassland/observed on-site
<i>Dudleya blochmaniae</i> ssp. <i>brevifolia</i> (= <i>Dudleya brevifolia</i>) Short-leaved dudleya	CE/-	1B	3-3-3	Chaparral, coastal sage scrub (Torrey sandstone)/observed on-site
<i>Ferocactus viridescens</i> Coast barrel cactus	-/-	2	1-3-1	Chaparral, coastal sage scrub, valley and foothill grassland/observed on-site
<i>Lessingia filaginifolia</i> var. <i>filaginifolia</i> (= <i>Corethrogyne filaginifolia</i> var. <i>linifolia</i>) Del Mar Mesa sand aster	-/-	1B	3-2-3	Chaparral, coastal sage scrub/observed on-site
<i>Muilla clevelandii</i> San Diego goldenstar	-/-	1B	2-2-2	Chaparral, coastal sage scrub, valley and foothill grassland, vernal pools
<i>Ophioglossum californicum</i> (= <i>Ophioglossum lusitanicum</i> ssp. <i>californicum</i>) California adder's-tongue fern	-/-	4	1-2-2	Clay mesa soils/observed on-site
<i>Pinus torreyana</i> ssp. <i>torreyana</i> Torrey pine	-/-	1B	3-2-3	Closed-cone coniferous forest/observed on-site
<i>Quercus dumosa</i> Nuttall's scrub oak	-/-	1B	2-3-2	Coastal chaparral

APPENDIX 3c
SENSITIVE PLANT SPECIES OBSERVED ON THE CARMEL MOUNTAIN PRESERVE
(continued)

SENSITIVITY CODES

FEDERAL CANDIDATES AND LISTED PLANTS

FE = Federally listed, endangered
FT = Federally listed, threatened
FPE = Federally proposed endangered
FPT = Federally proposed threatened

STATE LISTED PLANTS

CE = State listed, endangered
CR = State listed, rare
CT = State listed, threatened

CALIFORNIA NATIVE PLANT SOCIETY

LISTS

- 1A = Species presumed extinct.
- 1B = Species rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing.
- 2 = Species rare, threatened, or endangered in California but which are more common elsewhere. These species are eligible for state listing.
- 3 = Species for which more information is needed. Distribution, endangerment, and/or taxonomic information is needed.
- 4 = A watch list of species of limited distribution. These species need to be monitored for changes in the status of their populations.

R-E-D CODES

R (Rarity)

- 1 = Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time.
- 2 = Occurrence confined to several populations or to one extended population.
- 3 = Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

E (Endangerment)

- 1 = Not endangered
- 2 = Endangered in a portion of its range
- 3 = Endangered throughout its range

D (Distribution)

- 1 = More or less widespread Outside California
- 2 = Rare outside California
- 3 = Endemic to California

APPENDIX 3d
Descriptions of Sensitive Species Occurring
on the Carmel Mountain Preserve and Not Covered by the MSCP

California adolphia (*Adolphia californica*). California adolphia is a CNPS List 2 species in the buckthorn family (Rhamnaceae). This species generally occurs in Diegan coastal sage scrub or near the edge of chaparral, in dry locales with shrubs four to five feet tall. On Carmel Mountain, California adolphia is present in the southern maritime chaparral, on the southeastern portion of the Preserve. The population on the Preserve has been disturbed by road grading and trash dumping. This shrub flowers from December to April and loses its leaves in late summer and fall, making it difficult to find. Its spiny stems are identifiable at close range year-round, however. It is associated with San Miguel and Friant soils (Reiser 2001). Its geographic range extends from San Diego County south into Baja California. In San Diego County, it is found from the Carlsbad area south into the Proctor Valley and Otay region (Beauchamp 1986).

South coast saltbush (*Atriplex pacifica*). South coast saltbush is an annual herb and a member of the Chenopodiaceae (goosefoot) family. It is a CNPS List 1B species. This species is found within coastal bluff scrub and coastal sage scrub from Ventura County south to Baja California, Mexico. South coast saltbush superficially resembles the introduced Australian saltbush (*Atriplex semibaccata*), common throughout southern California.

Seaside calandrinia (*Calandrinia maritima*). Seaside calandrinia is a CNPS List 4 species, with low numbers throughout its range along the coast from Santa Barbara County southward into Baja California, Mexico, and on the Channel Islands. This succulent annual herb in the purslane family (Portulacaceae) flowers from March through May. It is typically found on sandy bluffs and openings in coastal sage scrub flats near the beach. It has been mapped on Gaviota fine sandy loam and Terrace Escarpment soils (Reiser 2001). Because the species inhabits coastal environments, development has reduced the number of populations throughout its range. On Carmel Mountain Preserve, this species is present in southern maritime chaparral north and northwest of Carmel Mountain.

Summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*). Summer holly is a CNPS List 1B species. This evergreen shrub in the heath family (Ericaceae) reaches heights of 15 feet and produces a small white flower from April to June (Munz 1974). Summer holly is found in the chaparral in Orange, Riverside, and San Diego Counties, as well as Baja California, Mexico. In San Diego County it generally occurs at low elevations in chaparral communities near the coast. Summer holly is threatened by development and gravel mining (CNPS 2001). It has been documented as occurring on Carmel Mountain Preserve, but its location has not been mapped.

Sea dahlia (*Coreopsis maritima*). Sea dahlia is a CNPS List 2 species. This perennial herb in the sunflower family (Asteraceae) has semi-succulent leaves and reaches two feet in height. It flowers from March to June. It typically grows on coastal bluffs and dunes below 200 feet elevation in coastal strand or coastal sage scrub. Its range extends along the coast from Encinitas in San Diego County south to near San Quentin, Baja California, Mexico. On Carmel Mountain Preserve, sea dahlia is present on north slopes within southern maritime chaparral. The population is currently presumed stable, due to lack of disturbance in that area of the Preserve. Threats to the species include loss of habitat and erosion of remaining sandstone seabluff habitat.



Photograph A3d-1. Sea Dahlia



Photograph A3d-2.
Sea Dahlia Flowers

Western dichondra (*Dichondra occidentalis*). Western dichondra is a CNPS List 4 species, indicating that it has limited distribution or is infrequent throughout its range. Its range extends from Ventura County south into Baja California, Mexico, including the Channel Islands. In San Diego County, it is known from Agua Hedionda south to Point Loma and inland to Poway, Otay Mountain, and the Tijuana Hills (Beauchamp 1986). This small perennial herb in the morning-glory family (Convolvulaceae) flowers from March to May. It often grows almost completely hidden under shrubs or trees in coastal sage scrub and chaparral, or among rocky outcrops in grasslands. It grows primarily in dry sandy soils including Huerfuerero soils and Hambright gravelly clay loam (Reiser 2001). On Carmel Mountain Preserve, this



Photograph A3d-3. Western Dichondra

species is found in southern maritime chaparral, adjacent to and within the 1986 burned area. The numbers of western dichondra are in a slow decline in southern California because habitat is being lost to development and weeds are invading native plant communities.

California adder's-tongue fern (*Ophioglossum californicum*). California adder's-tongue fern is a CNPS List 4 whose range extends from the Sierra Nevada foothills to southern California and southward into Baja California, Mexico. In San Diego County, the fern has been reported from Kearny Mesa, Olivenhain, Proctor Valley, and Escondido (Beauchamp 1986). This perennial rhizomatous herb typically occurs on grassy slopes and near vernal pools and seeps, in coastal and foothill locations below 900 feet elevation. The California adder's-tongue fern is easily observed during the springtime, but becomes inconspicuous later in the season. This species is associated with vernal pools and other seasonal wetlands and wet meadows on the Preserve.

Nuttall's scrub oak (*Quercus dumosa*). Nuttall's scrub oak is a member of the Fagaceae family. This evergreen shrub is a CNPS *Inventory* (CNPS 2001) List 1B species that occurs in Santa Barbara, Orange, and San Diego Counties as well as in Baja California, Mexico. Nuttall's scrub oak is found within chaparral and coastal sage scrub vegetation on sandy or clay loam soils. This species occurs abundantly within southern maritime chaparral on the Preserve.

Two-striped garter snake (*Thamnophis hammondi*). The two-striped garter snake is a sensitive species that may grow as long as 36 inches though 18 to 24 inches is more usual. Its dorsal scales are keeled, which breaks up the reflection of light and results in a dull luster. The overall color is olive drab with a single yellowish stripe running down each side of the body. Patterned into the dorsal coloration are four rows of small, dark spots. The belly is dull yellow, or sometimes salmon colored. The two-striped garter snake ranges in coastal California from the vicinity of Salinas south to El Rosario in Baja California, Mexico. They are normally found in or near permanent fresh water, inhabiting streams, ponds, and lakes throughout their range. They are often found even in temporary bodies of water such as vernal pools. It is the most common snake in southern California, and it is not unusual to encounter several individuals at a time. Activity is most common around dusk and in the early evening. Adults feed on frogs, tadpoles, toads, insect larvae, fish, fish eggs, and earthworms. The two-striped garter snake is ovoviviparous. Breeding commences in April and May and continues throughout the summer months. Gestation is approximately nine weeks. As many as 25 young may be born, though 12 to 13 is more common.



Photograph A3d-4. Red Diamond Rattlesnake at Carmel Mountain

Northern red diamond rattlesnake (*Crotalus ruber*). The northern red diamond rattlesnake is a CDFG species of special concern. This species occurs below 1,200 meters (4,000 feet) on both sides of the Peninsular Ranges of southwestern California in coastal sage scrub, desert scrub, open chaparral, woodland, and grassland habitats, as well as agricultural fields (Stebbins 1985). This snake is commonly found in areas with rock outcrops. Population declines in the red diamond rattlesnake are generally attributable to impacts related to the increased development near habitat in which this snake is found.

White-tailed kite (*Elanus leucurus*). The white-tailed kite is a California fully protected species that occurs in coastal lowland areas from Oregon to northern Baja California, Mexico (National Geographic Society 1983). This resident bird nests in riparian woodlands, live oaks, or sycamore groves which border grassland or open fields (Unitt 1984 and 2004). The white-tailed kite forages over open areas and grasslands feeding primarily on small rodents, in particular the California vole or meadow mouse (Unitt 2004), and insects (National Geographic Society 1983). This species is known to roost in large communal groups (Unitt 1984 and 2004). White-tailed kite populations in southern California have declined due to the loss of grassland foraging habitat to urbanization.

Coastal subspecies of the horned lark (*Eremophila alpestris actia*). The coastal subspecies of the horned lark is a CDFG species of special concern. The horned lark (*E. alpestris*) ranges throughout North America; however, the coastal subspecies occupies the coastal slope of San Diego County, extending east to Montezuma Valley (Ranchita), Mason Valley, and Jacumba (Unitt 2004). Other subspecies and hybrids with other subspecies have been encountered in San Diego County (Unitt 2004). Horned larks occur in the coastal strand, arid grasslands, and sandy desert floors of San Diego County year round (Unitt 2004). Decline of this species is generally attributed to urbanization and human disturbance.

Blue-gray gnatcatcher (*Poliophtila caerulea*). The blue-gray gnatcatcher is on the sensitive species list for the City of San Diego. The blue-gray gnatcatcher is distributed throughout Mexico and the U.S., excluding northern plains states and the northwest. Locally, this species is a fairly common migrant and winter visitor and a rare and localized summer resident. The blue-gray gnatcatcher winters in dense riparian undergrowth, weedy/brushy agricultural areas, thickets in desert washes, and occasionally chaparral. It breeds in foothill chaparral, desert-edge scrub, and mesquite thickets. Brood-parasitism by brown-headed cowbirds is one contributing reason to the decline of this species.

Loggerhead shrike (*Lanius ludovicianus*). The loggerhead shrike is a CDFG species of special concern. This species inhabits most of the continental U.S. and Mexico and is a year-round resident of southern California. The loggerhead shrike prefers open habitat with perches for hunting and fairly dense shrubs for nesting (Small 1994). In southern California, this bird inhabits grasslands, agricultural fields, chaparral, and desert scrub (Unitt 1984). Loggerhead shrikes feed on small reptiles and insects that they often impale on sticks or thorns before eating (Robbins et al. 1983). Loggerhead shrike populations are declining, likely due to urbanization and loss of habitat.

Bell's sage sparrow (*Amphispiza belli belli*). Bell's sage sparrow is a CDFG species of special concern. Bell's sage sparrow is an uncommon to locally fairly common resident along the extreme west coast of California. Its breeding range is along the coastal slopes from Trinity County south into northwestern Baja California, Mexico. Locally, it can be found in the interior chaparral and coastal sage scrub habitats, especially dense stands of chamise chaparral (Small 1994). This race is essentially sedentary. Male Bell's sage sparrows show high breeding territory tenacity, even when the habitat is altered dramatically (Ehrlich et al. 1988). This species feeds primarily on spiders, insects, and seeds while breeding, and seeds during the winter.

Grasshopper sparrow (*Ammodramus savannarum*). Although they have no official status with resource agencies, grasshopper sparrows are considered locally uncommon. In addition, the County gives "special attention" to this species during the development of the North County MSCP as reported in their update on the plan published on their website (County of San Diego 2001). This species has a patchy distribution within grasslands along coastal California and the foothills of the Sierra Nevadas. Grasshopper sparrows are semi-colonial and are locally rare throughout southern California with the numbers of grasshopper sparrows varying annually. Grasshopper sparrows are a localized summer resident in San Diego County and very rare in winter (Unitt 1984). This species was observed adjacent to the Preserve during surveys in 1994 and probably occurs on the Preserve, although its current status is unknown.

San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). The San Diego black-tailed jackrabbit is a CDFG species of special concern. This species can be found throughout southern California, with the exception of the high-altitude mountains. The black-tailed jackrabbit is strictly herbivorous, preferring habitat with ample forage such as grasses and forbs. The San Diego black-tailed jackrabbit breeds throughout the year with the greatest number of births occurring from April through May. This species is generally solitary, except when mating and raising young (Zeiner et al. 1990).

APPENDIX 3d
Descriptions of Sensitive Species Occurring
on the Carmel Mountain Preserve and Not Covered by the MSCP

California adolphia (*Adolphia californica*). California adolphia is a CNPS List 2 species in the buckthorn family (Rhamnaceae). This species generally occurs in Diegan coastal sage scrub or near the edge of chaparral, in dry locales with shrubs four to five feet tall. On Carmel Mountain, California adolphia is present in the southern maritime chaparral, on the southeastern portion of the Preserve. The population on the Preserve has been disturbed by road grading and trash dumping. This shrub flowers from December to April and loses its leaves in late summer and fall, making it difficult to find. Its spiny stems are identifiable at close range year-round, however. It is associated with San Miguel and Friant soils (Reiser 2001). Its geographic range extends from San Diego County south into Baja California. In San Diego County, it is found from the Carlsbad area south into the Proctor Valley and Otay region (Beauchamp 1986).

South coast saltbush (*Atriplex pacifica*). South coast saltbush is an annual herb and a member of the Chenopodiaceae (goosefoot) family. It is a CNPS List 1B species. This species is found within coastal bluff scrub and coastal sage scrub from Ventura County south to Baja California, Mexico. South coast saltbush superficially resembles the introduced Australian saltbush (*Atriplex semibaccata*), common throughout southern California.

Seaside calandrinia (*Calandrinia maritima*). Seaside calandrinia is a CNPS List 4 species, with low numbers throughout its range along the coast from Santa Barbara County southward into Baja California, Mexico, and on the Channel Islands. This succulent annual herb in the purslane family (Portulacaceae) flowers from March through May. It is typically found on sandy bluffs and openings in coastal sage scrub flats near the beach. It has been mapped on Gaviota fine sandy loam and Terrace Escarpment soils (Reiser 2001). Because the species inhabits coastal environments, development has reduced the number of populations throughout its range. On Carmel Mountain Preserve, this species is present in southern maritime chaparral north and northwest of Carmel Mountain.

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Photograph A3d-1. Sea Dahlia



Photograph A3d-2.
Sea Dahlia Flowers

Western dichondra (*Dichondra occidentalis*). Western dichondra is a CNPS List 4 species, indicating that it has limited distribution or is infrequent throughout its range. Its range extends from Ventura County south into Baja California, Mexico, including the Channel Islands. In San Diego County, it is known from Agua Hedionda south to Point Loma and inland to Poway, Otay Mountain, and the Tijuana Hills (Beauchamp 1986). This small perennial herb in the morning-glory family (Convolvulaceae) flowers from March to May. It often grows almost completely hidden under shrubs or trees in coastal sage scrub and chaparral, or among rocky outcrops in grasslands. It grows primarily in dry sandy soils including Huerfuerero soils and Hambright gravelly clay loam (Reiser 2001). On Carmel Mountain Preserve, this



Photograph A3d-3. Western Dichondra

species is found in southern maritime chaparral, adjacent to and within the 1986 burned area. The numbers of western dichondra are in a slow decline in southern California because habitat is being lost to development and weeds are invading native plant communities.

California adder's-tongue fern (*Ophioglossum californicum*). California adder's-tongue fern is a CNPS List 4 whose range extends from the Sierra Nevada foothills to southern California and southward into Baja California, Mexico. In San Diego County, the fern has been reported from Kearny Mesa, Olivenhain, Proctor Valley, and Escondido (Beauchamp 1986). This perennial rhizomatous herb typically occurs on grassy slopes and near vernal pools and seeps, in coastal and foothill locations below 900 feet elevation. The California adder's-tongue fern is easily observed during the springtime, but becomes inconspicuous later in the season. This species is associated with vernal pools and other seasonal wetlands and wet meadows on the Preserve.

Nuttall's scrub oak (*Quercus dumosa*). Nuttall's scrub oak is a member of the Fagaceae family. This evergreen shrub is a CNPS *Inventory* (CNPS 2001) List 1B species that occurs in Santa Barbara, Orange, and San Diego Counties as well as in Baja California, Mexico. Nuttall's scrub oak is found within chaparral and coastal sage scrub vegetation on sandy or clay loam soils. This species occurs abundantly within southern maritime chaparral on the Preserve.

Two-striped garter snake (*Thamnophis hammondi*). The two-striped garter snake is a sensitive species that may grow as long as 36 inches though 18 to 24 inches is more usual. Its dorsal scales are keeled, which breaks up the reflection of light and results in a dull luster. The overall color is olive drab with a single yellowish stripe running down each side of the body. Patterned into the dorsal coloration are four rows of small, dark spots. The belly is dull yellow, or sometimes salmon colored. The two-striped garter snake ranges in coastal California from the vicinity of Salinas south to El Rosario in Baja California, Mexico. They are normally found in or near permanent fresh water, inhabiting streams, ponds, and lakes throughout their range. They are often found even in temporary bodies of water such as vernal pools. It is the most common snake in southern California, and it is not unusual to encounter several individuals at a time. Activity is most common around dusk and in the early evening. Adults feed on frogs, tadpoles, toads, insect larvae, fish, fish eggs, and earthworms. The two-striped garter snake is ovoviviparous. Breeding commences in April and May and continues throughout the summer months. Gestation is approximately nine weeks. As many as 25 young may be born, though 12 to 13 is more common.



Photograph A3d-4. Red Diamond Rattlesnake at Carmel Mountain

Northern red diamond rattlesnake (*Crotalus ruber*). The northern red diamond rattlesnake is a CDFG species of special concern. This species occurs below 1,200 meters (4,000 feet) on both sides of the Peninsular Ranges of southwestern California in coastal sage scrub, desert scrub, open chaparral, woodland, and grassland habitats, as well as agricultural fields (Stebbins 1985). This snake is commonly found in areas with rock outcrops. Population declines in the red diamond rattlesnake are generally attributable to impacts related to the increased development near habitat in which this snake is found.

White-tailed kite (*Elanus leucurus*). The white-tailed kite is a California fully protected species that occurs in coastal lowland areas from Oregon to northern Baja California, Mexico (National Geographic Society 1983). This resident bird nests in riparian woodlands, live oaks, or sycamore groves which border grassland or open fields (Unitt 1984 and 2004). The white-tailed kite forages over open areas and grasslands feeding primarily on small rodents, in particular the California vole or meadow mouse (Unitt 2004), and insects (National Geographic Society 1983). This species is known to roost in large communal groups (Unitt 1984 and 2004). White-tailed kite populations in southern California have declined due to the loss of grassland foraging habitat to urbanization.

Coastal subspecies of the horned lark (*Eremophila alpestris actia*). The coastal subspecies of the horned lark is a CDFG species of special concern. The horned lark (*E. alpestris*) ranges throughout North America; however, the coastal subspecies occupies the coastal slope of San Diego County, extending east to Montezuma Valley (Ranchita), Mason Valley, and Jacumba (Unitt 2004). Other subspecies and hybrids with other subspecies have been encountered in San Diego County (Unitt 2004). Horned larks occur in the coastal strand, arid grasslands, and sandy desert floors of San Diego County year round (Unitt 2004). Decline of this species is generally attributed to urbanization and human disturbance.

Blue-gray gnatcatcher (*Poliophtila caerulea*). The blue-gray gnatcatcher is on the sensitive species list for the City of San Diego. The blue-gray gnatcatcher is distributed throughout Mexico and the U.S., excluding northern plains states and the northwest. Locally, this species is a fairly common migrant and winter visitor and a rare and localized summer resident. The blue-gray gnatcatcher winters in dense riparian undergrowth, weedy/brushy agricultural areas, thickets in desert washes, and occasionally chaparral. It breeds in foothill chaparral, desert-edge scrub, and mesquite thickets. Brood-parasitism by brown-headed cowbirds is one contributing reason to the decline of this species.

Loggerhead shrike (*Lanius ludovicianus*). The loggerhead shrike is a CDFG species of special concern. This species inhabits most of the continental U.S. and Mexico and is a year-round resident of southern California. The loggerhead shrike prefers open habitat with perches for hunting and fairly dense shrubs for nesting (Small 1994). In southern California, this bird inhabits grasslands, agricultural fields, chaparral, and desert scrub (Unitt 1984). Loggerhead shrikes feed on small reptiles and insects that they often impale on sticks or thorns before eating (Robbins et al. 1983). Loggerhead shrike populations are declining, likely due to urbanization and loss of habitat.

Bell's sage sparrow (*Amphispiza belli belli*). Bell's sage sparrow is a CDFG species of special concern. Bell's sage sparrow is an uncommon to locally fairly common resident along the extreme west coast of California. Its breeding range is along the coastal slopes from Trinity County south into northwestern Baja California, Mexico. Locally, it can be found in the interior chaparral and coastal sage scrub habitats, especially dense stands of chamise chaparral (Small 1994). This race is essentially sedentary. Male Bell's sage sparrows show high breeding territory tenacity, even when the habitat is altered dramatically (Ehrlich et al. 1988). This species feeds primarily on spiders, insects, and seeds while breeding, and seeds during the winter.

Grasshopper sparrow (*Ammodramus savannarum*). Although they have no official status with resource agencies, grasshopper sparrows are considered locally uncommon. In addition, the County gives "special attention" to this species during the development of the North County MSCP as reported in their update on the plan published on their website (County of San Diego 2001). This species has a patchy distribution within grasslands along coastal California and the foothills of the Sierra Nevadas. Grasshopper sparrows are semi-colonial and are locally rare throughout southern California with the numbers of grasshopper sparrows varying annually. Grasshopper sparrows are a localized summer resident in San Diego County and very rare in winter (Unitt 1984). This species was observed adjacent to the Preserve during surveys in 1994 and probably occurs on the Preserve, although its current status is unknown.

San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). The San Diego black-tailed jackrabbit is a CDFG species of special concern. This species can be found throughout southern California, with the exception of the high-altitude mountains. The black-tailed jackrabbit is strictly herbivorous, preferring habitat with ample forage such as grasses and forbs. The San Diego black-tailed jackrabbit breeds throughout the year with the greatest number of births occurring from April through May. This species is generally solitary, except when mating and raising young (Zeiner et al. 1990).

APPENDIX 3e
SENSITIVE WILDLIFE SPECIES OBSERVED ON THE CARMEL MOUNTAIN PRESERVE

Species	Status	Habitat
<u>Invertebrates</u> (Nomenclature from Eriksen and Belk 1999)		
San Diego fairy shrimp <i>Branchinecta sandiegonensis</i>	FE, MSCP (state coverage), *	Vernal pools.
<u>Amphibians</u> (Nomenclature from Crother 2001 and Crother et al. 2003)		
Western spadefoot <i>Spea hammondi</i>	CSC	Vernal pools, floodplains, and alkali flats within areas of open vegetation.
<u>Reptiles</u> (Nomenclature from Crother 2001 and Crother et al. 2003)		
Two-striped garter snake <i>Thamnophis hammondi</i>	CSC, *	Permanent freshwater streams with rocky bottoms. Mesic areas.
San Diego horned lizard <i>Phrynosoma coronatum blainvillii</i>	CSC, MSCP, *	Chaparral, coastal sage scrub with fine, loose soil. Partially dependent on harvester ants for forage.
Belding's orangethroat whiptail <i>Aspidoscelis hyperythra beldingi</i>	CSC, MSCP	Chaparral, coastal sage scrub with coarse sandy soils and scattered brush.
Northern red diamond rattlesnake <i>Crotalus ruber</i>	CSC	Desert scrub and riparian, coastal sage scrub, open chaparral, grassland, and agricultural fields.
<u>Birds</u> (Nomenclature from American Ornithologists' Union 1998 and Unitt 1984)		
White-tailed kite (nesting) <i>Elanus leucurus</i>	CFP, *	Nest in riparian woodland, oaks, sycamores. Forage in open, grassy areas. Year-round resident.
Northern harrier (nesting) <i>Circus cyaneus</i>	CSC, MSCP	Coastal lowland, marshes, grassland, agricultural fields. Migrant and winter resident, rare summer resident.
Cooper's hawk (nesting) <i>Accipiter cooperi</i>	CSC, MSCP	Mature forest, open woodlands, wood edges, river groves. Parks and residential areas. Migrant and winter visitor.
Western burrowing owl (burrow sites) <i>Athene cunicularia hypugaea</i>	CSC, MSCP	Grassland, agricultural land, coastal dunes. Require rodent burrows. Declining resident.
California horned lark <i>Eremophila alpestris actia</i>	CSC	Sandy shores, mesas, disturbed areas, grasslands, agricultural lands, sparse creosote bush scrub.

APPENDIX 3e
SENSITIVE WILDLIFE SPECIES OBSERVED ON THE CARMEL MOUNTAIN PRESERVE
(continued)

Species	Status	Habitat
Coastal California gnatcatcher <i>Polioptila californica californica</i>	FT, CSC, MSCP	Coastal sage scrub, maritime succulent scrub. Resident.
Loggerhead shrike <i>Lanius ludovicianus</i>	CSC	Open foraging areas near scattered bushes and low trees.
Southern California rufous-crowned sparrow <i>Aimophila ruficeps canescens</i>	CSC, MSCP	Coastal sage scrub, chaparral, grassland. Resident.
Bell's sage sparrow <i>Amphispiza belli belli</i>	CSC	Chaparral, coastal sage scrub. Localized resident.
Grasshopper sparrow (nesting) <i>Ammodramus savannarum</i>	MSCP	Tall grass areas. Localized summer resident, rare in winter.
<u>Mammals (Nomenclature from Jones et al. 1997)</u>		
San Diego black-tailed jackrabbit <i>Lepus californicus bennettii</i>	CSC	Open areas of scrub, grasslands, agricultural fields.
Mountain lion <i>Felis concolor</i>	CFP, MSCP	Many habitats.
Southern mule deer <i>Odocoileus hemionus fuliginata</i>	MSCP	Many habitats.

STATUS CODES

Listed/Proposed

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

Other

CFP = California fully protected species
 CSC = California Department of Fish and Game species of special concern
 MSCP = Multiple Species Conservation Program covered species
 * = Taxa listed with an asterisk fall into one or more of the following categories:

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

APPENDIX 3f
PLANT SPECIES OBSERVED AT THE DEL MAR MESA PRESERVE

Scientific Name	Common Name	Origin
<i>Acanthomintha coronatum</i> (Thurber) Barkworth	Giant needlegrass	N
<i>Adenostoma fasciculatum</i> Hook. & Arn.	Chamise	N
<i>Adiantum jordani</i> K. Mull.	California maiden-hair fern	N
<i>Adolphia californica</i> Wats.	California adolphia, spineshrub	N
<i>Allium praecox</i> Bdg.	Wild onion	I
<i>Amblyopappus pusillus</i> Hook. & Arn.	Pineapple weed	N
<i>Ambrosia psilostachya</i> DC	Western ragweed	N
<i>Anagallis arvensis</i> L.	Scarlet pimpernel, poor-man's weatherglass	I
<i>Antirrhinum nuttallianum</i> Benth. in DC.	Snapdragon	N
<i>Apiastrum angustifolium</i> Nutt. in Torrey & A. Gray	Wild-celery	N
<i>Arctostaphylos glandulosa</i> Eastw. ssp. <i>crassifolia</i> (Jepson) Wells	Del Mar manzanita, Costa Baja manzanita	N
<i>Artemisia californica</i> Less.	California sagebrush	N
<i>Artemisia palmeri</i> A. Gray	San Diego sagewort, Palmer sagewort	N
<i>Atriplex semibaccata</i> R.Br.	Australian saltbush	I
<i>Avena barbata</i> Link	Slender wild oats	N
<i>Avena fatua</i> L.	Wild oats	N
<i>Baccharis pilularis</i> DC.	Coyote bush	N
<i>Baccharis salicifolia</i> (Ruiz Lopez & Pavón) Pers.	Mule fat, seep-willow	N
<i>Baccharis sarothroides</i> A. Gray	Broom baccharis	N
<i>Bothriochloa barbinodis</i> (Lag.) Herter	Cane bluestem	N
<i>Brassica nigra</i> L.	Black mustard	I
<i>Brodiaea orcuttii</i> (E. Greene) Baker	Orcutt's brodiaea	N
<i>Bromus diandrus</i> Roth.	Ripgut brome	I
<i>Bromus hordaceus</i> L.	Smooth brome	I
<i>Bromus madritensis</i> L. ssp. <i>rubens</i> (L.) Husnot	Foxtail chess	I
<i>Calandrinia ciliata</i>	Red maids	N
<i>Callitriche marginata</i> Torrey	Water-starwort	N
<i>Calochortus splendens</i> Benth.	Lilac mariposa	N
<i>Calystegia macrostegia</i> ssp. <i>arida</i> (E. Greene) Brum.	Finger-leaf morning-glory	N
<i>Camissonia bistorta</i> (Torrey & A. Gray) Raven	California sun cup	N
<i>Cardamine californica</i> (Torrey & A. Gray) E. Greene	Milk maids, tooth wort	N

APPENDIX 3f
PLANT SPECIES OBSERVED AT THE DEL MAR MESA PRESERVE
(continued)

Scientific Name	Common Name	Origin
<i>Cardionema ramosissimum</i> (Weinm.) Nelson & J.F. Macbr.	Tread lightly	N
<i>Carpobrotus edulis</i> (L.) Bolus.	Hottentot fig	I
<i>Castilleja exserta</i> (A.A. Heller) Chuang & Heckard	Purple owl's clover	N
<i>Castilleja foliolosa</i> Hook. & Arn.	Woolly Indian paintbrush	N
<i>Ceanothus tomentosus</i> C. Parry	Coast blue lilac	N
<i>Ceanothus verrucosus</i> Nutt.	Wart-stemmed ceanothus	N
<i>Centaurea melitensis</i> L.	Tocolote, star-thistle	I
<i>Centaureum venustum</i> (A. Gray) Rob.	Canchalagua	N
<i>Chaenactis glabriuscula</i> DC.	Yellow pincushion	N
<i>Chamaesyce polycarpa</i> (Benth.) Millsp.	Spurge	N
<i>Chenopodium ambrosioides</i> L.	Mexican tea	I
<i>Chlorogalum parviflorum</i> Wats.	Amole, soap plant	N
<i>Chorizanthe fimbriata</i> Nutt.	Fringed spineflower	N
<i>Chrysanthemum coronarium</i> L.	Garland, crown daisy	I
<i>Claytonia perfoliata</i> Willd.	Miner's lettuce	N
<i>Cneoridium dumosum</i> (Nutt.) Baillon	Bushrue	N
<i>Collinsia heterophylla</i> Buist.	Chinese houses	N
<i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i> (Parry) E. Greene	Summer holly	N
<i>Conyza canadensis</i> (L.) Cronq.	Horseweed	N
<i>Cordylanthus rigidus</i> (Benth.) Jepson ssp. <i>setigerus</i> Chuang & Heckard	Thread-leaved bird's-beak	N
<i>Cortaderia jubata</i> (Lemoine) Stapf	Pampas grass	I
<i>Cotula coronopifolia</i> L.	Brass-buttons	I
<i>Crassula aquatica</i> (L.) Schoen.	Stone-crop	N
<i>Crassula connata</i> (Ruiz Lopez & Pavon) A. Berger	Pygmy-weed	N
<i>Cryptantha intermedia</i> (A. Gray) E. Greene	Nievita	N
<i>Cucurbita foetidissima</i> Kunth	Calabazilla	N
<i>Cynara cardunculus</i> L.	Cardoon	I
<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass	I
<i>Cyperus alternifolius</i> L.	Umbrella-plant	I
<i>Daucus pusillus</i> Michx	Rattlesnake weed	N

APPENDIX 3f
PLANT SPECIES OBSERVED AT THE DEL MAR MESA PRESERVE
(continued)

Scientific Name	Common Name	Origin
<i>Deschampsia danthonioides</i>	Annual hairgrass	N
<i>Dichelostemma capitatum</i> Alph. Wood	Blue dicks	N
<i>Dichondra occidentalis</i> House	Western dichondra	N
<i>Distichlis spicata</i> (L.) E. Greene	Saltgrass	N
<i>Downingia cuspidata</i> Jepson	Downingia	N
<i>Dudleya lanceolata</i> (Nutt.) Britt. & Rose	Live-for-ever	N
<i>Dudleya pulverulenta</i> (Nutt.) Britt. & Rose ssp. <i>pulverulenta</i>	Chalk lettuce	N
<i>Eleocharis macrostachya</i> Britton	Pale spikerush	N
<i>Emmenanthe penduliflora</i> Benth.	Whispering bells	N
<i>Encelia californica</i> Nutt.	Common encelia	N
<i>Epilobium canum</i> (E. Greene) Raven ssp. <i>canum</i>	California-fuchsia, <i>zauschneria</i>	N
<i>Eremocarpus setigerus</i> (Hook.) Benth.	Dove weed	N
<i>Eriogonum fasciculatum</i> Benth. var. <i>fasciculatum</i>	California buckwheat	N
<i>Eriophyllum confertiflorum</i> (DC.) A. Gray var. <i>confertiflorum</i>	Golden-yarrow	N
<i>Erodium botrys</i> (Cav.) Bertol.	Pin-clover	I
<i>Erodium cicutarium</i> (L.) L. Her.	White-stemmed filaree	I
<i>Eryngium aristulatum</i> Jepson var. <i>parishii</i> (C. & R.) Jepson	San Diego button-celery	N
<i>Eschscholzia californica</i> Cham.	California poppy	N
<i>Eucalyptus</i> spp.	Eucalyptus	I
<i>Ferocactus viridescens</i> (Torrey & A. Gray) Britt. & Rose	Coast barrel cactus	N
<i>Filago gallica</i> L.	Narrow-leaf herba impia	I
<i>Foeniculum vulgare</i> Mill.	Fennel	I
<i>Galium angustifolium</i> Nutt. <i>angustifolium</i>	Narrow-leaf bedstraw	N
<i>Galium aparine</i> L.	Goose grass	I
<i>Gastrium ventricosum</i> (Gouan) Schinz & Thell.	Nit grass	I
<i>Gilia</i> sp.	Gilia	N
<i>Gnaphalium bicolor</i> Bioletti	Bicolored cudweed	N
<i>Gnaphalium californicum</i> DC.	Green everlasting	N
<i>Harpagonella palmeri</i> A. Gray	Palmer's grappling hook	N
<i>Hazardia squarrosa</i> (Hook. & Arn.) E. Greene	Sawtoothed goldenbush	N

APPENDIX 3f
PLANT SPECIES OBSERVED AT THE DEL MAR MESA PRESERVE
(continued)

Scientific Name	Common Name	Origin
<i>Helianthemum scoparium</i> Nutt.	Peak rush-rose	N
<i>Hemizonia fasciculata</i> (DC.) Torrey & A. Gray	Golden tarplant	N
<i>Heteromeles arbutifolia</i> (Lindley) Roemer	Toyon, Christmas berry	N
<i>Heterotheca grandiflora</i> Nutt.	Telegraph weed	N
<i>Hypochaeris glabra</i> L.	Smooth cat's-ear	I
<i>Isocoma menziesii</i> (Hook. & Arn.) G. Nesom	Coast goldenbush	N
<i>Isomeris arborea</i> Nutt.	Bladderpod	N
<i>Jepsonia parryi</i> (Torrey) Small	Mesa saxifrage	N
<i>Juncus bufonius</i> L.	Toad rush	N
<i>Juncus dubius</i> Engelm.	Mariposa rush	N
<i>Juncus mexicanus</i> Willd.	Mexican rush	N
<i>Lactuca serriola</i> L.	Prickly lettuce	I
<i>Lamarckia aurea</i> (L.) Moench.	Goldentop	I
<i>Lasthenia californica</i> Lindley	Goldfields	N
<i>Layia platyglossa</i> (F. & M.) A. Gray	Tidy-tips	N
<i>Lepidium nitidum</i> Torrey & A. Gray var. <i>nitidum</i>	Shining peppergrass	N
<i>Lessingia filaginifolia</i> (Hook. & Arn.) M.A. Lane var. <i>filaginifolia</i>	California-aster	N
<i>Leymus condensatus</i> (C. Presl) A. Love	Giant ryegrass	N
<i>Linanthus dianthiflorus</i> (Benth.) E. Greene	Ground-pink	N
<i>Linaria canadensis</i> (L.) Dum.-Cours	Blue toadflax	N
<i>Lomatium dasycarpum</i> (Torrey & A. Gray) Coult. & Rose ssp. <i>dasycarpum</i>	Lace parsnip	N
<i>Lonicera subspicata</i> Hook. & Arn. var. <i>denudata</i> Rehd.	Wild honeysuckle	N
<i>Lotus</i> sp.	Trefoil	N
<i>Lotus scoparius</i> (Nutt. in Torrey & A. Gray) Ottley var. <i>scoparius</i>	California broom	N
<i>Lotus strigosus</i> (Nutt.) E. Greene	Bishop's lotus	N
<i>Lupinus bicolor</i> Lindl.	Miniature lupine	N
<i>Lupinus succulentus</i> Koch	Arroyo lupine	N
<i>Lycium californicum</i> Nutt.	California box thorn	N
<i>Lythrum californicum</i> Torrey & A. Gray	California loosestrife	N

APPENDIX 3f
PLANT SPECIES OBSERVED AT THE DEL MAR MESA PRESERVE
(continued)

Scientific Name	Common Name	Origin
<i>Lythrum hyssopifolium</i> L.	Grass poly	N
<i>Malacothamnus fasciculatus</i> (Torrey & A. Gray) E. Greene	Chaparral mallow	N
<i>Malosma laurina</i> (Nutt.) Abrams	Laurel sumac	N
<i>Marah macrocarpus</i> (E. Greene) E. Greene	Wild cucumber	N
<i>Marrubium vulgare</i> L.	Horehound	I
<i>Melica imperfecta</i> Trin.	California melic	N
<i>Mesembryanthemum crystallinum</i> L.	Crystalline ice plant	I
<i>Mimulus aurantiacus</i> Curtis	Bush monkeyflower	N
<i>Mirabilis californica</i> A. Gray	Wishbone bush	N
<i>Muhlenbergia rigens</i> (Benth.) A. Hitchc.	Deergrass	N
<i>Muilla clevelandii</i> (Wats.) Hoover	San Diego goldenstar	N
<i>Muilla maritima</i> (Torrey) S. Watson	Common muilla	N
<i>Myosurus minimus</i> L.	Little mouse-tail	N
<i>Nassella lepida</i> (A. Hitchc.) Barkworth	Foothill needlegrass	N
<i>Nassella pulchra</i> (A. Hitchc.) Barkworth	Purple needlegrass	N
<i>Navarretia hamata</i> E. Greene	Hooked navarretia	N
<i>Nemophila menziesii</i> Hook. & Arn. var. <i>menziesii</i>	Baby blue-eyes	N
<i>Nicotiana glauca</i> Grah.	Tree tobacco	I
<i>Ophioglossum californicum</i> Prantl.	California adder's-tongue	N
<i>Opuntia littoralis</i> (Engelm.) Cockerell.	Shore cactus	N
<i>Opuntia prolifera</i> Engelm.	Cholla	N
<i>Oxalis albicans</i> Kunth ssp. <i>californica</i> (Abrams) Eiten.	California wood-sorrel	N
<i>Oxalis pes-caprae</i> L.	Bermuda buttercup	I
<i>Pectocarya linearis</i> (Ruis Lopez & Pavon) DC. ssp. <i>ferocula</i> (I.M. Johnston) Thorne	Comb-bur	N
<i>Pellaea mucronata</i> (D. Eaton) D. Eaton	Bird's-foot fern	N
<i>Pentagramma triangularis</i> ssp. <i>viscosa</i> (D. Eaton) G. Yatskievych, M.D. Windham & E. Wollenweber	Silverback fern	N
<i>Phacelia</i> sp.	Phacelia	N
<i>Pholistoma auritum</i> (Lindley) Lilja var. <i>auritum</i>	Fiesta flower	N

APPENDIX 3f
PLANT SPECIES OBSERVED AT THE DEL MAR MESA PRESERVE
(continued)

Scientific Name	Common Name	Origin
<i>Plantago erecta</i> Morris	Dot-seed plantain	N
<i>Plantago major</i> L.	Common plantain	I
<i>Platanus racemosa</i> Nutt.	Western sycamore	N
<i>Pogogyne abramsii</i> J. Howell	San Diego mesa mint	N
<i>Polypogon monspeliensis</i> (L.) Desf.	Annual beard grass	I
<i>Porophyllum gracile</i> Benth.	Odora	N
<i>Psilocarphus brevissimus</i> Nutt. var. <i>brevissimus</i>	Dwarf woolly-heads	N
<i>Psilocarphus tenellus</i> Nutt. var. <i>tenellus</i>	Woolly-heads	N
<i>Quercus agrifolia</i> Nee	Coast live oak, Encina	N
<i>Quercus dumosa</i> Nutt.	Nuttall's scrub oak	N
<i>Ranunculus californicus</i> Benth.	California buttercup	N
<i>Raphanus sativus</i> L.	Radish	I
<i>Rhamnus crocea</i> Nutt.	Spiny redberry	N
<i>Rhus integrifolia</i> (Nutt.) Brewer & Watson	Lemonadeberry	N
<i>Rhus ovata</i> Wats.	Sugar bush	N
<i>Ribes speciosum</i> Pursh.	Fuchsia-flowered gooseberry	N
<i>Rumex crispus</i> L.	Curly dock	I
<i>Salix gooddingii</i> C. Ball.	Goodding's black willow	N
<i>Salix lasiolepis</i> Benth.	Arroyo willow	N
<i>Salsola tragus</i> L.	Russian thistle, tumbleweed	I
<i>Salvia apiana</i> Jepson	White sage	N
<i>Salvia columbariae</i> Benth.	Chia	N
<i>Salvia mellifera</i> E. Greene	Black sage	N
<i>Sambucus mexicana</i> C. Presl	Blue elderberry	N
<i>Sanicula</i> sp.	Sanicle	N
<i>Schinus molle</i> L.	Peruvian pepper tree	I
<i>Scirpus californicus</i> (C.A. Mey.) Steudel.	California bulrush	N
<i>Selaginella bigelovii</i> L. Underw.	Bigelow clubmoss	N
<i>Selaginella cinerascens</i> Maxon	Ashy spike-moss	N
<i>Sidalcea malvaeflora</i> (DC.) Benth. ssp. <i>sparsifolia</i> C.L. Hitchc.	Checker mallow	N

APPENDIX 3f
PLANT SPECIES OBSERVED AT THE DEL MAR MESA PRESERVE
(continued)

Scientific Name	Common Name	Origin
<i>Silene gallica</i> L.	Windmill pink	I
<i>Sisymbrium irio</i> L.	London rocket	I
<i>Sisymbrium orientale</i> L.	Mustard	I
<i>Sisyrinchium bellum</i> Wats.	Blue-eyed-grass	N
<i>Solanum parishii</i> A.A. Heller	Parish's nightshade	N
<i>Sonchus asper</i> (L.) Hill ssp. <i>asper</i>	Prickly sow thistle	I
<i>Spergula arvensis</i> L. ssp. <i>arvensis</i>	Stickwort, starwort	I
<i>Spergularia villosa</i> (Pers.) Cambess.	Cleveland sand spurrey	I
<i>Stellaria media</i> (L.) Villars	Common chickweed	I
<i>Stephanomeria virgata</i> (Benth.) ssp. <i>virgata</i>	Slender stephanomeria	N
<i>Stylomecon heterophylla</i> (Benth.) G.C. Taylor	Wind poppy	N
<i>Toxicodendron diversilobum</i> (Torrey & A. Gray) E. Greene	Western poison oak	N
<i>Trifolium</i> sp.	Clover	N
<i>Urtica urens</i> L.	Dwarf nettle	I
<i>Viola pedunculata</i> Torrey & A. Gray	Johnny-jump-up	N
<i>Xanthium strumarium</i> L.	Cocklebur	N
<i>Xylococcus bicolor</i> Nutt.	Mission manzanita	N
<i>Yucca schidigera</i> K.E. Ortgies	Mohave yucca	N
<i>Zigadenus fremontii</i> (Torrey) S. Watson	Star-lily	N

OTHER TERMS

N = Native to locality

I = Introduced species from outside locality

APPENDIX 3g
WILDLIFE SPECIES OBSERVED/DETECTED ON THE DEL MAR MESA PRESERVE

Common Name	Scientific Name	Status
<u>Fairy Shrimp</u> (Nomenclature from Eriksen and Belk 1999)		
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	FE, MSCP (state coverage), *
<u>Invertebrates</u> (Nomenclature from Mattoni 1990 and Opler and Wright 1999)		
Common or checkered white	<i>Pieris protodice</i>	
Sara orangetip	<i>Anthocaris sara</i>	
Alfalfa butterfly	<i>Colias eurytheme</i>	
California ringlet	<i>Coenonympha californica californica</i>	
Painted lady	<i>Vanessa cardui</i>	
Buckeye	<i>Precis coenia</i>	
Behr's metalmark	<i>Apodemia mormo virgulti</i>	
Western elfin	<i>Callophrys augustus iroides</i>	
Bramble or perplexing hairstreak	<i>Callophrys affinis perplexa</i>	
Pigmy blue	<i>Brephidium exilis</i>	
Marine blue	<i>Leptotes marina</i>	
Southern blue	<i>Glaucopsyche lygdamus australis</i>	
Funereal duskywing	<i>Erynnis funeralis</i>	
<u>Amphibians</u> (Nomenclature from Crother 2001 and Crother et al. 2003)		
Pacific treefrog	<i>Pseudacris regilla</i>	
American bullfrog+	<i>Rana catesbeiana</i>	
Western spadefoot	<i>Spea hammondii</i>	CSC
California toad	<i>Bufo boreas halophilus</i>	
<u>Reptiles</u> (Nomenclature from Crother 2001 and Crother et al. 2003)		
San Diego horned lizard	<i>Phrynosoma coronatum blainvillii</i>	CSC, *, MSCP
Western fence lizard	<i>Sceloporus occidentalis</i>	
Side-blotched lizard	<i>Uta stansburiana</i>	
Belding's orangethroat whiptail	<i>Aspidoscelis hyperythra beldingi</i>	CSC, MSCP
Coastal whiptail	<i>Aspidoscelis tigris multiscutatus</i>	
Two-striped garter snake	<i>Thamnophis hammondii</i>	*
Northern red diamond rattlesnake	<i>Crotalus ruber</i>	CSC
<u>Birds</u> (Nomenclature from American Ornithologists' Union 1998 and Unit 1984)		
Turkey vulture	<i>Cathartes aura</i>	
White-tailed kite	<i>Elanus leucurus</i>	CFP, *
Northern harrier	<i>Circus cyaneus hudsonius</i>	CSC, MSCP
Sharp-shinned hawk	<i>Accipiter striatus velox</i>	CSC
Cooper's hawk	<i>Accipiter cooperi</i>	CSC, MSCP
Red-shouldered hawk	<i>Buteo lineatus elegans</i>	
Red-tailed hawk	<i>Buteo jamaicensis</i>	
American kestrel	<i>Falco sparverius</i>	
California quail	<i>Callipepla californica californica</i>	
Band-tailed pigeon	<i>Columba fasciata monilis</i>	
Mourning dove	<i>Zenaida macroura marginella</i>	
Common ground dove	<i>Columbina passerina pallescens</i>	
Greater roadrunner	<i>Geococcyx californianus</i>	

APPENDIX 3g
WILDLIFE SPECIES OBSERVED/DETECTED ON THE DEL MAR MESA PRESERVE
(continued)

Common Name	Scientific Name	Status
Common barn owl	<i>Tyto alba pratincola</i>	
Western screech owl	<i>Megascops kennicottii</i>	
Lesser nighthawk	<i>Chordeiles acutipennis texensis</i>	
Poor-will	<i>Phalaenoptilus nuttallii</i>	
Anna's hummingbird	<i>Calypte anna</i>	
Allen's hummingbird	<i>Selasphorus sasin</i>	
Belted kingfisher	<i>Ceryle alcyon</i>	
Acorn woodpecker	<i>Melanerpes formicivorus bairdi</i>	
Nuttall's woodpecker	<i>Picoides nuttallii</i>	
Northern flicker	<i>Colaptes auratus</i>	
Black phoebe	<i>Sayornis nigricans semiatra</i>	
Say's phoebe	<i>Sayornis saya</i>	
Ash-throated flycatcher	<i>Myiarchus cinerascens cinerascens</i>	
Horned lark	<i>Eremophila alpestris</i>	
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	
Cliff swallow	<i>Hirundo pyrrhonota tachina</i>	
Western scrub-jay	<i>Aphelocoma californica</i>	
American crow	<i>Corvus brachyrhynchos hesperis</i>	
Common raven	<i>Corvus corax clarionensis</i>	
Hutton's vireo	<i>Vireo huttoni huttoni</i>	
Plain titmouse	<i>Parus inornatus transpositus</i>	
Bushtit	<i>Psaltriparus minimus minimus</i>	
Bewick's wren	<i>Thyromanes bewickii</i>	
House wren	<i>Troglodytes aedon parkmanii</i>	
Northern mockingbird	<i>Mimus polyglottos polyglottos</i>	
California thrasher	<i>Toxostoma redivivum redivivum</i>	
European starling+	<i>Sturnus vulgaris</i>	
Western bluebird	<i>Sialia mexicana occidentalis</i>	MSCP
Hermit thrush	<i>Catharus guttatus</i>	
Wrentit	<i>Chamaea fasciata henshawi</i>	
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	
Coastal California gnatcatcher	<i>Polioptila californica californica</i>	FT,CSC,MSCP
Phainopepla	<i>Phainopepla nitens lepida</i>	
American goldfinch	<i>Carduelis tristis salicamans</i>	
Lesser goldfinch	<i>Carduelis psaltria hesperophilus</i>	
House finch	<i>Carpodacus mexicanus frontalis</i>	
Orange-crowned warbler	<i>Vermivora celata</i>	
Yellow-rumped warbler	<i>Dendroica coronata</i>	
Common yellowthroat	<i>Geothlypis trichas</i>	
Lazuli bunting	<i>Passerina amoena</i>	
Spotted towhee	<i>Pipilo maculatus</i>	
California towhee	<i>Pipilo crissalis</i>	
Bell's sage sparrow	<i>Amphispiza belli belli</i>	CSC
Southern California rufous-crowned sparrow	<i>Aimophila ruficeps canescens</i>	CSC,MSCP
Song sparrow	<i>Melospiza melodia</i>	
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	
Golden-crowned sparrow	<i>Zonotrichia atricapilla</i>	
Western meadowlark	<i>Sturnella neglecta</i>	
Red-winged blackbird	<i>Agelaius phoeniceus</i>	

APPENDIX 3g
WILDLIFE SPECIES OBSERVED/DETECTED ON THE DEL MAR MESA PRESERVE
(continued)

Common Name	Scientific Name	Status
<u>Mammals</u> (Nomenclature from Jones et al. 1997)		
California ground squirrel	<i>Spermophilus beecheyi</i>	
Southern pocket gopher	<i>Thomomys umbrinus</i>	
Pacific (= agile) kangaroo rat	<i>Dipodomys agilis</i>	
Woodrat	<i>Neotoma</i> sp.	CSC
San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	CSC
Cottontail rabbit	<i>Sylvilagus audubonii</i>	
Striped skunk	<i>Mephitis mephitis</i>	
Coyote	<i>Canis latrans</i>	
Gray fox	<i>Urocyon cinereoargenteus</i>	
Mountain lion	<i>Felis concolor</i>	CFP, MSCP
Bobcat	<i>Felis rufus</i>	
Southern mule deer	<i>Odocoileus hemionus fuliginata</i>	MSCP

+ = Introduced species

Status

CFP = California fully protected species

CSC = California Department of Fish and Game species of special concern

FE = Listed as endangered by the federal government

FT = Listed as threatened by the federal government

MSCP = Multiple Species Conservation Program covered species

* = Taxa listed with an asterisk fall into one or more of the following categories:

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

APPENDIX 3h
SENSITIVE PLANT SPECIES OBSERVED ON THE DEL MAR MESA PRESERVE

Species	State/Federal Status	CNPS List	CNPS Code	Typical Habitat/Comments
<i>Adolphia californica</i> California adolphia	-/-	2	1-2-1	Chaparral
<i>Arctostaphylos glandulosa</i> ssp. <i>crassifolia</i> Del Mar manzanita	-/FE	1B	3-3-2	Coastal chaparral
<i>Artemisia palmeri</i> San Diego sagewort	-/-	2	2-2-1	Coastal sage scrub, chaparral, riparian
<i>Brodiaea orcuttii</i> Orcutt's brodiaea	-/-	1B	1-3-2	Closed-cone coniferous forest, meadows, cismontane wood-land, valley and foothill grass-land, vernal pools
<i>Ceanothus verrucosus</i> Wart-stemmed ceanothus	-/-	2	1-2-1	Chaparral
<i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i> Summer holly	-/-	1B	2-2-2	Chaparral
<i>Dichondra occidentalis</i> Western dichondra	-/-	4	1-2-1	Chaparral, cismontane wood-land, coastal sage scrub, valley and foothill grassland
<i>Eryngium aristulatum</i> var. <i>parishii</i> San Diego button celery	CE/FE	1B	2-3-2	Vernal pools, marshes
<i>Ferocactus viridescens</i> Coast barrel cactus	-/-	2	1-3-1	Chaparral, coastal sage scrub, valley and foothill grassland
<i>Harpagonella palmeri</i> var. <i>palmeri</i> Palmer's grappling hook	-/-	2	1-2-1	Chaparral, coastal sage scrub, valley and foothill grassland
<i>Lessingia filaginifolia</i> var. <i>filaginifolia</i> (= <i>Corethrogyne filaginifolia</i> var. <i>linifolia</i>) Del Mar Mesa sand aster	-/-	1B	3-2-3	Chaparral, coastal sage scrub
<i>Monardella linoides</i> ssp. <i>viminea</i> Willow monardella	CE/FE	1B	2-3-2	Riparian scrub
<i>Muilla clevelandii</i> San Diego goldenstar	-/-	1B	2-2-2	Chaparral, coastal sage scrub, valley and foothill grassland, vernal pools
<i>Myosurus minimus</i> ssp. <i>apus</i> Little mousetail	-/-	3	2-3-2	Vernal pools
<i>Ophioglossum californicum</i> (= <i>Ophioglossum lusitanicum</i> ssp. <i>californicum</i>) California adder's-tongue fern	-/-	4	1-2-2	Clay mesa soils

APPENDIX 3h
SENSITIVE PLANT SPECIES OBSERVED ON THE DEL MAR MESA PRESERVE
(continued)

Species	State/Federal Status	CNPS List	CNPS Code	Typical Habitat/Comments
<i>Pogogyne abramsii</i> San Diego mesa mint	CE/FE	1B	2-3-3	Vernal pools
<i>Quercus dumosa</i> Nuttall's scrub oak	-/-	1B	2-3-2	Coastal chaparral
<i>Selaginella cinerascens</i> Ashy spike-moss	-/-	4	1-2-1	Chaparral, coastal sage scrub

NOTE: See Appendix 3c for Sensitivity Codes

APPENDIX 3i

Descriptions of Sensitive Species Occurring on the Del Mar Mesa Preserve and Not Covered by the MSCP

California adolphia (*Adolphia californica*). California adolphia is a CNPS List 2 species in the buckthorn family (Rhamnaceae). This species generally occurs in Diegan



Photograph A3i-1. California Adolphia (pale green shrub in the middle of the picture) in the Northeast Portion of the Del Mar Mesa Preserve

coastal sage scrub or near the edge of chaparral, in dry locales with shrubs four to five feet tall. This shrub flowers from December to April and loses its leaves in late summer and fall, making it difficult to find. Its spiny stems are identifiable at close range year-round, however. It is associated with San Miguel and Friant soils (Reiser 2001). Its geographic range extends from San Diego County south into Baja California. In San Diego County, it is found from the Carlsbad area south into the Proctor Valley and Otay region (Beauchamp 1986).

On the Del Mar Mesa Preserve, California adolphia is a component of the coastal sage scrub and has been found in the northeast portion of the Preserve and likely occurs at other locations as well.

San Diego sagewort (*Artemisia palmeri*). San Diego sagewort is a member of the plant family Asteraceae. This perennial is on List 2 of the CNPS *Inventory* (CNPS 2001). It generally occurs in coastal sage scrub and along drainages in San Diego County and northern Baja California, Mexico. In San Diego County, its distribution ranges from La Jolla south to Otay and east to Alpine (Beauchamp 1986). This species can occur in low numbers in dense riparian vegetation and its presence may be very difficult to detect.

Summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*). Summer holly is a CNPS List 1B species. This evergreen shrub in the heath family (Ericaceae) reaches heights of 15 feet and produces a small white flower from April to June (Munz 1974). Summer holly is found in the chaparral in Orange, Riverside and San Diego Counties, as well as Baja California, Mexico. In San Diego County it generally occurs at low elevations in chaparral communities near the coast. Summer holly is threatened by development and gravel mining (CNPS 2001).

Western dichondra (*Dichondra occidentalis*). Western dichondra is a CNPS List 4 species, indicating that it has limited distribution or is infrequent throughout its range. Its



Photograph A3i-2. Western Dichondra

range extends from Ventura County south into Baja California, Mexico, including the Channel Islands. In San Diego County, it is known from Agua Hedionda south to Point Loma and inland to Poway, Otay Mountain, and the Tijuana Hills (Beauchamp 1986). This small perennial herb in the morning-glory family (Convolvulaceae) flowers from March to May. It often grows almost completely hidden under shrubs or trees in coastal sage scrub and chaparral, or among rocky outcrops

in grasslands. It grows primarily in dry sandy soils including Heuerhuero soils and Hambright gravelly clay loam (Reiser 2001). The numbers of western dichondra are slowly declining in southern California because habitat is being lost to development and weeds are invading native vegetation communities.

Palmer's grappling hook (*Harpagonella palmeri*). Palmer's grappling hook is a member of the Boraginaceae family. This annual is a CNPS *Inventory* (CNPS 2001) List 2 species that occurs in Los Angeles, Orange, Riverside, and San Diego Counties as well as in Arizona; in Baja California, Mexico; and on San Clemente Island (Munz 1974). In San Diego County, it occurs on clay soils from Guajome Mesa, Rancho Santa Fe, Poway, Kearny Mesa, Mission Gorge, Rice Canyon, and Otay (Beauchamp 1986).

Little mousetail (*Myosurus minimus* ssp. *apus*). This annual is on List 3 of the CNPS *Inventory*, indicating that additional study is needed to determine the level of threat to the species (CNPS 2001). It is an annual herb in the buttercup family (Ranunculaceae) that flowers from March to June. Little mousetail is endemic to vernal pools, where it typically grows in the deeper portions of vernal pools. It ranges from southern Oregon to northern Baja California, Mexico, and can be found in the Central Valley and Riverside, San Bernardino, and San Diego Counties in California. In San Diego County, it is found in a limited number of vernal pools on Del Mar Mesa, Camp Pendleton, Otay Mesa, near Otay Lake, near Peñasquitos Canyon, and in the Ramona area (Reiser 2001).

California adder's-tongue fern (*Ophioglossum californicum*). California adder's-tongue fern is a CNPS List 4 whose range extends from the Sierra Nevada foothills to southern California and southward into Baja California, Mexico. In San Diego County, the fern has been reported from Kearny Mesa, Olivenhain, Proctor Valley, and Escondido (Beauchamp 1986). This perennial rhizomatous herb typically occurs on grassy slopes and near vernal pools and seeps, in coastal and foothill locations below 900 feet elevation. The California adder's-tongue fern is easily observed during the

springtime, but becomes inconspicuous later in the season. This species is associated with vernal pools and other seasonal wetlands and wet meadows on the Preserve. It has been documented as occurring on Del Mar Mesa Preserve, but its location has not been mapped.

Nuttall's scrub oak (*Quercus dumosa*). Nuttall's scrub oak is a member of the Fagaceae family. This evergreen shrub is a CNPS *Inventory* (CNPS 2001) List 1B species that occurs in Santa Barbara, Orange, and San Diego Counties as well as in Baja California, Mexico. Nuttall's scrub oak is found within chaparral and coastal sage scrub vegetation on sandy or clay loam soils. This species occurs abundantly within southern maritime chaparral on the Preserve.

Ashy spike-moss (*Selaginella cinerascens*). Ashy spike-moss is no longer considered a List 4 species by CNPS (CNPS 2001); however, due to the importance of this species to habitat and ecosystem stability, we still consider this species a sensitive resource. Ashy spike-moss is a prostrate non-flowering perennial herb in the spike-moss family (Selaginellaceae) that reproduces by spores in March. It occurs in undisturbed coastal sage scrub and chaparral from Orange County south into Baja California, Mexico. In San Diego County ashy spike-moss is most often found near the coast, south of Highway 78, particularly around the periphery of the city of San Diego. Ashy spike-moss has been documented as occurring on Del Mar Mesa Preserve (see Appendix 3e) and is present in many of the vegetation communities, particularly on flat mesas or slightly sloped mesa edges, wherever the cryptogamic/microbiotic crust has not been disturbed and also in some locations that are recovering from disturbance.

Two-striped garter snake (*Thamnophis hammondi*). The two-striped garter snake is a sensitive species that may grow as long as 36 inches though 18 to 24 inches is more usual. Its dorsal scales are keeled, which breaks up the reflection of light and results in a dull luster. The overall color is olive drab with a single yellowish stripe running down each side of the body. Patterned into the dorsal coloration are four rows of small, dark spots. The belly is dull yellow, or sometimes salmon colored. The two-striped garter snake ranges in coastal California from the vicinity of Salinas south to El Rosario in Baja California, Mexico. They are normally found in or near permanent fresh water, inhabiting streams, ponds, and lakes throughout their range. They are often found even in temporary bodies of water such as vernal pools. It is the most common snake in southern California, and it is not unusual to encounter several individuals at a time. Activity is most common around dusk and in the early evening. Adults feed on frogs, tadpoles, toads, insect larvae, fish, fish eggs, and earthworms. The two-striped garter snake is ovoviviparous. Breeding commences in April and May and continues throughout the summer months. Gestation is approximately nine weeks. As many as 25 young may be born, though 12 to 13 is more common.

Northern red diamond rattlesnake (*Crotalus ruber*). The northern red diamond rattlesnake is a CDFG species of special concern. This species occurs below 1,200



Photograph 3i-3.
Red Diamond Rattlesnake at Carmel Mountain

eters (4,000 feet) on both sides of the Peninsular Ranges of southwestern California in coastal sage scrub, desert scrub, open chaparral, woodland, and grassland habitats, as well as agricultural fields (Stebbins 1985). This snake is commonly found in areas with rock outcrops. Population declines in the red diamond rattlesnake are generally attributable to impacts related to the increased development near habitat in which this snake is found.

Sharp-shinned hawk (*Accipiter striatus*) The sharp-shinned hawk is a California species of special concern that inhabits woodlands, parks, and residential areas throughout most of North America, feeding mostly on birds and occasionally on small mammals, reptiles, and other small prey (Ehrlich et al. 1988). When breeding in mountainous coniferous/deciduous forests in April through August, the sharp-shinned hawk usually nests within 90 meters of water (Zeiner et al. 1990). It is a common migrant and rare summer resident in San Diego County (Unitt 1984).

White-tailed kite (*Elanus leucurus*). The white-tailed kite is a California fully protected species that occurs in coastal lowland areas from Oregon to northern Baja California, Mexico (National Geographic Society 1983). This resident bird nests in riparian woodlands, live oaks, or sycamore groves which border grassland or open fields (Unitt 1984 and 2004). The white-tailed kite forages over open areas and grasslands feeding primarily on small rodents, in particular the California vole or meadow mouse (Unitt 2004), and insects (National Geographic Society 1983). This species is known to roost in large communal groups (Unitt 1984 and 2004). White-tailed kite populations in southern California have declined due to the loss of grassland foraging habitat to urbanization. This species was observed on the Preserve.

Blue-gray gnatcatcher (*Poliophtila caerulea*). The blue-gray gnatcatcher is on the sensitive species list for the City of San Diego. The blue-gray gnatcatcher is distributed throughout Mexico and the U.S., excluding northern plains states and the northwest. Locally, this species is a fairly common migrant and winter visitor and a rare and localized summer resident. The blue-gray gnatcatcher winters in dense riparian undergrowth, weedy/brushy agricultural areas, thickets in desert washes, and occasionally chaparral. It breeds in foothill chaparral, desert-edge scrub, and mesquite thickets. Brood-parasitism by brown-headed cowbirds is one contributing reason to the decline of this species.

Bell's sage sparrow (*Amphispiza belli belli*). Bell's sage sparrow is a CDFG species of special concern. Bell's sage sparrow is an uncommon to locally fairly common resident along the extreme west coast of California. Its breeding range is along the coastal slopes from Trinity County south into northwestern Baja California, Mexico. Locally, it can be found in the interior chaparral and coastal sage scrub habitats, especially dense stands of chamise chaparral (Small 1994). This race is essentially sedentary. Male Bell's sage sparrows show high breeding territory tenacity, even when the habitat is altered dramatically (Ehrlich et al. 1988). This species feeds primarily on spiders, insects, and seeds while breeding, and seeds during the winter.

San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). The San Diego black-tailed jackrabbit is a CDFG species of special concern. This species can be found throughout southern California, with the exception of the high-altitude mountains. The black-tailed jackrabbit is strictly herbivorous, preferring habitat with ample forage such as grasses and forbs. The San Diego black-tailed jackrabbit breeds throughout the year with the greatest number of births occurring from April through May. This species is generally solitary, except when mating and raising young (Zeiner et al. 1990).

APPENDIX 3j
SENSITIVE WILDLIFE SPECIES OCCURRING ON THE DEL MAR MESA PRESERVE

Species	Status	Habitat
<u>Invertebrates</u> (Nomenclature from Eriksen and Belk 1999)		
San Diego fairy shrimp <i>Branchinecta sandiegonensis</i>	FE, MSCP (state coverage), *	Vernal pools.
<u>Amphibians</u> (Nomenclature from Crother 2001 and Crother et al. 2003)		
Western spadefoot <i>Spea hammondi</i>	CSC	Vernal pools, floodplains, and alkali flats within areas of open vegetation.
<u>Reptiles</u> (Nomenclature from Crother 2001 and Crother et al. 2003)		
San Diego horned lizard <i>Phrynosoma coronatum blainvillii</i>	CSC, MSCP, *	Chaparral, coastal sage scrub with fine, loose soil. Partially dependent on harvester ants for forage.
Belding's orangethroat whiptail <i>Aspidoscelis hyperythra beldingi</i>	CSC, MSCP,	Chaparral, coastal sage scrub with coarse sandy soils and scattered brush.
Two-striped garter snake <i>Thamnophis hammondi</i>	CSC, *	Permanent freshwater streams with rocky bottoms. Mesic areas.
Northern red diamond rattlesnake <i>Crotalus ruber</i>	CSC	Desert scrub and riparian, coastal sage scrub, open chaparral, grassland, and agricultural fields.
<u>Birds</u> (Nomenclature from American Ornithologists' Union)		
Turkey vulture <i>Cathartes aura</i>		Open fields, grasslands, rocky cliffs. Spring and fall migrant, winter visitor, rare summer resident..
White-tailed kite (nesting) <i>Elanus leucurus</i>	CFP, *	Nest in riparian woodland, oaks, sycamores. Forage in open, grassy areas. Year-round resident.
Northern harrier (nesting) <i>Circus cyaneus</i>	CSC, MSCP	Coastal lowland, marshes, grassland, agricultural fields. Migrant and winter resident, rare summer resident.
Sharp-shinned hawk (nesting) <i>Accipiter striatus</i>	CSC	Open deciduous woodlands, forests, edges, parks, residential areas. Migrant and winter visitor.
Cooper's hawk (nesting) <i>Accipiter cooperi</i>	CSC, MSCP	Mature forest, open woodlands, wood edges, river groves. Parks and residential areas. Migrant and winter visitor.
California horned lark <i>Eremophila alpestris actia</i>	CSC	Sandy shores, mesas, disturbed areas, grasslands, agricultural lands, sparse creosote bush scrub.
Coastal California gnatcatcher <i>Poliophtila californica californica</i>	FT, CSC, MSCP	Coastal sage scrub, maritime succulent scrub. Resident.

APPENDIX 3j
SENSITIVE WILDLIFE SPECIES OCCURRING ON THE DEL MAR MESA PRESERVE
(continued)

Species	Status	Habitat
Southern California rufous-crowned sparrow <i>Aimophila ruficeps canescens</i>	CSC, MSCP	Coastal sage scrub, chaparral, grassland. Resident.
Bell's sage sparrow <i>Amphispiza belli belli</i>	CSC	Chaparral, coastal sage scrub. Localized resident.
Western bluebird <i>Sialia mexicana</i>	MSCP	Open woodlands, farmlands, orchards.
<u>Mammals</u> (Nomenclature from Jones et al. 1997)		
San Diego black-tailed jackrabbit <i>Lepus californicus bennettii</i>	CSC	Open areas of scrub, grasslands, agricultural fields.
Mountain lion <i>Felis concolor</i>	CFP, MSCP	Many habitats.
Southern mule deer <i>Odocoileus hemionus fuliginata</i>	MSCP	Many habitats.

STATUS CODES

Listed/Proposed

FE = Listed as endangered by the federal government
 FT = Listed as threatened by the federal government

Other

CFP = California fully protected species
 CSC = California Department of Fish and Game species of special concern
 MSCP = Multiple Species Conservation Program covered species
 * = Taxa listed with an asterisk fall into one or more of the following categories:

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

APPENDIX 4
MSCP Table 3-5

Table 3-5

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
PLANTS					
<i>Acanthomintha ilicifolia</i> San Diego thorn-mint PE/CE	85% of 8 major populations	15% of major populations	Site-specific preserve design and special measures/management	Monitoring Plan - Site Specific (4 populations) and Management Plans/Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because all major populations are within the MHPA, and each of the eight major populations will be conserved from 80-100%, with 85% conserved overall. This species is on the list of narrow endemics³ which requires jurisdictions to specify and implement measures in their subarea plans to avoid or minimize impacts to all populations (including Asphalt Inc., Sky Mesa, El Capitan sites) during project design.</p> <p>Notes: This species occurs on clay and gabbro soils which will be conserved at >28% and >43%, respectively.</p> <p>Conditions: Area-specific management directives and the SPA for the Otay Lakes Resort area must include specific measures to protect against detrimental edge effects from the surrounding development.⁴</p>					
<i>Agave shawii</i> Shaw's agave FSC*/	100% of major populations	No major populations	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because all known extant populations are within protected public land (Torrey Pines State Reserve and Border Field State Park). This species is on the MSCP's list of narrow endemics and therefore participating jurisdictions must specify in their subarea plans additional specific conservation measures for the species.³</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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Notes: Additional important populations are found on military lands (Pt. Loma) which are not part of the MSCP. Populations at Pt. Loma are not part of the MSCP but will be conserved at a minimum of 91% in the Pt. Loma Ecological Reserve Area.

Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects.⁴

<i>Ambrosia pumila</i> San Diego ambrosia FSC*/	90% of the only major population	10% of the only major population	Site-specific preserve design and special measures/management	Monitoring Plan - Site Specific (major population) and Management Plans/ Directives	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered because 90% of the only major population in the MSCP will be conserved, and the adjoining population at the radio tower site will be 100% conserved. This major population occurs on public lands in the Mission Trails Regional Park. This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional specific conservation measures for the species.³

Notes: Occurrences thought to be *Ambrosia pumila* in Spring Canyon, Otay Mesa (east of Otay Lakes), Otay Valley (along the Otay River), and Hidden Trails were misidentified and are now known to be a common species of *Ambrosia*. The small population within the San Diego National Wildlife Refuge (Rancho San Diego) will also be conserved and managed by the USFWS.

Conditions: If more than 10% of the population at the Mission Trails Regional Park is impacted, this species will no longer be a covered species. Area-specific management directives must include monitoring of transplanted populations and specific measures to protect against detrimental edge effects.⁴

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Aphanisma blitoides</i> Aphanisma FSC*/	90% of potential habitat (261± acres) - 92% of southern foredunes (123± acres), 88% of southern coastal bluff scrub (138± acres)	10% of potential habitat (28± acres) - 8% of southern foredunes (9± acres) , 12% of southern coastal bluff scrub (17± acres)	Preserve design/landscape level with site-specific consideration(s)/management	Monitoring Plan - Habitat Based and Incidental	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 90% of its potential habitat will be conserved.</p> <p>Notes: Additional potential habitat occurs on military lands (Silver Strand, Imperial Beach) which are not a part of the MSCP. There are no known populations of this species in the MSCP Plan area.</p>					
<i>Arctostaphylos glandulosa</i> var. <i>crassifolia</i> Del Mar manzanita FE/	91% of major populations and 67% of southern maritime chaparral habitat	9% of major populations	Preserve design/landscape level with site-specific consideration(s)/management	Monitoring Plan - Site Specific	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 91% of the major populations will be conserved and 67% of the habitat for the species will be conserved. This species is a Group A species in the County's proposed BMO.⁵</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>Notes: Within the County, this species occurs in the western portion of the Metro-Lakeside-Jamul segment, primarily in open space areas. Although not dedicated to the preserve, these areas will not likely be developed.</p> <p>Conditions: Area-specific management directives must include specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire.⁴ Management measures to accomplish this may include prescribed fire.</p>					
<i>Arctostaphylos otayensis</i> Otay manzanita FSC*/	95% of major populations	5% of major populations	Preserve design/landscape level	Monitoring Plan - Habitat Based and Photo Plot	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 95% of the major populations are located on BLM land and in the open space (100% protection) designation for Otay Ranch, Jamul Mountain, and San Miguel Mountain. This species is a Group A species in the County's proposed BMO.³</p> <p>Notes: This species is often associated with metavolcanic soils of which 34,000 acres are included within the MHPA.</p> <p>Conditions: Area-specific management directives must include specific management measures to promote germination of seeds, maintenance of diverse age class structure, and reduction in the risk of catastrophic fire.⁴ Management measures to accomplish this may include prescribed fire.</p>					
<i>Astragalus deanei</i> Dean's milk vetch FSC*/	Unknown conservation level and therefore not covered by the plan.				NO

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Astragalus tener</i> var. <i>titi</i> Coastal dunes milk vetch PE/CE	92% of southern foredunes (123± acres)	8% of southern foredunes (11± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based and Incidental	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 92% of the vegetative community that is potential habitat for this species will be conserved.</p> <p>Notes: This species historically occurred on the Silver Strand but is thought to be extirpated from the MSCP study area.</p> <p>Conditions: Area-specific management directives must provide for reintroduction opportunities, identify potential reintroduction sites, and include measures to prevent non-native species introductions.⁴ Any newly found populations shall be evaluated for inclusion in the preserve strategy through acquisition, like exchange, etc.</p>					
<i>Baccharis vanessae</i> Encinitas baccharis FT/CE	92% of major populations	8% of major populations	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Site Specific (1 population) and Management Plans/ Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 92% of major populations will be conserved. This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional specific conservation measures for the species.³</p> <p>Conditions: Based on BMPs, area-specific management directives must include specific management measures to address the autecology and natural history of the species, measures to reduce the risk of catastrophic fire, and appropriate male/female plant ratios.⁴ Management measures to accomplish this may include prescribed fire.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Berberis nevini</i> Nevin's barberry PE/CE	100% of populations (occurrences are all persisting cultivars)	No natural populations present	Site-specific preserve design and special measures/management	Monitoring Plan - Habitat Based	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
<p>This species will be covered by the MSCP because persisting cultivars occurring in Spring Valley and Torrey Pines State Reserve will be conserved. This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional specific conservation measures for the species.³</p> <p>Notes: As no known natural populations occur within the plan area, development covered by the plan will not impact the species. Persistence of naturally occurring populations in San Diego County is dependent on conservation efforts outside the MSCP area.</p>					
<i>Brodiaea filifolia</i> Thread-leaved brodiaea PT/CE	88% of vernal pool habitat, 38% of grassland	12% of vernal pool habitat may be impacted, but this habitat is subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
<p>This species will be covered by the MSCP because 88% of the vernal pool habitat and 38% of grassland habitat that are potential habitat for this species will be conserved. This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional specific conservation measures for the species if a population is identified in the future.³</p> <p>Notes: This species is not known to occur within the MSCP area.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Brodiaea orcuttii</i> Orcutt's brodiaea FSC*/	All major populations in MSCP area, 88% of vernal pool habitat, 38% of grassland	12% of vernal pool habitat may be impacted, but this habitat is subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/management	Monitoring Plan - Site Specific (4 populations) and Management Plans/Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because all of the major populations in the MSCP Plan area (4 populations) will be conserved. This is a Group A species in the County's proposed BMO.⁵</p> <p>Notes: Three major populations occur on Miramar military lands which are not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: The San Vicente population is identified as a critical population in the County's Subarea Plan and must be 100% conserved. Area-specific management directives must include specific measures to protect against detrimental edge effects.⁴</p>					
<i>Calamagrostis densa</i> Dense reed grass none	91% of major populations	9% of major populations	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 91% of major populations will be conserved.

Notes: Taxonomic reclassification has combined this taxon in a more common taxon (*Calamagrostis koelerioides*) which is widespread.

Conditions: Trail maintenance/placement to avoid human impacts must be addressed in area-specific management directives.⁴ Enhancement opportunities using prescribed fire should be evaluated in management plans. Area-specific management directives must include specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire.⁴

<i>Calochortus dunnii</i> Dunn's mariposa lily FSC*/CR	100% of major populations	No major populations	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Habitat Based and Photo Plot and Management Plans/ Directives	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 100% of the major populations will be conserved. This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional specific conservation measures³ for the species if a population is identified in the future.

Notes: Fifty-two percent of one of the three major populations occurs within a major amendment area in the Otay Mountain area. (Take authorization amendments will be subject to public review through CEQA and NEPA processes and require approval by CDFG and USFWS.) This species occurs on gabbro and metavolcanic soils, and >43% of the gabbro soils in the MSCP Plan area are within the MHPA.

Conditions: At the time permit amendments are proposed, strategies to provide protection for this species within the amendment area must be included.

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Caulanthus stenocarpus</i> Slender-pod jewelflower FSC*/CR	75% of major populations	25% of major populations	Site-specific preserve design and special measures/management	Monitoring Plan - Habitat Based and Incidental and Management Plans/ Directives	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
This species will be covered by the MSCP because 3 of 4 (75%) of the major populations and 89% of occurrences will be conserved. The Wildcat Canyon, Poway/Sanrex, and Fortuna Mountain populations are identified as critical and will be 100% protected (San Diego County Subarea Plan requirement).					
Note: This taxon has been combined with the more widespread and common <i>Caulanthus heterophyllus</i> var. <i>heterophyllus</i> .					
Conditions: Area-specific management directives must include specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire. ⁴ Management measures to accomplish this may include prescribed fire.					
<i>Ceanothus cyaneus</i> Lakeside ceanothus FSC*/	75% of major populations	25% of major populations	Site-specific preserve design and special measures/management	Monitoring Plan - Habitat Based and Photo Plot	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
This species will be covered by the MSCP because 3 of 4 (75%) of the major populations will be conserved. This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional specific conservation measures ³ for the species if a population is identified in the future. This is a Group A species in the County's proposed BMO. ⁵					
Conditions: Area-specific management directives must include specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire. Management measures to accomplish this may include prescribed fire.					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Ceanothus verrucosus</i> Wart-stemmed ceanothus FSC*/	67% of major populations, and 64% of known localities	33% of major populations, and 36% of known localities	Site-specific preserve design and special measures/management	Monitoring Plan - Habitat Based and Photo Plot and Management Plans/ Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 67% of the major populations will be conserved, and special management actions will increase populations. This is a Group B species in the County's proposed BMO.⁵</p> <p>Notes: Additional important populations (30% of known populations) are found on military lands (Pt. Loma, Miramar) which are not part of the MSCP.</p> <p>Conditions: Revegetation efforts within appropriate habitats must include restoration of this species. Area-specific management directives for the protected populations must include specific measures to increase populations, including specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire.⁴ Management measures to accomplish this may include prescribed fire. Any newly found populations should be evaluated for inclusion in the preserve strategy through acquisition, like exchange, etc.</p>					
<i>Chorizanthe orcuttlana</i> Orcutt's spineflower FE/CE	Unknown conservation level and therefore not covered by the Plan.				NO
<i>Cordylanthus maritimus</i> ssp. <i>maritimus</i> Salt marsh bird's-beak FE/CE	100% of major populations	No major populations	Site-specific preserve design and special measures/management	Monitoring Plan - Site Specific (3 populations)	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 100% of major populations within the MSCP Plan area will be conserved.

Note: Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional protection. One population of this species also occurs on military lands (Naval Radar Receiving Facility) which are not part of the MSCP.

Conditions: Area-specific management directives must (1) include measures to reduce threats and stabilize populations (e.g., relocation of footpaths, establishment of buffer areas, etc.), (2) address opportunities for reintroduction, and (3) include measures to enhance existing populations (e.g., protect and improve upland habitat for pollinators). There is a federal recovery plan for this species, and management activities should help achieve the specified goals. Any newly found populations shall be evaluated for inclusion in the preserve strategy through acquisition, like exchange, etc.

<i>Cordylanthus orcuttianus</i> Orcutt's bird's-beak FSC*/	75% of major populations	25% of major populations	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Site Specific (4 populations) and Management Plans/ Directives	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 3 of 4 (75%) major populations will be conserved. A portion of the Otay River Valley population lies outside of the MHPA but will be subject to the County's Biological Mitigation Ordinance (80-100% conservation).⁵ The Otay Ranch population (southeast of Lower Otay Lake) is considered conserved subject to landowner and agency agreement.

Condition: At the time permit amendments are proposed, strategies to provide protection for this species within the amendment area must be included. (Take authorization amendments are subject to public review through CEQA and NEPA processes and require approval by CDFG and USFWS.)

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Corethrogyne filaginifolia</i> var. <i>linifolia</i> Del Mar Mesa sand aster FSC†/	48% of major populations, 57% of known localities, and 67% of southern maritime chaparral	52% of major populations, 43% of known localities, and 33% of southern maritime chaparral	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Site Specific	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
<p>This species will be covered by the MSCP because 48% of major populations and 67% of its potential habitat (southern maritime chaparral) will be conserved. This is a Group A species in the County's proposed BMO.³</p> <p>Notes: This taxon has been merged with two other <i>Corethrogyne filaginifolia</i> varieties and has been determined not to meet the taxonomic standards for listing.</p> <p>Conditions: Area-specific management directives for the protected populations must include specific measures to protect against detrimental edge effects to this species, including specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire.⁴ Management measures to accomplish this may include prescribed fire.</p>					
<i>Cupressus forbesii</i> Tecate cypress FSC*/	98% Tecate cypress forest	2% Tecate cypress forest	Preserve design/landscape level	Monitoring Plan - Habitat Based and Photo Plot	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
<p>This species will be covered by the MSCP because 98% of major populations will be conserved, primarily on lands administered by BLM.</p> <p>Conditions: Area-specific management directives for the protected populations will include specific measures to maintain or increase populations, including specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire.⁴ Management measures to accomplish this may include prescribed fire.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Dudleya blochmaniae</i> ssp. <i>brevifolia</i> Short-leaved dudleya FSC†/CE	100% of major populations	No major populations	Site-specific preserve design and special measures/management	Monitoring Plan - Site Specific (3 populations) and Management Plans/ Directives	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
This species will be covered by the MSCP because 100% of major populations will be conserved. This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional conservation measures for the species. ³					
Notes: The populations on Del Mar Mesa, Carmel Mountain, and Crestview Canyon are subject to considerable edge effects. The wildlife agencies will work with the University of California, San Diego to protect and manage the University of California property adjacent to Skeleton Canyon for this species.					
Conditions: Area-specific management directives must include (1) specific measures to protect against detrimental edge effects to this species, (2) species-specific monitoring, and (3) maintenance of surrounding habitat for pollinators. ⁴					
<i>Dudleya variegata</i> Variegated dudleya FSC*/	56% of major populations, 75% of known localities	44% of major populations, 25% of known localities	Site-specific preserve design and special measures/management	Monitoring Plan - Site Specific (5 populations) and Management Plans/ Directives	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 56% of major populations and 75% of known localities will be conserved. This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional conservation measures for the species.³

Conditions: Area-specific management directives must include species-specific monitoring and specific measures to protect against detrimental edge effects to this species, including effects caused by recreational activities.⁴ Some populations now occur within a major amendment area (Otay Mountain), and at the time permit amendments are proposed, strategies to provide protection for this species within the amendment area must be included. (Proposed take authorization amendments will have public review through CEQA and NEPA processes and require approval by CDFG and USFWS.)

<i>Dudleya viscida</i> Sticky dudleya FSC*/	100% of major population	No major populations	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 100% of the only major population within the MSCP will be conserved.

Notes: Persistence of this species in San Diego County depends largely on conservation efforts in the MHCP and Camp Pendleton areas.

Conditions: Area-specific management directives must address specific measures to protect against detrimental edge effects.⁴

<i>Ericameria palmeri</i> ssp. <i>palmeri</i> Palmer's ericameria FSC*/	66% of major populations	34% of major populations	Site-specific preserve design and special measures/management	Monitoring Plan - Habitat Based and Photo Plot and Management Plans/ Directives	YES
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Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 66% of major populations will be conserved. This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional conservation measures for the species.³

Notes: Impacts will be fully mitigated through avoidance, minimization, and compensation. Two of the six major populations are subject to potential impacts from proposed road widening projects (Jamacha Blvd., Highways 54/94).

<i>Eryngium aristulatum</i> var. <i>parishii</i> San Diego button-celery FE/CE	82% of major populations, 88% of vernal pool habitat	18% of major populations may be impacted, but vernal pool habitat is subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/ management	Area-specific Management Directives (wetlands)	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 82% of major populations and 88% of vernal pool habitat will be conserved.

Notes: Additional important populations are found on military lands (Miramar) which are not part of the MSCP. Four populations (Proctor Valley, Otay River Valley, Del Mar Mesa, Spring Canyon) are likely to be subject to edge effects. This species has been added to the City of San Diego's list of narrow endemic species. Vernal pools that become part of the National Wildlife Refuge will be managed for the recovery of this species.

Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects.⁴

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Erysimum ammophilum</i> Coast wallflower FSC*/	92% of southern foredunes, 67% of southern maritime chaparral	8% of southern foredunes, 33% of southern maritime chaparral	Preserve design/landscape level	Monitoring Plan - Habitat Based and Incidental	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 92% of southern foredunes and 67% of southern maritime chaparral vegetation communities (that are potential habitat for this species) will be conserved.</p> <p>Notes: Populations from San Diego County are now being treated as <i>Erysimum capitatum</i> ssp. <i>capitatum</i>, a common species of wallflower.</p>					
<i>Ferocactus viridescens</i> San Diego barrel cactus FSC*/	81% of major populations	19% of major populations	Preserve design/landscape level	Monitoring Plan - Habitat Based and Photo Plot	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 81% of major populations will be conserved. This is a Group B species in the County's proposed BMO.⁵</p> <p>Notes: This is an abundant species that will be protected at varying levels in several subareas: Carmel Mountain, 64%; East Elliott, 75%; Marron Valley, 90%; Mission Trails Regional Park, 94%; Otay Mesa, 70%; Otay River Valley, 100%; Sweetwater Reservoir, 100%; Sycamore Canyon-Fanita Ranch, 50%.</p> <p>Conditions: Area-specific management directives must include measures to protect this species from edge effects and unauthorized collection;⁴ directives should also include appropriate fire management/control practices to protect against a too frequent fire cycle.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Fremontodendron mexicanum</i> Mexican flannelbush PE/CR	Insufficient distribution data and unknown conservation level; therefore, the species is not covered by the Plan.				NO
<i>Githopsis diffusa</i> spp. <i>filicaulis</i> Mission Canyon bluecup FSC*/	Unknown conservation level and therefore not covered by the Plan.				NO
<i>Hemizonia conjugens</i> Otay tarplant PE/CE	66% of major populations	34% of major populations	Site-specific preserve design and special measures/management	Monitoring Plan - Site Specific (5 populations) and Management Plans/ Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 66% of major populations will be conserved. This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional conservation measures for the species.³</p> <p>Conditions: MSCP coverage of this species requires avoidance of populations in the Otay River Valley through sensitive design and development of the active recreation areas as described in the Otay Ranch RMP and GDP. One of the seven major populations occurs within an amendment area (Proctor Valley). At the time permit amendments are proposed, strategies to provide protection for this species within the amendment area must be included (proposed take authorization amendments will be subject to public review through CEQA and NEPA processes, and take authorization amendments require approval by CDFG and USFWS). Area-specific management directives must include specific measures for monitoring of populations, adaptive management of preserves (taking into consideration the extreme population fluctuations from year to year), and specific measures to protect against detrimental edge effects to this species.⁴</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Hemizonia floribunda</i> Tecate tarplant FSC*/	Unknown conservation levels and therefore not covered by the Plan.			NO	
<i>Lepechinia cardiophylla</i> Heart-leaved pitcher sage FSC*/	85% of major populations	15% of major populations	Preserve design/landscape level	Monitoring Plan - Habitat Based and Photo Plot	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
This species will be covered by the MSCP because 85% of major populations will be conserved. The Iron Mountain population falls within a 100% conservation area. The other three major populations fall within the County's area of undetermined development status and will receive 80-100% conservation based on the County's proposed BMO (Group A species). ⁵					
Conditions: Area-specific management directives must include: (1) specific measures to protect against detrimental edge effects; (2) specific measures to promote increase of populations; and (3) specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire (management measures to accomplish this may include prescribed fire). ⁴					
<i>Lepechinia ganderi</i> Gander's pitcher sage FSC*/	All known locations	No known locations	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Habitat Based and Photo Plot and Management Plans/ Directives	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 100% of the known locations will be conserved. This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional conservation measures for the species.³

Conditions: Area-specific management directives must include: (1) specific measures to protect against detrimental edge effects and uncontrolled access; (2) measures to promote the increase of populations; and (3) specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire (management measures to accomplish this may include prescribed fire).⁴ One of the five major populations occurs within a major amendment area (Otay Mountain). At the time permit amendments are proposed, strategies to provide protection for this species within the amendment area must be included (proposed take authorization amendments are subject to public review through CEQA and NEPA processes and require approval by CDFG and USFWS).

<i>Lotus nuttallianus</i> Nuttall's lotus FSC*/	80-100% of major populations; 92% of southern foredune habitat	0-20% of major populations; 8% of southern foredune habitat	Preserve design/landscape level	Monitoring Plan - Site Specific (1 population)	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 80-100% of the major populations will be conserved and 92% of the habitat (southern foredunes) will be conserved.

Notes: Additional important populations are found on military lands (Imperial Beach, Silver Strand) which are not part of the MSCP. The USFWS is currently working with the Navy to provide protection for this species on Silver Strand.

Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects.⁴

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Monardella hypoleuca</i> ssp. <i>lanata</i> Felt-leaved monardella none	89% of major populations	11% of major populations	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Habitat Based and Photo Plot and Management Plans/ Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p>					
<p>This species will be covered by the MSCP because 89% of major populations will be conserved. The Sequan Peak and Iron Mountain populations are identified as critical populations which will be 100% protected (San Diego County Subarea Plan). This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional specific conservation measures for this species.³ This is a Group A species in the County's proposed BMO.⁵</p>					
<p>Notes: Persistence of this species in San Diego County depends, in part, on conservation efforts outside the MSCP area.</p>					
<p>Conditions: Area-specific management directives must also include measures to protect against detrimental edge effects and uncontrolled access.⁴</p>					
<i>Monardella linoides</i> ssp. <i>viminea</i> Willow monardella PE/CE	100% of major populations	No major populations	Preserve design/landscape level	Monitoring Plan - Site Specific (2 populations) and Management Plans/ Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p>					
<p>This species will be covered by the MSCP because 100% of major populations will be conserved. Additional important populations are found on military lands (Miramar) which are not included as part of the MSCP. This species occurs in drainages and would receive protection based on Fish and Game Code 1600 agreements and federal wetlands permitting. This is a Group A species in the County's proposed BMO.⁵</p>					
<p>Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Muilla clevelandii</i> San Diego goldenstar FSC*/	73% of major populations and 38% of grasslands	27% of major populations	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Site Specific (4 populations)	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 8 of 11 major populations, 125 of 144 occurrences, and 38% of the grassland vegetation community will be conserved. The City of San Diego will avoid populations within its 25% encroachment area. The 4S Ranch population will be transplanted into an appropriate preserve area. This is a Group A species in the County's proposed BMO.⁵</p> <p>Conditions: Area-specific management directives must include monitoring of the transplanted population(s) and specific measures to protect against detrimental edge effects to this species.⁴</p>					
<i>Myosurus minimus</i> ssp. <i>apus</i> Little mousetail FSC*/	The MSCP preserve does not include adequate habitat to conserve this species.				NO
<i>Navarretia fossalis</i> Prostrate navarretia PT/	63% of only major population, 88% of vernal pool habitat	37% of only major population, 12% of vernal pool habitat may be impacted, but this habitat is subject to no net loss of function and value and 404(b)1 guidelines	Site-specific preserve design and special measures/ management	Area-specific Management Directives (wetlands)	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 63% of the one major population and 88% of vernal pool habitat will be conserved. Federal wetland regulations will provide additional protection for vernal pool habitats. This is a Group A species in the County's proposed BMO.⁵

Notes: State and federal transportation agencies will need to avoid or adequately mitigate the impacts to this species from the extension of State Route 125. An additional small population is found on military lands (Miramar) and is not included as part of the MSCP. Vernal pools incorporated into the National Wildlife Refuge System will be managed for the recovery of this species.

Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species and must incorporate measures to conserve and maintain surrounding habitat (1) for pollinators and (2) as part of the hydrological system for the vernal pools.

<i>Nolina interrata</i> Dehesa bear-grass PT/CE	90-100% of major populations	<10% of major populations	Preserve design/landscape level	Monitoring Plan - Habitat Based and Photo Plot and Management Plans/ Directives	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because: 100% of the McGinty Mountain population will be conserved; half of the Sequan Peak population is under protected ownership, and 80-100% of the other half will be conserved; and 80-100% of the Dehesa Peak population will be conserved under the County's proposed BMO (Group A species).⁷ This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional specific conservation measures for this species.³

Notes: Acquisition of the remaining portions of the population on Sequan Peak is important, and efforts are underway by CDFG.

Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects⁴ and management measures to maintain surrounding habitats for pollinators.

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Opuntia parryi</i> var. <i>serpentina</i> Snake cholla FSC*/	75% of major populations and 67% of southern maritime chaparral	25% of major populations and 33% of southern maritime chaparral	Preserve design/landscape level with site-specific consideration(s)/ management	Area-specific Management Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 75% of major populations and 67% of the southern maritime chaparral vegetation community will be conserved. This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional specific conservation measures for this species.³</p> <p>Notes: Additional important populations are found on military lands (Pt. Loma) which are not part of the MSCP.</p> <p>Conditions: Area-specific management directives must include (1) specific measures to protect against detrimental edge effects to this species⁴ and (2) translocation, where appropriate. The Otay Ranch project GDP and RMP require protection of 80% of existing occurrences and transplantation of any impacted occurrences to restored areas of comparable size.</p>					
<i>Orcuttia californica</i> California Orcutt grass FE/CE	86% of only major population, 88% of vernal pool habitat	14% of only major population may be impacted, but vernal pool habitat is subject to no net loss of function or value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/ management	Area-specific Management Directives (wetlands)	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
This species will be covered by the MSCP because 86% of the one major population will be conserved. This species is on the MSCP's list of narrow endemics, and therefore participating jurisdictions must specify in their subarea plans additional specific conservation measures for this species. ³					
Notes: A population outside of the MHPA (J-13N pool complex) is conserved within dedicated open space as mitigation for the Ramona K-mart. The USFWS will work with the Border Patrol to minimize impacts to this species. An additional small population is found on military lands (Miramar) and is not part of the MSCP.					
Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species ⁴ and measures to maintain surrounding habitats for pollinators.					
<i>Pinus torreyana</i> Torrey pine FSC*/	100% of native population	No major populations	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
This species will be covered by the MSCP because the single naturally occurring population at Torrey Pines State Reserve will be conserved and appropriately managed.					
<i>Pogogyne abramsii</i> San Diego mesa mint FE/CE	88% of vernal pool habitat	12% of vernal pool habitat may be impacted, but this habitat is subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/management	Area-specific Management Directives	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
<p>This species will be covered by the MSCP because 88% of its potential habitat (vernal pool habitat) will be conserved. Federal wetland regulations will provide additional protection for vernal pool habitats.</p>					
<p>Notes: The three major populations in the county occur on military lands (Miramar) which are not part of the MSCP. The City of San Diego has added this species to its narrow endemics list. The population at Montgomery Field was mistakenly omitted from the original mapping and has now been included. This population will be conserved and managed by the City of San Diego. Vernal pools included in the National Wildlife Refuge will be managed for recovery of this species.</p>					
<p>Conditions: Area-specific management directives must include measures to: (1) protect against detrimental effects; (2) maintain surrounding habitat for pollinators; and (3) maintain pool watershed areas.</p>					
<p><i>Pogogyne nuduscula</i> Otay Mesa mint FE/CE</p>	<p>91% of the major population, 88% of vernal pool habitat</p>	<p>9% of the major population may be impacted, and this habitat is subject to no net loss of function and value and 404(b)1 guidelines</p>	<p>Preserve design/landscape level with site-specific consideration(s)/management</p>	<p>Area-specific Management Directives</p>	<p>YES</p>

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 91% of the one major population will be conserved, and federal wetland regulations will provide additional protection for vernal pool habitats.

Notes: Twenty-six percent of the stockpan soils will be conserved, which will provide for enhancement opportunities for this species. The City of San Diego has added this species to its narrow endemics list. Vernal pools included in the National Wildlife Refuge will be managed for recovery of this species. The RMP for the Otay Ranch project includes protection for vernal pools with sensitive species.

Conditions: Area-specific management directives must include measures to: (1) protect against detrimental edge effects; (2) maintain surrounding habitat for pollinators; and (3) maintain pool watershed areas.

<i>Rosa minutifolia</i> Small-leaved rose /CE	Only known MSCP occurrence transplanted into preserve, propagation and restoration in appropriate habitat	Only known MSCP occurrence transplanted into preserve	Site-specific preserve design and special measures/management	Area-specific Management Directives (1 population)	YES
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Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

There is only one known occurrence of this species in the MSCP on Otay Mesa near Dennery Canyon. The occurrence may be a single clone, and some evidence suggests it may be a cultivar. This species will be covered by the MSCP because the only known occurrence will be conserved through the California Terraces project.

The following conditions for small-leaved rose conservation are required in the CDFG 2081 as a part of the California Terraces project:

1. The rose population shall be salvaged, propagated, and transplanted to a new location that will support a healthy, reproducing population in perpetuity. This goal shall be achieved through a 5-year program that includes site improvement, propagation, transplantation, and monitoring. (a) The rose population shall be transplanted to a suitable open space preserve location on Otay Mesa or to an alternative location subject to Department approval. Criteria in site selection shall include similar habitat, slope, aspect, soils, and hydrology as present on the existing rose site. (b) Propagation and transplanting of the rose population shall be implemented by a qualified native plant nursery/habitat restoration contractor, acceptable to the Department, and under supervision of a qualified botanist. The rose propagation shall take place over a 2-year period. Rose plants to be extirpated shall be salvaged through: (i) seed collection; (ii) preparation of cuttings from rose canes; and (iii) salvage of underground parts and transplantation. (d) Transplantation of the rose clone shall commence during the period of October-December 1997. The remaining rose clone shall be cut into a minimum of 200 clumps. Each clump possessing roots and de-caned stems shall be planted on the habitat management lands as prescribed by a qualified botanist.
2. There shall be no removal of the rose population for a 2-year period commencing from the date of planting propagated rose plants at the approved locations.
3. The progress of the rose mitigation effort shall be assessed through measurements and observations for a period of at least 5 years following implementation of rose transplantation, commencing in December 1997 and ending in July 2002. Factors to be monitored shall include growth, survival and/or establishment rate of the species, presence of introduced weeds, erosion, effects of herbivores, and any other factors important to the success of the mitigation effort. Community structure and species diversity at the mitigation site shall also be assessed. (a) Transplant success criteria over a 5-year period shall include: (i) measurable annual growth on a minimum of 50% of the rose plants; and (ii) flowering of 50% of the rose plants during a minimum of one flowering season. In the event that success criteria are not met, the project applicant shall implement remedial measures subject to Department approval.

<i>Satureja chandleri</i> San Miguel savory None	80-100% of future identified occurrences	0-20%	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Habitat Based and Photo Plot	YES
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Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because it will be conserved at the 80+% level. The County will add this species to Group A or B of the County's proposed BMO.³

Conditions: Area-specific management directives must include specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire. Management measures to accomplish this may include prescribed fire. This species will be conserved at the 80+% level.

<i>Senecio ganderi</i> Gander's butterweed FSC*/CR	90-100% of major populations	<10% of major populations	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Habitat Based and Photo Plot	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 90-100% of known major populations will be conserved. Half of the Sequan Peak population is under protected ownership, 80-100% of the other half will be conserved, and 90-100% of the McGinty Mountain population will be conserved. The El Cajon Mountain (between El Capitan and San Vicente Reservoir) population is identified as critical which requires 100% protection based on the San Diego County Subarea Plan. Occurrences in the County's areas of undetermined development status will receive 80-100% protection under the County's proposed BMO (Group A species).⁵

Notes: This species is often associated with gabbro soils which will be conserved at the 43+% level. Acquisition of the remaining portions of the population on Sequan Peak is important, and efforts are underway by CDFG.

Conditions: Area-specific management directives must include: (1) specific measures to protect against detrimental edge effects to this species;⁴ and (2) measures to address the autecology and natural history of the species.

<i>Solanum tenuilobatum</i> Narrow-leaved nightshade FSC*/	90% of major populations	10% of major populations	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Habitat Based and Photo Plot and Management Plans/ Directives	YES
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Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 90% of major populations will be conserved. Two smaller populations, Silverwood and Fernbrook, are identified as critical and will be 100% protected in the San Diego County Subarea Plan.</p> <p>Notes: This species is now taxonomically included in <i>Solanum xanti</i>.</p>					
<p><i>Tetracoccus dioicus</i> Parry's tetracoccus FSC*/</p>	<p>80-100% of major populations</p>	<p>0-20% of major populations</p>	<p>Preserve design/landscape level</p>	<p>Monitoring Plan - Habitat Based and Photo Plot</p>	<p>YES</p>

<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 80-100% of major populations will be conserved.</p> <p>Notes: Fourteen of 33 (43%) small populations are already under protected ownership. The Dehesa population is identified as critical and will be 100% protected in the San Diego County Subarea Plan. Occurrences in the County's areas of undetermined development status will receive 80-100% protection under the County's proposed BMO (Group A species).⁵ Acquisition of the remaining portions of the population on Sequan Peak is important, and efforts are underway by CDFG. This species is often associated with gabbro soils, and 43+% of the gabbro soils are within the MHPA.</p> <p>Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴</p>					
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Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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ANIMALS					
Invertebrates					
<i>Euphydryas editha quino</i> Quino checkerspot butterfly FE/	Unknown conservation level and lack of assurances that Plan will protect preferred habitat (mesa tops/grassland) and connection to known source populations, therefore, not covered by the Plan.				NO
<i>Euphyes vestris harbisoni</i> Harbison's dun skipper FSC*/	Unknown conservation level and therefore not covered by the Plan based on insufficient distribution and life history data.				NO
<i>Lycaena hermes</i> Hermes copper butterfly FSC*/	Unknown conservation level and therefore not covered by the Plan based on insufficient distribution and life history data.				NO
<i>Mitoura thornei</i> Thorne's hairstreak butterfly FSC*/	98% of Tecate cypress forest (larval host plant)	2% of Tecate cypress forest	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 98% of the major populations of its larval host plant, Tecate cypress, will be conserved. Most of the Tecate cypress forest occurs on BLM lands.</p> <p>Conditions: Area-specific management directives must manage for the host species (Tecate cypress).⁴ Management measures to accomplish this may include prescribed fire.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Panoquina errans</i> Salt marsh skipper FSC*/	93% of salt marsh habitat (1,700± acres)	7% of salt marsh habitat (120± acres) may be impacted, but this habitat is subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% of its potential habitat will be conserved.</p> <p>Conditions: Area-specific management directives must include measures to: (1) control exotic weeds and invertebrate predators, where appropriate, and (2) control access to saltmarsh habitat.⁴</p>					
<i>Branchinecta sandiegoensis</i> San Diego fairy shrimp FE/	88% of vernal pool habitat	12% of vernal pool habitat may be impacted, but this habitat is subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Area-specific Management Directives (wetlands)	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 88% of its potential habitat (vernal pool habitat) will be conserved. Federal and local wetland regulations will provide additional protection for vernal pool habitats. The Otay Ranch project RMP and GDP require protection for vernal pools with sensitive species.

Notes: Additional important habitat for this species occurs on military lands (Miramar) and is not part of the MSCP.

Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴

<i>Streptocephalus woottoni</i> Riverside fairy shrimp FE/	88% of vernal pool habitat	12% of vernal pool habitat may be impacted, but this habitat is subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Area-specific Management Directives (wetlands)	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 88% of its potential habitat (vernal pool habitat) will be conserved. Federal and local wetland regulations will provide additional protection for vernal pool habitats. The Otay Ranch project RMP and GDP require protection for vernal pools with sensitive species.

Notes: Additional important habitat for this species occurs on military lands (Miramar) and is not part of the MSCP.

Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
Reptiles and Amphibians					
<i>Bufo microscaphus californicus</i> Arroyo southwestern toad FE/SSC	All known locations (Cottonwood Creek in Marron Valley, San Vicente Creek and Santa Ysabel Creek in San Pasqual Valley, Sweetwater River, and Otay River), 78% riparian wetland areas in suitable habitat	Upland habitats adjacent to riparian wetlands (potential habitat) in undetermined status areas in Sloan Canyon - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/management	Monitoring Plan - Site Specific (7 locations) and Management Plans/Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because the MHPA preserves all known locations, and 90-95% of the upland habitats within the Marron Valley area will be conserved. Impacts to upland habitats within 1 km of riparian corridors within the MHPA will be minimized during project review by CDFG and USFWS. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Notes: Important habitat areas include the San Diego River below El Capitan Reservoir, San Vicente Creek between Sweetwater Reservoir and Loveland Reservoir, Dulzura Creek, San Pasqual Valley from Lake Hodges to Boden Canyon, Otay River, Jamul Creek, Cedar Creek, and Sycamore Creek.</p> <p>Conditions: Area-specific management directives must address the maintenance of arroyo toad through control of nonnative predators, protection and maintenance of sufficient suitable low-gradient sandy stream habitat (including appropriate water quality) to meet breeding requirements, and preservation of sheltering and foraging habitat within 1 km of occupied breeding habitat within preserve lands. Area-specific management directives must include measures to control human impacts to the species within the preserve (e.g., public education, patrol, etc.).¹ Take authorization holders must minimize impacts to upland habitats that are: within the MHPA and are within 1 km of riparian habitat that supports or is likely to support arroyo toad.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Rana aurora draytoni</i> California red-legged frog FT/SSC	72% of riparian habitats and freshwater marsh (9,500± acres)	28% of riparian habitats and freshwater marsh (3,800± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
<p>This species is believed to be extirpated from the county. Although unlikely, additional survey effort may detect red-legged frog. Therefore, this species will be covered by the MSCP because 70% of its potential habitat will be conserved. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p>					
<p>Conditions: Area-specific management directives must provide for management of any new discovered populations within the preserve.⁴</p>					
<i>Clemmys marmorata pallida</i> Southwestern pond turtle FSC*/SSC	72% of riparian habitats and freshwater marsh (9,501± acres)	28% of riparian habitats and freshwater marsh (3,800± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Habitat Based and Management Plans/Directives	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 72% of its potential habitat will be conserved. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.

Conditions: Maintain and manage areas with 1500 feet around known locations within preserve lands for the species. Within this impact avoidance area, human impacts will be minimized, non-native species detrimental to pond turtles will be controlled/removed, and habitat restoration/enhancement measures will be implemented.

<i>Cnemidophorus hyperythrus</i> <i>beldingi</i> Orange-throated whiptail FSC*/SSC	59% of potential habitat (129,600± acres) - 64% of coastal sage scrub, 60% of maritime succulent scrub, 54% of chaparral, 67% of southern maritime chaparral, 44% of coastal sage/chaparral - 62% of known point occurrences	41% of potential habitat (89,800± acres) - 38% of known point occurrences	Preserve design/landscape level	Monitoring Plan - Site Specific (pit traps at 12 locations)	YES
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Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 59% of its potential habitat and 62% of known point occurrences will be conserved. Habitat linkages between large blocks of protected lands are conserved in a functional manner. Monitoring of populations and adaptive management of preserves will occur as a result of plan implementation.

Notes: This species also occurs extensively on military lands.

Conditions: Area-specific management directives must address edge effects.⁴

<i>Phrynosoma coronatum blainvillei</i> San Diego horned lizard FSC*/SSC	60% of potential habitat (132,000± acres) - 64% of coastal sage scrub, 54% of chaparral, 44% of coastal sage/chaparral, 80% of riparian scrub - 63% of known point occurrences	40% of potential habitat (89,700± acres) - 37% of known point occurrences	Preserve design/landscape level	Monitoring Plan - Site Specific (pit traps at 12 locations)	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 60% of its potential habitat and 63% of known point occurrences will be conserved. Habitat linkages between large blocks of protected lands are conserved in a functional manner. Monitoring of populations and adaptive management of preserves will occur as a result of plan implementation.

Conditions: 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.⁴

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
Birds					
<i>Pelecanus occidentalis californicus</i> California brown pelican FE/CE	91% of roosting and foraging habitat (2,900± acres) - 93% of southern coastal saltmarsh, 88% of natural flood channel, 90-95% of beach outside of intensively used recreational beaches	9% of roosting and foraging habitat (270± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
This species will be covered by the MSCP because 91% of roosting and foraging habitat within the MSCP Plan area will be conserved. No new development of beaches is authorized which will result in 90-95% protection of beach habitat that is outside of intensively used beach areas.					
Notes: Most of the important roosting and foraging habitat occurs on military lands and waters under Port Authority jurisdiction which are not included as part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. This species is a common to very common non-breeding visitor which uses mud flats, piers, jetties, etc. to roost, and it forages primarily in coastal ocean waters and San Diego Bay.					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Egretta rufescens</i> Reddish egret FSC*/	92% of potential habitat (2,700± acres)- 93% of southern coastal saltmarsh, 99% of saltpan, 88% of natural flood channel	8% of potential habitat (230± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
This species will be covered by the MSCP because 90% of its potential habitat will be conserved.					
Notes: Additional important habitat occurs in waters under Port Authority and military jurisdiction which are not included as part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. This species forages in shallow lagoons, mud flats, tidal channels, and salt marsh. This species is a rare visitor in fall and winter and a casual visitor in spring and summer but does not nest in San Diego County.					
<i>Plegadis chihi</i> White-faced ibis FSC*/SSC	80% of potential habitat (1,200± acres) - 68% of freshwater marsh, 88% of natural flood channel; additionally 1,800± acres of agricultural land will be conserved	20% of potential habitat (300± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 78% of its potential habitat will be conserved. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. The preserve management plan for the City of San Diego cornerstone lands must include protection and management of potential nesting habitat at Lake Hodges.

Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴

<i>Branta canadensis</i> Canada goose none	8,200± acres of potential habitat	1,100± acres of potential habitat - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

Although not considered sensitive, this species has aesthetic and intrinsic values and is a regulated game species, thereby being an important species to protect. This species will be covered by the MSCP because 8,200± acres of its potential habitat will be conserved, including open water areas for loafing. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Haliaeetus leucocephalus</i> Bald eagle FT/CE	89% of potential foraging habitat (wetlands, 5,719± acres), 68% of freshwater marsh, 92% of open water. In addition, foraging opportunities on 100,000+ acres will be conserved.	11% of potential foraging habitat (wetlands, 692± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 89% of its potential foraging habitat (open water and freshwater marsh) will be conserved. Bald eagles are a rare winter visitor which require perching and roosting sites adjacent to open water and marshes. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p>					
<i>Circus cyaneus</i> Northern harrier /SSC	42% of potential nesting habitat (12,000± acres) - 93% of saltmarsh, 68% of freshwater marsh, and 38% of grasslands - 85,000± acres of potential foraging habitat	58% of potential nesting habitat (16,300± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Habitat Based and Management Plans/Directives (nest sites)	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species is an uncommon migrant, winter visitor, and rare summer resident/breeder. This species will be covered by the MSCP because 42% of its potential nesting habitat and 85,000± acres of its potential foraging habitat will be conserved. The plan will not adversely affect the species' long-term survival.

Notes: Harriers tolerate patchiness in their habitat, exhibit nest area fidelity, and forage within 4 miles of their nests. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. Active nesting areas include:

Tijuana River Valley - The City of San Diego Subarea Plan includes conservation of two known nesting sites in the Tijuana River Valley and maintenance of some agricultural lands (available for foraging harriers) within the Tijuana River Valley Regional Park. The Tijuana National Estuarine Sanctuary will continue to enhance marshlands and manage for nesting harriers. Some existing grasslands and agricultural lands at the outer limits of the foraging distance for nesting harriers will be developed. With the addition of over 4,000 acres of agricultural and disturbed lands to the City of San Diego's preserve (in comparison with the March 1995 preserve design), adequate foraging areas within this area are conserved. Food production for harriers on preserve lands can be enhanced.

South San Diego Bay/Sweetwater Marsh - The City of San Diego Subarea Plan includes conservation of one known nesting site in the Sweetwater Marsh area. All nesting and foraging habitat within 4 miles of the known nesting site will be conserved. Upland habitat enhancement opportunities exist at the D Street fill area.

Proctor Valley - Proctor Valley includes a historical nesting location (1970s). Over 80% of the Proctor Valley area will be conserved, with most of the development occurring in the upper portion of the valley, away from the more likely nesting areas.

Conditions: Area-specific management directives must: (1) manage agricultural and disturbed lands (which become part of the preserve) within 4 miles of nesting habitat to provide foraging habitat; (2) include an impact avoidance area (900 feet or maximum possible within the preserve) around active nests; and (3) include measures for maintaining winter foraging habitat in preserve areas in Proctor Valley, around Sweetwater Reservoir, San Miguel Ranch, Otay Ranch east of Wueste Road, Lake Hodges, and San Pasqual Valley. The preserve management coordination group shall coordinate efforts to manage for wintering northern harriers' foraging habitat within the MSCP preserve.

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Accipiter cooperii</i> Cooper's hawk /SSC	59% of potential foraging habitat (133,400± acres) (47% of oak woodland, 58% of oak riparian, 64% of coastal sage scrub, 54% of chaparral, 44% of coastal sage scrub/chaparral - 57% of known localities) and 52% (5,705± acres) of potential nesting habitat (58% of oak riparian and 47% of oak woodland)	41% of potential foraging (93,900± acres) and 48% of potential nesting habitat (5,200± acres)	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Habitat Based and Management Plans/Directives (site-specific nest territories)	YES

DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 59% of potential foraging habitat, 52% of potential nesting habitat, and 57% of known occurrences will be conserved.

Conditions: In the design of future projects within the Metro-Lakeside-Jamul segment, preserve areas shall conserve patches of oak woodland and oak riparian forest of adequate size for nesting and foraging habitat. 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.⁴

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Buteo swainsoni</i> Swainson's hawk /CT	22% of foraging habitat (11,600± acres) - 38% of grassland, 6% of agricultural fields	78% of foraging habitat (42,000± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based (10 grassland locations)	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species is an extremely rare visitor during migration which forages in grasslands and agricultural fields. This species will be covered by the MSCP because more than 11,000 acres of potential foraging habitat will be conserved.</p> <p>Notes: The plan will not adversely affect the <u>species</u>' long-term survival. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas. This species is a rare migrant through the area.</p>					
<i>Buteo regalis</i> Ferruginous hawk FSC*/SSC	22% of foraging habitat (11,600± acres) - 38% of grassland, 6% of agricultural fields	78% of foraging habitat (42,000± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based (10 grassland locations)	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered because 11,600± acres of potential foraging habitat will be conserved. This species is an uncommon winter visitor which forages in grasslands and agricultural fields.</p> <p>Notes: The plan will not adversely affect the <u>species</u>' long-term survival. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas. This species is not known to nest within the MSCP study area.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Aquila chrysaetos</i> Golden eagle BEPA/SSC	53% of potential foraging/nesting habitat (coastal sage scrub, chaparral, grassland and oak woodland) (139,000+ acres) - large blocks of habitat conserved in the eastern portion of the plan area where active nesting territories exist. Of the 11 active nesting territories (based on information from the Golden Eagle Survey Project, San Diego) which are fully or partially within the MSCP plan area, 7 nesting territories should remain viable.	Viability of 4 of the 11 active nesting territories (partially or fully within the plan area)	Preserve design/landscape level with site-specific consideration(s)/management	Monitoring Plan - Habitat Based and Management Plans/Directives (site-specific nest territories)	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 53% of potential foraging and nesting habitat will be conserved. Local populations are not critical to, and the plan will not adversely affect, the species' long-term survival.

Notes: Fourteen active nesting territories occur primarily outside of the MSCP area (east and northeast of the plan area). Plans developed for these areas should include measures to conserve adequate habitat to maintain their viability. The following is an analysis of the plan's effects on each nesting territory within the MSCP study area:

1. Rancho San Diego- development under the plan will result in <10% loss of habitat in the nesting territory; nesting territory should remain viable.
2. East Otay Mountain- development under the plan will result in <5% loss of habitat in the nesting territory; nesting territory should remain viable.
3. Sequan Peak- between 30% and 40% of the habitat in the nesting territory could be developed; the nesting territory may not remain viable, but the steepness of the areas that could be developed may preclude enough development to keep the territory viable.
4. Loveland Reservoir- development under the plan will result in <20% loss of habitat in the nesting territory; nesting territory should remain viable.
5. Lake Jennings- between 40% and 60% of the habitat in the nesting territory could be developed under the plan; the nesting territory may not remain viable.
6. El Capitan- development under the plan will result in <15% loss of habitat within the nesting territory; the territory should remain viable.
7. San Vicente Reservoir- development under the plan will result in <30% of the high quality golden eagle habitat being developed, although low quality habitat (steep chaparral) could be developed, resulting in greater habitat loss within the nesting territory (although high density development is not likely to occur because of the steep slopes); the nesting territory may not be viable.
- 8 and 9. San Pasqual (two nesting territories)- development under the plan will result in <20% loss of habitat in the nesting territory; both nesting territories should remain viable.
10. Santee- development under the plan could result in 30%-40% loss of habitat in the nesting territory; nesting territory may not remain viable, although a significant amount of foraging habitat (Miramar and Mission Trails) occurs just outside of the territory and within normal foraging distances.
11. Lake Hodges- development under the plan will result in <20% loss of habitat in the nesting territory; nesting territory should remain viable.

Conditions: Area-specific management directives for areas with nest sites must include measures to avoid human disturbance while the nest is active, including establishing a 4,000-foot disturbance avoidance area within preserve lands.⁴ Area-specific management directives must also include monitoring of nest sites to determine use/success.

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Falco peregrinus anatum</i> American peregrine falcon FE/CE	61% of historic nesting sites - 58% of foraging habitat (89,400± acres) - 93% southern coastal saltmarsh, 99% of saltpan, 68% of freshwater marsh, 92% of open water, 88% of natural flood channel, 64% of coastal sage scrub, 38% of grassland	39% of foraging habitat (57,000± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
This species will be covered by the MSCP because more than 89,000 acres of potential foraging habitat will be conserved.					
Notes: This species has very low population numbers in the county, being primarily a rare fall and winter visitor. All three nest sites occur outside of the MHPA: one on Coronado Bridge, one on a crane in Port Authority jurisdiction, and one on Pt. Loma federal lands. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.					
<i>Rallus longirostris levipes</i> Light-footed clapper rail FE/CE	93% of potential habitat (1,700± acres of southern coastal saltmarsh)	7% of potential habitat (120± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Site-specific preserve design and special measures/management	Management Plans/Directives	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 93% of its habitat will be conserved.

Notes: Additional important habitat is found on military lands (Silver Strand) which are not included as part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.

Conditions: Area-specific management directives must include active management of wetlands to ensure a healthy tidal saltmarsh environment and specific measures to protect against detrimental edge effects to this species.⁴

<i>Charadrius alexandrinus nivosus</i> Western snowy plover FT/SSC	93% of potential habitat (650± acres) - 99% of saltpan, 90-95% of beach outside of intensively used recreational beaches	7% of potential habitat (46± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/management	Area-specific Management Directives	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 93% of its potential habitat will be conserved. All breeding activity of western snowy plovers in the county occurs in saltpan habitat. No new development of beaches is authorized, which will result in 90-95% conservation of beach habitat that is outside of intensively used beach areas.

Notes: Additional important habitat is found on military lands (Silver Strand) which are not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.

Conditions: Area-specific management directives must include protection of nesting sites from human disturbance during the reproductive season and specific measures to protect against detrimental edge effects to this species.⁴ Incidental take (during the breeding season) associated with maintenance/removal of levees/dikes is not authorized except as specifically approved on a case-by-case basis by the wildlife agencies.

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Charadrius montanus</i> Mountain plover C/SSC	22% of potential foraging habitat (11,600± acres) - 38% of grassland, 6% of agricultural fields	78% of potential foraging habitat (41,100± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because over 11,000 acres of potential foraging habitat will be conserved. The plan will not adversely affect the <u>species'</u> long-term survival.</p> <p>Notes: This species is an uncommon winter visitor (primarily in the Tijuana River Valley) that forages in grasslands and agricultural fields. The MSCP conservation requirement for the Tijuana River Valley area is primarily 94%, with a small area identified as 75%.</p> <p>Conditions: Area-specific management directives for the Tijuana River Valley should specifically address the habitat requirements for this species.⁴</p>					
<i>Numenius americanus</i> Long-billed curlew FSC*/SSC	24% of potential foraging habitat (13,500± acres) - 93% of southern coastal saltmarsh, 99% of saltpan, 38% of grassland, 6% of agricultural fields	76% of potential foraging habitat (42,800± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species is a fairly common migrant and winter visitor.

Notes: This species will be covered by the MSCP because more than 13,500 acres of potential foraging habitat will be conserved. The plan will not adversely affect the species' long-term survival. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas. Additional habitat occurs on military lands (Silver Strand, San Diego Bay) which are not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.

<i>Sterna elegans</i> Elegant tern FSC*/SSC	93% of potential habitat (650± acres) - 99% of saltpan, 90-95% of beach outside of intensively used recreational beaches	7% of potential habitat (46± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/management	Area-specific Management Directives	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 93% of its potential habitat will be conserved.

Notes: All breeding activity of elegant terns in the county occurs in saltpan habitat. No new development of beaches is authorized, which will result in 90-95% protection of beach habitat that is outside of intensively used beach areas. Additional important foraging habitat (bay waters) is under the jurisdiction of the Port Authority and military and is not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.

Conditions: Area-specific management directives must include protection of nesting sites from human disturbance during reproductive season and specific measures to protect against detrimental edge effects to this species.⁴ Incidental take (during the breeding season) associated with maintenance/removal of levees/dikes is not authorized except as specifically approved on a case-by-case basis by the wildlife agencies.

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Sterna antillarum browni</i> California least tern FE/CE	93% of potential habitat (650+ acres) -99% of saltpan, 90-95% of beach outside of intensively used recreational beaches	7% of potential habitat (46+ acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Area-specific Management Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% of its potential habitat will be conserved.</p> <p>Notes: No new development of beaches is authorized, which will result in 90-95% conservation of beach habitat that is outside of intensively used beach areas. Additional important breeding habitat occurs on military lands (North Beach, Silver Strand, Naval Training Center) and is not part of the MSCP. Additional important foraging habitat (bay waters) is under the jurisdiction of the Port Authority and the military and is not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must include protection of nesting sites from human disturbance during reproductive season, predator control, and specific measures to protect against detrimental edge effects to this species.⁴ Incidental take (during the breeding season) associated with maintenance/removal of dikes/levees, beach maintenance/enhancement is not authorized except as specifically approved on a case-by-case basis by the wildlife agencies.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Speotyto cunicularia hypugaea</i> Burrowing owl FSC*/SSC	4 known locations (Spring Canyon, northeast of Brown Field, Lake Hodges), 8 known locations within major amendment area (South County segment), 4,000± acres of known habitat	8 known locations (Otay Ranch, San Pasqual Valley, and South County at border), 5,000± acres of known habitat	Site-specific preserve design and special measures/management	Monitoring Plan (10 grassland locations) and Area-specific Management Directives	YES

DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 5,770± acres of potential and 4,000± acres of known suitable habitat (grassland vegetation community) will be conserved, including portions of Spring Canyon, San Pasqual Valley, Lake Hodges, Otay Mesa northeast of Brown Field, Otay Ranch, Otay River Valley, and Future Urbanizing Area 4.

Notes: Habitat enhancement opportunities for the species occur in the Spring Canyon, San Pasqual Valley, Lake Hodges, Otay Mesa northeast of Brown Field, Otay Ranch, Otay River Valley, and Future Urbanizing Area 4. The wildlife agencies will enhance and manage lands within their ownership to allow for relocation of burrowing owls, particularly in conjunction with burrowing owl removal programs in areas where their presence conflicts with nesting of California least terns. The wildlife agencies will attempt to achieve additional conservation of occupied burrowing owl habitat or habitat suitable for restoration using state and federal acquisition resources. Persistence of the species in San Diego County is also dependent on adequate conservation of known concentrations in the Santa Maria Valley in the vicinity of Ramona.

Conditions: During the environmental analysis of proposed projects, burrowing owl surveys (using appropriate protocols) must be conducted in suitable habitat to determine if this species is present and the location of active burrows. If burrowing owls are detected, the following mitigation measures must be implemented: within the MHPA, impacts must be avoided; outside of the MHPA, impacts to the species must be avoided to the maximum extent practicable; any impacted individuals must be relocated out of the impact area using passive or active methodologies approved by the wildlife agencies; mitigation for impacts to occupied habitat (at the subarea plan specified ratio) must be through the conservation of occupied burrowing owl habitat or conservation of lands appropriate for restoration, management, and enhancement of burrowing owl nesting and foraging requirements.

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>Management plans/directives must include: enhancement of known, historical, and potential burrowing owl habitat and management for ground squirrels (the primary excavator of burrowing owl burrows). Enhancement measures may include creation of artificial burrows and vegetation management to enhance foraging habitat. Management plans must also include: monitoring of burrowing owl nest sites to determine use and nesting success; predator control; and establishing a 300 foot-wide impact avoidance area (within the preserve) around occupied burrows.⁴</p>					
<p>Eight known burrowing owl locations occur within major amendment areas of the South County Segment of the County Subarea Plan, and the conservation of occupied burrowing owl habitat must be one of the primary factors in preserve design during the permit amendment process.</p>					
<p><i>Empidonax traillii extimus</i> Southwestern willow flycatcher FE/CE</p>	<p>76% of potential habitat (4,900± acres) - 93% of riparian woodland, 80% of riparian scrub - 88% of known localities</p>	<p>24% of potential habitat (1,400± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines</p>	<p>Preserve design/landscape level with site-specific consideration(s)/management</p>	<p>Monitoring Plan -Habitat Based and Area-specific Management Directives</p>	<p>YES</p>
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 4,900± acres (76%) of potential habitat will be conserved.</p> <p>Conditions: Jurisdictions must require surveys (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted and incorporate mitigation measures consistent with the 404(b)1 guidelines into the project. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. For new developments adjacent to preserve areas that create conditions attractive to brown-headed cowbirds, jurisdictions must require monitoring and control of cowbirds. Area-specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species. Any clearing of occupied habitat must occur between September 1 and May 1 (i.e., outside of the nesting period).</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Campylorhynchus brunneicapillus couesi</i> Coastal cactus wren FSC*/SSC	60% of maritime succulent scrub habitat in large contiguous blocks (850± acres)	40% of maritime succulent scrub habitat in small isolated blocks (580± acres)	Site-specific preserve design and special measures/management	Monitoring Plan - Site Specific (31 locations) and Management Plans/ Directives	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
<p>This species is covered because four of five major populations are conserved, including populations at Lake Hodges/San Pasqual Valley, Lake Jennings, South Sweetwater Reservoir/San Miguel Ranch, and Salt Creek/Otay Mesa, and 60% (850 ± acres) of potential habitat will be conserved, allowing for expansion of the populations with management.</p>					
<p>Notes: This species also uses other habitat types (coastal sage scrub and chaparral) containing cactus patches. Small clusters of birds at Black Mountain and Spring Valley will also be conserved. Conservation of the Salt Creek population is critical to the persistence of the species in San Diego County, and it would only be conserved under the City of Chula Vista's "Modified GDP B" alternative. The existing distribution of cactus wrens in the MSCP Plan area has been greatly reduced, and restoration of suitable cactus wren habitat and its management are important components of the MSCP Plan. Significant opportunities for restoration within the MHPA occur on Otay Ranch, Spring Canyon (and adjacent areas), Dennery Canyon, San Miguel Ranch, Lake Hodges/San Pasqual Valley, Otay River Valley, and Santee/Lake Jennings. The participating jurisdictions should seek OHV funds for restoration, as much of these areas has been heavily impacted by OHVs. The City of San Diego already has acquired habitat in Spring Canyon as mitigation. The City of San Diego and the wildlife agencies have agreed to make restoration of maritime succulent scrub in Spring Canyon a high priority. The USFWS also will make restoration of maritime succulent scrub a high priority on any lands it acquires in Spring Canyon.</p>					
<p>Conditions: The restoration of maritime succulent scrub habitat as specified in the Otay Ranch RMP and GDP must occur at the specified 1:1 ratio. Area-specific management directives must include restoration of maritime succulent scrub habitat, including propagation of cactus patches, active/adaptive management of cactus wren habitat, monitoring of populations within preserves, and specific measures to reduce or eliminate detrimental edge effects.⁴ No clearing of occupied habitat may occur from the period February 15 through August 15.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Poliptila californica californica</i> California gnatcatcher FT/SSC	73,300± acres of coastal sage scrub and interdigitated habitats in an interconnected network of preserves	67,300± acres of coastal sage scrub and interdigitated habitats	Preserve design/landscape level	Area-specific Management Directives (31 locations)	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because: over 73,300 acres of existing and potential gnatcatcher habitat will be conserved and linked together; over 81% of the core areas where the species occurs (Otay, San Miguel, Mission Trails, Santee, Kearny Mesa, Poway, San Pasqual, and Lake Hodges) will be conserved; and 65% (1,819 of 2,814) of the known locations will be conserved.</p> <p>Notes: 68% (57,874 acres) of habitat supporting core gnatcatcher populations, 70% (30,273 acres) of Very High value and 62% High value (4,609 acres) gnatcatcher coastal sage scrub habitat will be conserved. Critical habitat linkages between core areas will be conserved in a functional manner, with a minimum of 75% of the habitat within identified linkages conserved. Populations of this species also occur on military lands which are not part of the MSCP.</p> <p>Conditions: Area-specific management directives must include measures to reduce edge effects and minimize disturbance during the nesting period, fire protection measures to reduce the potential for habitat degradation due to unplanned fire, and management measures to maintain or improve habitat quality including vegetation structure.⁴ No clearing of occupied habitat within the cities' MHPAs and within the County's Biological Resource Core Areas may occur between March 1 and August 15.</p>					
<i>Sialia mexicana</i> Western bluebird none	59% of potential habitat (15,500± acres) - 58% of oak riparian forest, 47% of oak woodland, 38% of grassland	41% of potential habitat (12,100± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because over 15,000 acres of habitat will be conserved.

Notes: Persistence of this species in San Diego County depends largely on conservation of existing large populations on public lands east of the MSCP Plan area.

<i>Vireo bellii pusillus</i> Least Bell's vireo FE/CE	81% of potential habitat (1,700± acres) - 93% of riparian woodland, 58% of oak riparian forest - 82-100% of major populations	19% of potential habitat (400± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/management	Monitoring Plan - Habitat Based and Management Plans/Directives	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 1,700± acres (81%) of potential habitat will be conserved.

Conditions: Jurisdictions will require surveys (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted and incorporate mitigation measures consistent with the 404(b)1 guidelines into the project. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. Jurisdictions must require new developments, adjacent to preserve areas that create conditions attractive to brown-headed cowbirds, to monitor and control cowbirds. Area-specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species.⁴ Any clearing of occupied habitat must occur between September 15 and March 15 (i.e., outside of the nesting period).

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Aimophila ruficeps canescens</i> California rufous-crowned sparrow FSC*/SSC	61% of potential habitat (73,600± acres) - 64% of coastal sage scrub, 60% of maritime succulent scrub, 44% of coastal sage/chaparral - 71% of mapped localities	39% of potential habitat (46,600± acres) - 29% of mapped localities	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 61% (73,600± acres) of potential habitat (including 71% of mapped localities) will be conserved.</p> <p>Notes: This species is tolerant of edge effects, small habitat patches, low shrub volume, and short-term habitat disturbance.</p> <p>Conditions: 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.⁴</p>					
<i>Passerculus sandwichensis beldingi</i> Belding's Savannah sparrow FSC*/CE	93% of potential habitat (1,700± acres of southern coastal saltmarsh) - 71% of mapped localities	7% of potential habitat (120± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based and Management Plans/Directives	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 93% (1,700± acres) of potential habitat (including 71% of mapped localities) will be conserved, and the remaining acres (120±) are subject to no net loss of value and function.

Notes: Additional important habitat is found on military lands (Silver Strand, North Island, etc.) which are not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.

Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴

<i>Passerculus sandwichensis rostratus</i> Large-billed Savannah sparrow FSC*/SSC	93% of potential habitat (1,700± acres) of southern coastal saltmarsh - 50% of mapped localities	7% of potential habitat (120± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based and Management Plans/Directives	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 93% (1,700± acres) of potential habitat (including 50% of mapped localities) will be conserved, and the remaining acres (120±) are subject to no net loss of value and function.

Notes: Additional important habitat is found on military lands (Silver Strand, North Island, etc.) which are not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.

Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Ammodramus savannarum</i> Grasshopper sparrow none	This species will not be covered by the MSCP because insufficient information is available to determine if adequate habitat is conserved.			NO	
<i>Agelaius tricolor</i> Tricolored blackbird FSC*/SSC	77% of breeding habitat (4,800± acres) - 68% of freshwater marsh, 80% of riparian scrub - 59% of known localities	23% of breeding habitat (1,400± acres)	Preserve design/landscape level	Management Plans/ Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 77% of potential habitat (including 59% of mapped localities) will be conserved. Breeding colonies move from season to season, and with a goal of no net loss of wetlands, most of the suitable breeding sites will continue to be available. This species forages in grasslands and agricultural fields near its breeding habitat. Foraging habitat near the known nesting colonies will be conserved at 70-100%. Additionally, foraging opportunities will continue to be provided and created in turfed areas such as golf courses and cemeteries. Jurisdictions will require surveys during the CEQA review process in suitable breeding habitat proposed to be impacted. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Project approvals must require avoidance of active nesting areas during the breeding season. Area-specific management directives must include measures to avoid impacts to breeding colonies and specific measures to protect against detrimental edge effects to this species.⁴</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
Mammals					
<i>Corynorhinus townsendii pallescens</i> Townsend's western big-eared bat FSC*/SSC	Unknown/Insufficient data on distribution and life history.				NO
<i>Eumops perotis californicus</i> California mastiff bat FSC*/SSC	Unknown/Insufficient data on distribution and life history.				NO
<i>Perognathus longimembris pacificus</i> Pacific pocket mouse FE/SSC	Unknown/Only 3 to 4 known populations in Southern California. Insufficient data on distribution and life history.				NO
<i>Taxidea taxus</i> American badger /SSC	58% of potential habitat (82,500± acres) - 38% of grassland, 64% of coastal sage scrub, 44% of coastal sage/chaparral	42% of potential habitat (58,300± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 82,500± acres (58%) of its potential habitat will be conserved.

Notes: This species has a wide range, and the plan will not adversely affect the species' long-term survival. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas.

Conditions: Area-specific management directives must include measures to avoid direct human impacts to this species if it is present or likely to be present.⁴

<i>Felis concolor</i> Mountain lion /protected	81% of core areas 5, 6, 7, 8, 9, 11, and 12 (105,000± acres) - connected by linkages C, D, N	19% of core areas (24,000± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based and Corridor Sites	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 81% of the core areas (105,000± acres) that support its habitat will be conserved.

Notes: Although not considered sensitive, this species has aesthetic and intrinsic values, thereby being an important species to protect. This species has a wide range, and the plan will not adversely affect the species' long-term survival. The criteria used to define core and linkage areas involve maintaining ecosystem function and processes, including large animal movement. Each core area is connected to other core areas or to habitat areas outside of the MSCP either through common boundaries or through linkages. Core areas have multiple connections to help ensure that the balance in the ecosystem will be maintained. An extensive monitoring program will be implemented by the wildlife agencies to detect unanticipated changes in ecosystem function and allow for adaptive management of the preserve system. Specific design criteria for linkages and road crossings/undercrossings are included in subarea plans.

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Odocoileus hemionus fuliginata</i> Southern mule deer none	81% of core areas 5, 6, 7, 8, 9, 11, and 12 (105,000± acres) - connected by linkages C, D, N	19% of core areas (24,000± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based and Corridor Sites	YES

DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 81% of the core areas (105,000± acres) that support its habitat will be conserved.

Notes: Although not considered sensitive, this broadly distributed species has aesthetic and intrinsic values, and is the only large native herbivore in the plan area, thereby making it an important species to protect. The criteria used to define core and linkage areas involve maintaining ecosystem function and processes, including large animal movement. Each core area is connected to other core areas or to habitat areas outside of the MSCP either through common boundaries or through linkages. Core areas have multiple connections to help ensure that the balance in the ecosystem will be maintained. An extensive monitoring program will be implemented by the wildlife agencies to detect unanticipated changes in ecosystem function and allow for adaptive management of the preserve system. Specific design criteria for linkages and road crossings/undercrossings are included in subarea plans.

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

¹ Status (Federal/State)

FE=Federally Endangered

PE=Proposed for federal listing as Endangered

FT=Federally Threatened

PT=Proposed for federal listing as Threatened

C=Candidate for federal listing

FSC* = Federal species of concern; formerly Category 2 or Category 3 candidate for federal listing.

FSC† = Federal species of concern; proposed federal rule to list as Endangered or Threatened has been withdrawn.

Shading indicates federally and state listed species, species proposed for listing, candidate species, and NCCP target species.

BEPA = Bald Eagle Protection Act

CE = State Endangered

CR = State Rare

CT = State Threatened

SSC = State Species of Special Concern

protected = moratorium on hunting

none = no federal or state status

² This column indicates the conservation level for the species. Not all major populations are in the GIS database, i.e., if specific locality data are lacking. In these cases, the percentage of major populations preserved is determined or estimated from the percentage of associated habitat in the MHPA.

³ Measures to conserve population of species on the MSCP Plan's narrow endemic list must be incorporated into the subarea plans that do not have preserve/development areas specifically delineated based on site-specific surveys. The City of San Diego's and the County of San Diego's Subarea Plan areas are primarily where this requirement is applicable, and both subarea plans specify MSCP narrow endemic species conservation measures. Within the City of San Diego's MHPA, populations of MSCP narrow endemic species will be avoided.

The County will conserve MSCP narrow endemic species using a process that: (1) requires avoidance to the maximum extent possible; (2) allows for a maximum 20% encroachment into a population if total avoidance is not possible; and (3) requires mitigation at a 1:1 to 3:1 ratio (in-kind) for impacts if (1) avoidance and (2) minimization of impacts would result in no reasonable use of the property. The County requirements for (1) avoidance, (2) minimization, and (3) mitigation are specifically described in the County's proposed Biological Mitigation Ordinance (BMO).

⁴ Area-specific management directives for preserve areas will include specific guidelines for managing and monitoring covered species and their habitats, including following best management practices. Edge effects may include (but are not limited to) trampling, dumping, vehicular traffic, competition with invasive species, parasitism by cowbirds, predation by domestic animals, noise, collecting, recreational activities, and other human intrusion.

⁵ The County's proposed BMO includes a list of sensitive plant species (Groups A and B) that require special consideration in project design. The County will conserve Groups A and B species using a process that: (1) requires avoidance to the maximum extent possible; (2) allows for a maximum 20% encroachment into a population if total avoidance is not possible; and (3) requires mitigation at a 1:1 to 3:1 ratio (in-kind) for impacts if (1) avoidance and (2) minimization of impacts would result in no reasonable use of the property.

Source: 1996 MSCP GIS database. Military lands excluded from analysis.

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APPENDIX 5

Short-leaved Dudleya Enhancement and Restoration Plan for the Carmel Mountain Preserve

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Short-leaved Dudleya Enhancement and Restoration Plan for the Carmel Mountain Preserve, San Diego, California

Prepared by

Mark Doderio, Biologist

Bobbie Stephenson, Biologist

April 2005

1.0 Introduction

1.1 Existing Locations of Short-leaved Dudleya

The five remaining natural populations of short-leaved dudleya (*Dudleya blochmaniae* ssp. *brevifolia*) are found on sandstone mesas of the Del Mar and La Jolla region of San Diego County. Carmel Mountain and the main portion of Torrey Pines State Park nearby, support the largest populations of short-leaved dudleya. Smaller populations are found at Crest Canyon in Del Mar Heights; Skeleton Canyon at the University of California, San Diego (UCSD); and the Torrey Pines State Park extension north of Peñasquitos Lagoon. The short-leaved dudleya populations are in southern maritime chaparral within the fog belt of coastal San Diego County.

1.2 Purpose, Goals, and Objectives

The purpose of this Plan is to establish management procedures to ensure that the subpopulations of the short-leaved dudleya, a species that is extremely restricted in range, is not extirpated on Carmel Mountain. To this end, the following goals have been established for the Carmel Mountain Preserve:

Goal: Protect and preserve the existing subpopulations of short-leaved dudleya.

Objective: Eliminate disturbance within the existing short-leaved dudleya populations to minimize weed invasions and damage to the dudleya from trampling and vehicles.

Goal: Expand the existing populations of short-leaved dudleya.

Objective: To maintain and enhance the genetic diversity of the dudleya populations to make them more resistant to stochastic changes

Goal: Establish new populations with a minimum of 10,000 short-leaved dudleya.

Objective: To reduce the risk of population losses due to catastrophic events such as fire and resulting weed invasions.

2.0 Management Actions

The goals and objectives will be successfully attained by implementing the management actions.

Goal: Protect and preserve the existing subpopulations of short-leaved dudleya.

Objective: Eliminate disturbance within the existing short-leaved dudleya populations.

Action A: Reroute trails and roads to avoid the subpopulations and to protect the subpopulations from trampling by humans, bicycles and other vehicles, and horses.

Action B: Allow the subpopulations to fill in open spots within the perimeter of the existing populations and to expand outward into newly protected areas for three years before beginning active restoration procedures. Monitor the subpopulations each spring.

Action C: Monitor the subpopulations once yearly for three years.

Close roads bisecting existing habitat by implementation of the proposed trail and road closure program included in this document and through future cooperative agreements with SDG&E and private inholding landowners.

Action C: Restore disturbed habitat inside the perimeter of each of the three subpopulations.

Goal: Expand the existing self-sustaining populations of short-leaved dudleya.

Objective: Restore habitat adjoining the subpopulations.

Action A: Choose an adjoining area with the same physical characteristics as those of the existing subpopulations.

Action B: Remove weedy species by hand or using hand tools.

Preserve, protect, restore, and enhance sandstone terraces dominated by ashy spike-moss and other microbotic species as habitat for new populations of short-leaved dudleya.

- Reroute foot, bike, and horse trails around existing subpopulations of short-leaved dudleya and potential population expansion areas.
- Enter into an MOU between the City of San Diego and CDFG to allow for collection of 5 percent or less of the seed crop from the Carmel Mountain population annually for a period of approximately 10 years.
- Germinate seed to produce plants for captive seed production.
- Use propagated seed to directly seed appropriate restoration and enhancement sites.
- Propagate short-leaved dudleya from seed to grow mature plants for translocation into existing and new population sites.
- Repair of tire ruts with hand tools in areas where repair activities will not adversely affect existing sensitive species or microbotic crusts.
- Implement an exotic plant control measure in short-leaved dudleya habitat. Control measures can include hand removal using cutting devices that minimize soil disturbance, the use of leaf blowers/vacuums to remove weed seeds from microbotic crust/dudleya habitat areas and limited herbicide spraying where sensitive resources

including the short-leaved dudleya will not be impacted. Replanting/reseeding with site appropriate natives grown from locally collected seed.

- Collect, propagate, and broadcast appropriate species of native seed into restoration sites where weeds are under control.

3.0 Short-leaved Dudleya Biology

3.1 Habitat

Typically, the short-leaved dudleya occupies openings that are dominated by microbial crust, a combination of species such as lichens, mosses, and ashy spike-moss, within the southern maritime chaparral. Herbaceous plants such as Cleveland's shooting stars (*Dodecatheon clevelandii*), dot-seed plantain (*Plantago erecta*), pygmy weed (*Crassula connata*), skunkweed (*Navarettia hamata*), spineflower (*Chorizanthe* sp.), herb impia (*Filago* sp.), popcorn flower (*Plagiobothrys* sp.), and everlasting nest straw (*Stylocline gnaphaliodes*) are also common associates in the openings.



Photograph A5-1. Short-leaved Dudleya Habitat (Subpopulation 3), showing ashy spikemoss and lichens



Photograph A5-2. Short-leaved Dudleya Habitat (close-up), with manganese nodules and lichens, on the Edge of the Mesa at Carmel Mountain

The southern maritime chaparral that surrounds the short-leaved dudleya populations on Carmel Mountain is about eight feet tall and includes chamise (*Adenostoma fasciculatum*), mission manzanita (*Xylococcus bicolor*), black sage (*Salvia mellifera*), wart-stemmed ceanothus (*Ceanothus verrucosus*), and an occasional Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*).

3.2 Phenology

Like other members of the subgenus *Hasseanthus*, short-leaved dudleya is drought-deciduous in summer, surviving on starch reserves stored in a subterranean tuberous caudex (stem). Short-leaved dudleya typically grows on shallow sandy soils that overlay a cemented sandstone hardpan. These soils where the dudleya grows are frequently so shallow that the underground stem will grow downward for a centimeter, hit the hard pan, and continue growing horizontally along the surface of the hardpan layer (Dodero pers. obs.). In the thin soil areas the stem of the short-leaved dudleya can be very irregular in shape.

Annual growth is initiated after the first significant autumn rains and the plants grow actively through early April, as long as soil conditions are moist. After growth is initiated, dry periods of several weeks in mid-winter can cause the plants to cease growing and become dormant for the rest of season (Dodero 1995). In some cases, even if additional rains fall later in the winter or spring, the plants will not respond. This drought dormancy effect seems to be most common in smaller plants, whereas larger plants will usually maintain their leaves unless drought conditions are prolonged by higher than normal temperatures and low humidity. This dormancy response can lead to the mistaken determination that the plants have died or did not occupy a particular location, even though they are actually present underground.

Short-leaved dudleya can begin flowering as early as late April and continue flowering through early June, with seeds being set in late June and July. Short-leaved dudleya generally flowers later in the season than populations of the closely related Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*) elsewhere in San Diego County (Moran 1951). Populations of short-leaved dudleya on Carmel Mountain also begin to flower somewhat earlier than non-specific populations at Torrey Pines State Park, where longer lasting fog cover causes more mesic conditions (Dodero pers. obs.).

The percentage of flowering individuals in a season is correlated with the amount and frequency of rainfall during the winter and early spring. Well-spaced rains throughout the winter, at one- to two-week intervals, leads to a greater number of flowering plants than in dry years or when long dry periods occur in the middle of the normal rainy season. Small plants typically do not flower in a dry year, but in a year with above average or well-spaced rains, the same plant is capable of successful reproduction (Dodero 1995). In any given year only 10 to 30 percent of the individuals in a population will flower. Population estimates made from flowering individuals alone significantly underestimate the total number of plants in a population. Reproduction is primarily by seed; however, short-leaved dudleya is also capable of vegetative reproduction via detached leaves both in nature and in cultivation (Dodero 1995). Within one to three weeks after leaves are removed from the plant, they develop roots at the petiole base and are ready for planting.

Census numbers generated through the San Diego Multiple Species Conservation Program (MSCP) monitoring program for the three subpopulations of short-leaved dudleya on Carmel

Mountain show an increase in the number of flowering individuals in 2001 from the two previous years (City of San Diego 2001). Monitoring has resulted in the following population data for Carmel Mountain:

<u>Year</u>	<u>Rainfall</u>	<u>Number of Individuals</u>
1999	6.5	27,317
2000	5.7	23,487
2001	8.6	66,637
2002	3.0	1,446
2003	10.4	113,134
2004	4.2	18,907
2005	22.49	123,200

These numbers likely reflect responses of the populations to the timing and amount of rainfall each of those years and probably do not indicate an actual increase in population numbers in light of the continued disturbance and ongoing spreading of weeds. In 1999 and 2000 rainfall was well below average and long dry periods of up to several weeks occurred in midwinter. As described above, this type of weather pattern is not favorable for most short-leaved dudleya plants to flower. Even though rainfall was still below normal in the 2001 season, the rains that did occur were well spaced and effective for sustaining plant growth, which is probably the reason more plants flowered than in previous years. The 2003 rainfall season total of 10.4 inches was near the annual average rainfall and this is reflected in the increase in plant numbers observed in 2002, the driest year on record.

Potential pollinators that have been seen visiting short-leaved dudleya flowers include bee flies (Bombyliidae), hover flies (Syrphidae), soft-winged flower beetles (*Dasytes* sp.; family Melyridae), honey bees (*Apis mellifera*), bumble bees (genus *Bombus*), and digger bees (family Anthophoridae). The ovoid, striated seeds, at approximately 0.8 millimeter long, are very small and are generally dispersed by wind and water. They have no appendages for attaching to other material or animals for dispersal. Seedlings are frequently seen aggregated where water collects during sheet-flooding across the sandy surface of the mesa. Also, dried inflorescences of this species have been observed blowing across the sand on windy days after they have become detached from the parent plant. This presumably disperses seed as well (Dodero 1995).

4.0 Current Conditions of Subpopulations on Carmel Mountain

All three subpopulations at Carmel Mountain have suffered from past and ongoing disturbances such as road grading, off-road vehicle use, horseback riding, bicycling, and foot traffic.



Photograph A5-3. Road Bisecting the Short-Leaved Dudleya Habitat



Photograph A5-4. Horse Hoof Imprint in Microbiotic Crust



Photograph A5-5. Bicycle Tire Tracks and damaged Microbiotic Crust



Photograph A5-6. Tire Ruts and Damaged Microbiotic Crust at the Short-Leaved Dudleya Subpopulation 1

Damage to the dudleya areas has been particularly severe when vehicles have been driven through the habitat during rainy periods when wet soils and microbial crusts are most easily damaged.

Although access is more restricted since developments have been built adjacent to the preserve, vehicles, bicycles, horses, and foot traffic continue to crush short-leaved dudleya plants on Carmel Mountain. In addition, these disturbances are breaking and crushing the surrounding microbial crust, which allows and promotes weed invasion.



Photograph A5-7. Weed Invasion into Short-leaved Dudleya Habitat after Disturbance from Pocket Gophers

After the initial disturbance, pocket gophers frequently move into the disturbed area to feed on non-native plants, and their burrowing further churns the soil and promotes additional weed growth. The gopher disturbance results in further weed invasion as more non-native annuals invade the disturbed soils (RECON 1999). Access by illegal off-road vehicles is still possible from the SDG&E access road.

5.0 Habitat and Population Management of Existing Populations

5.1 Site Protection

The first priority for the three areas is to protect them from further disturbance from vehicle, horse, and foot traffic as outlined in the trail and road closure program. A locked gate should be installed at the southern terminus of the SDG&E access road to prevent continued unauthorized vehicle traffic into the Preserve. The roads/trails that bisect subpopulations two and three on Carmel Mountain are proposed for closure or rerouting of the trails around the short-leaved dudleya habitat. The SDG&E access road that runs immediately adjacent to Subpopulation 1 is not proposed for closure at this time. This road should be considered for closure if alternate access to SDG&E transmission towers and the private inholdings can be arranged through negotiations between the City, the landowners, and SDG&E. Barriers such as split-rail fencing could be installed along the edge of the road/trail to protect Subpopulation 1. The existing roads/trails that go through Subpopulations 2 and 3 are proposed for closure and fencing barriers and signage can be placed at appropriate locations to discourage foot and vehicle traffic.

If protective fences or barriers are installed, the location and design of the fences should be carefully considered so that the fence installation and maintenance activities do not impact the dudleya populations or the microbial crusts in the vicinity. The short-leaved dudleya populations on Carmel Mountain are being censused annually as part of MSCP rare plant monitoring program conducted by the City of San Diego (City of San Diego 2001).

5.2 Maintenance

Hand irrigation for new seedlings and transplants will likely be needed the first season. If dry periods longer than approximately two weeks occur (or if plants look desiccated) after seedlings have germinated or flats of seedlings have been planted, supplemental water will be needed to ensure the greatest survivorship of individuals. Watering of seedlings and transplants should be done gently to minimize any soil disturbance that can uproot seedlings or expose the stem of the plants to the air. The plants should be kept moist until natural rainfall occurs. If natural rain events occur at regular intervals less supplemental watering will be required.

5.3 Monitoring

As mentioned previously, the short-leaved dudleya are part of an ongoing MSCP monitoring program. The goals of the annual monitoring program are to: (1) document ecological trends, (2) evaluate the effectiveness of management activities, (3) provide new data on species populations, and (4) evaluate the indirect impacts of land uses and construction. The following are additional monitoring recommendations for the restoration and enhancement program for short-leaved dudleya on Carmel Mountain intended to meet these stated goals.

With careful monitoring, researchers can detect changes in managed and unmanaged populations and communities over time (Primack 1996; Sutter 1996). Monitoring can be used to obtain basic biological information regarding life history traits of species including seed production, pollination, herbivory, dispersal, and seed and plant dormancy (Sutter 1996). With these goals in mind, the restored and newly created populations will be monitored for a minimum of five years. Monitoring activities will include:

- Photographing plots from permanent locations during the active growing period of short-leaved dudleya (February);
- Collection of quantitative data on total counts of short-leaved dudleya individuals in early February (MSCP Biological Monitoring Plan);
- Collection and identification of insect pollinators from the existing population of short-leaved dudleya at Carmel Mountain and the new population sites in May and June to assess on-site pollinator diversity and to ensure sufficient preservation of open ground habitat for pollinators;
- Collection of quantitative data on total counts of flowering individuals at the new population sites in May and June; and
- Collection of detailed qualitative and quantitative information regarding the success of exotic species eradication efforts at the restoration/translocation sites each year in spring. The extent of exotic and native species will be quantified using global positioning system (GPS) technology and the resulting changes in the distribution of these plants,

including the dudleya, which will be monitored throughout the five-year monitoring period.

In addition, seedlings established at new population sites will be monitored for collection of detailed data on dudleya growth rates. A minimum of 40 seedlings will be marked and followed through their development from germination through five consecutive growing seasons. Data to be recorded includes number of rosette leaves, maximum length of rosette leaf, number and height of inflorescences, and presence of seed. Leaf measurement data will be recorded annually during late February–early March when the plants have reached their maximum leaf size for the season. The number and height of the inflorescences will be recorded annually in late April–early May during the flowering period.

Based on growth data recorded for variegated dudleya and Blochman's dudleya, short-leaved dudleya seedling plants germinated in the field are not expected to reach flowering maturity under natural conditions until at least the third season of growth (Dodero 1995).

All monitoring activities should be conducted with care to minimize impacts to short-leaved dudleya and microbial crusts caused by foot traffic. Even occasional foot traffic can have negative effects on habitat quality when microbial crusts are broken and weeds invade a site as a result of disturbance. Land managers should evaluate the effects of monitoring on habitat quality and adjust the monitoring program schedule and tasks accordingly if damage is occurring.

6.0 Population and Habitat Enhancement and Restoration

6.1 Procedures for Enhancement and Restoration

6.1.1 Site Selection

There are a number of characteristics to consider when selecting a translocation site. Fiedler and Laven (1996) suggest these selection criteria fall into four general categories: physical, biological, logistical, and historical. Physical characteristics for site selection can be straightforward and typically focus on soils and landscape characteristics. Biological criteria are considered to be the ecological characteristics of a species. Translocation sites should be selected based on the presence of appropriate habitat parameters, including similar plant community structure and successional stage. In addition, potential competitors of the plant species being translocated, including weeds, should be identified and a plan developed and implemented for the control of these other species. Logistical criteria to consider when choosing the translocation sites should include how well the site can be protected from unauthorized

human access, as well as the level of difficulty in accessing the site for monitoring and remediation efforts. Historical selection criteria include two issues: (1) the use of currently occupied versus potential habitat and (2) consideration of a species evolutionary history, including its specific habitat requirements. Knowledge of how the habitat, occupied by the species, changes over time and how new habitat arises and becomes occupied by the plant is important to the success of restoration efforts. The site selection criteria outlined by Fiedler and Laven (1996) are reflected in the choice of the proposed population creation sites depicted in Figures A5-1a and A5-1b.

Guerrant (1996) performed modeling experiments on a number of rare plant species for which reintroduction programs were implemented. He found the risk of population extinction is greatly reduced if plants of even slightly larger than seedling size are used in a translocation program. Guerrant also found that the size of the created populations after 10 years is strongly correlated with the size of the plants used. The use of the largest individuals of a species resulted in the largest population size. These size factors have been taken into account in designing the methods for propagating and establishing a new population of small-leaved dudleya at Carmel Mountain.

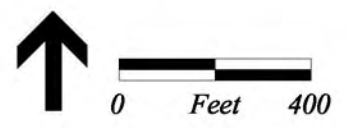
In addition, Guerrant (1996) points out that one of the most serious problems associated with reintroduction is a loss of genetic diversity. Research has shown that reduced population size can rapidly result in the loss of genetic variability. One way to avoid the loss of genetic diversity is to rapidly expand the size of the newly established population



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Image Source: 2001 Aerial Fotobank (flown September 2001)

MATCHLINE
SEE MAP 2



 Carmel Mountain Preserve
 Private lands




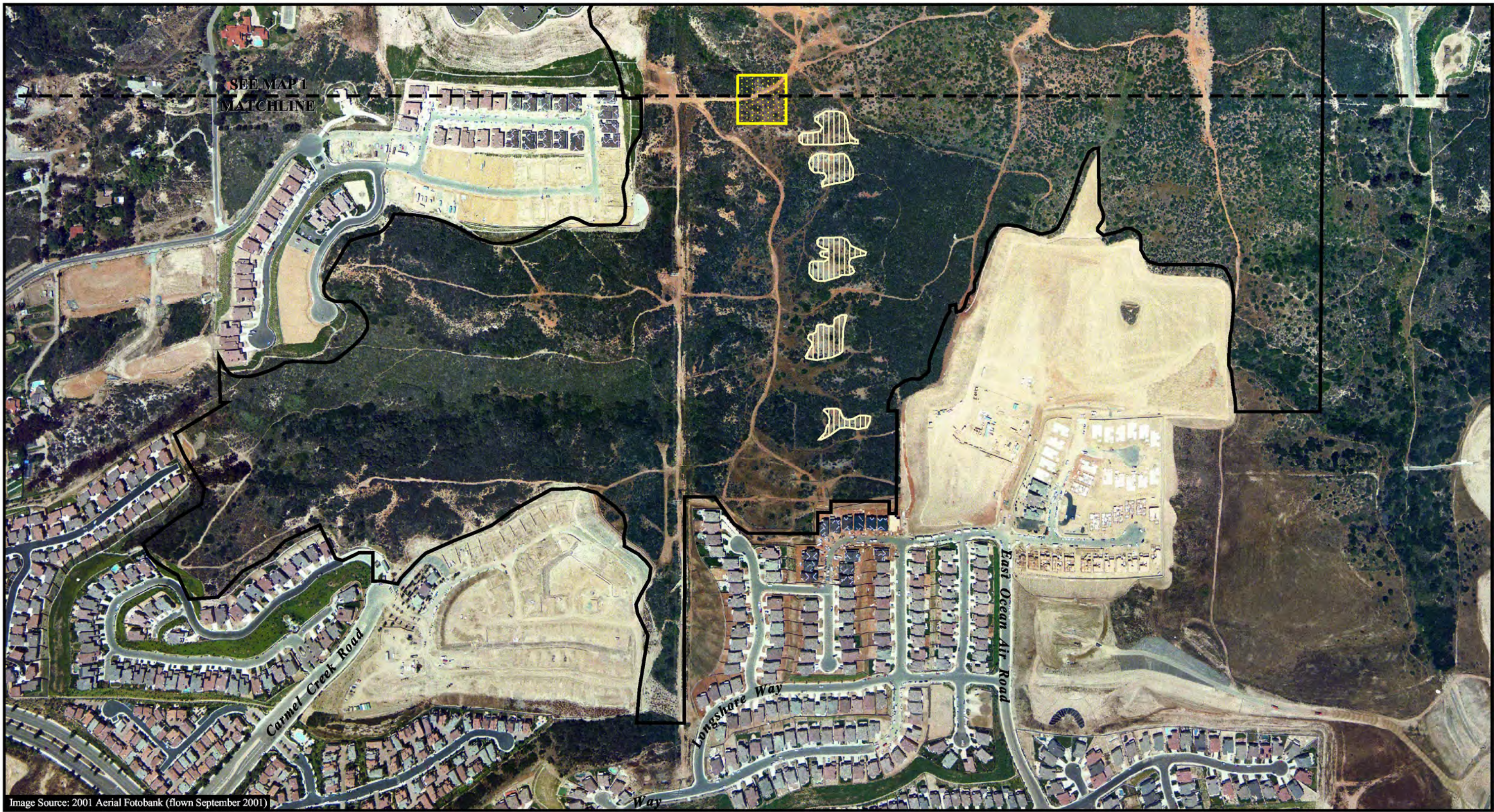
Proposed Restoration and Enhancement Areas
 Existing Short-leaved dudleya population area proposed for enhancement
 Potential Short-leaved dudleya translocation/restoration area
Dudleya brevifolia population
 Source: City of San Diego

FIGURE A5-1a
Potential Short-Leaved Dudleya Restoration Enhancement, and Translocation Areas on Carmel Mountain Preserve (Map 1)

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SEE MAP 1
MATCHLINE



Carmel Creek Road


Longshore Way

East Ocean Air Road

Way

Image Source: 2001 Aerial Fotobank (flown September 2001)

 Carmel Mountain Preserve
 Private lands

Proposed Restoration Areas
 Potential Short-leaved dudleya translocation/restoration area

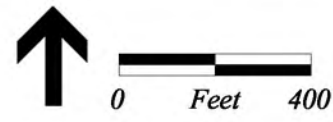


FIGURE A5-1b

Potential Short-Leaved Dudleya Restoration Enhancement, and Translocation Areas on Carmel Mountain Preserve (Map 2)

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(Guerrant 1996). By increasing the number of individuals soon after the population is established, much of the genetic variability present in a population can be maintained.

The natural populations of short-leaved dudleya are found on hard sandstone terraces, a mixture of sandstones and clay with iron concretions that have formed by weathering of the rock. The dominant plants in dudleya habitat include ashy spike-moss and herbaceous species. The proposed creation sites have similar soils and plant communities to those found at the natural population sites nearby.

Dodero (1995) notes that the range of this and other closely related species have probably expanded and contracted throughout the evolutionary history of the group, as areas of appropriate habitat have been exposed and subsequently eroded. The mosaic of occupied and potential dudleya habitat changes over time and probably causes populations to come into contact or become isolated as habitat areas shrink and then expand. Limited dispersal capabilities of short-leaved dudleya reduces the chances that suitable habitat nearby will be colonized naturally.

Three sites, corresponding to the subpopulations identified in the City of San Diego MSCP monitoring program report (City of San Diego 2001) and chosen to expand the subpopulations, have been selected as enhancement areas for short-leaved dudleya (see Figures A5-1a and A5-1b). All conditions at the sites are favorable for growing short-leaved dudleya.

6.1.2 Site Preparation

Because short-leaved dudleya will be established in existing, albeit somewhat disturbed, habitat on intact soils, no soil testing will be necessary. The intact sites most likely support the mycorrhizal associations important to the successful establishment of native plant species. No native species are anticipated to be displaced by this restoration project, which is designed to enhance native habitat for the small-leaved dudleya.

The sites have non-native weedy species, particularly annual grasses, that must be removed before the short-leaved dudleya and its associate plant species are planted. Weeds will be removed by hand.

6.1.3 Site Rehabilitation and Maintenance

Because short-leaved dudleya will be established in existing (albeit somewhat disturbed) habitat occurring on intact soils, no soil testing will be necessary. The sites have non-native weedy species particularly annual grasses that must be controlled and replaced by native species. No native species are anticipated to be displaced by this restoration project, which is designed to enhance the site. The intact sites most likely support the mycorrhizal associations important to the successful establishment of native plant species.

Exotic plants will be controlled throughout the length of the program. Non-native species will be removed primarily using hand tools, although some plants may need to be controlled by Roundup® or another appropriate herbicide sprayed by a licensed pesticide applicator under the supervision of the project biologist. As exotics are removed, these areas will receive hand-broadcast native seed collected including the short-leaved dudleya from on-site in order to enhance the quality of the habitat. Native seeds other than short-leaved dudleya will not be placed directly in the dudleya planting sites in order to avoid competition early in the establishment process. Also, seeds will not be raked into the soil, as this action enhances weed germination and competition. The use of supplemental water for native species other than the dudleya is not anticipated because native seeds will be broadcast during the winter rainy season.

The restoration sites should be actively maintained for a minimum of five years depending on funding. If adequate money is not available in the early years, then the focus should be placed on limiting disturbance to habitat and restoration activities may be extended for a longer period at any particular site. Maintenance will commence following placement and establishment of dudleya seed, transplanted adults, and leaf cuts, if they are used. Maintenance activities will include continued control of exotics and visual inspections to identify incipient problems such as herbivory or vandalism. The monitoring biologist shall direct weeding crews to remove weeds and determine which plants require control during the five-year maintenance period. The need for weeding is expected to decrease substantially by the end of the five-year period, provided successful habitat restoration has been achieved.

6.1.4 Dudleya Seed Collection

After an M OU agreement for seed collection of this state listed species has been negotiated with CDFG, seeds from individual short-leaved dudleya found in the three subpopulations on Carmel Mountain should be collected annually. Seeds from individuals of short-leaved dudleya found in the populations on Carmel Mountain will be collected in the summer. Dried inflorescences should be collected and placed in paper envelopes, which allow for the evaporation of residual moisture to prevent molding. Seeds are then stored in a cool, dark location to prevent desiccation and maintain viability. Dudleya seeds remain viable for many years under these conditions (Doderer 1995) and germination tests using seeds from *Dudleya multicaulis*, a closely related species, indicate no significant reduction in viability over a two-year storage period.

The seed would be used to propagate plants at a nearby growing facility for later translocation to the Preserve and also to grow plants that will be used to produce seed for direct application to the restoration sites and for dispersal into appropriate but currently unoccupied areas of the Preserve.

To ensure the maintenance of genetic diversity in the enhanced and newly created subpopulations, seed should be collected from individuals in each subpopulation. In the

absence of any genetic information it is probably the best strategy to keep seeds and plants from each subpopulation separate to maintain any genetic differentiation between the subpopulations. Plants propagated from these seeds should only be used in the same subpopulation area that they originated from.

For newly created populations disjunct from the existing sites, plants and seeds from the three different subpopulations could be mixed to create as genetically diverse populations as possible. In theory then the created populations would have the best chance of having at least some individuals that are adapted to the varying types of conditions that may be present at the proposed creation/expansion sites. Past experience with translocation of *Blochman's dudleya* suggests that plants will do well at the new sites as long as they are properly planted and herbivory is not too severe and weeds are controlled (RECON 1996 and 2001).

6.1.5 Propagation

To propagate short-leaved *dudleya* for translocation and seed production the following methods should be used. Salvaged soil collected on-site can be placed in standard greenhouse flats to a depth of approximately one inch. Flats should be filled with soil that has a higher clay content than pure sand. The clay is a more stable growing medium than sand and will be easier to transplant into the restoration sites. Clumps of plants grown in sand have a tendency to break apart and will not transplant well.

Soil could be salvaged from nearby locations with the same soil type that are slated for development. Another option would be to salvage soil from the cut edge of the mesa adjacent to the park where the soil has already been disturbed by grading activities.

The dried *dudleya* fruits can be broken apart by hand to release the seeds that are then sprinkled on the surface of the moist soil. Because of their small size the short-leaved *dudleya* seeds should not be covered with any soil. The seeds should be immediately watered with a fine mist several times a day to keep them continuously moist for a period of approximately two weeks although in the cool fall and winter seasons most viable *dudleya* seeds should germinate within one week. To produce plants that will attain the greatest possible size during the first growing season short-leaved *dudleya* seed is best sown after the first cold front of the season has past, usually in late October. Plants started at that time have the potential to reach flowering size in cultivation in approximately six months.

The sowing of the seed in the flats should be covered with shade cloth to reduce evaporative water loss from the soil and to minimize mechanical disturbance from watering. Each flat requires weeding as needed throughout the growing season. Supplemental watering should be given as needed during dry periods and small seedlings should never be allowed to dry out during the growing season. By late April, supplemental watering should be discontinued to allow the plants to enter their normal dormancy cycle, which starts at the onset of the summer drought.

If flats are intended for translocation into sites with thin soil, the amount of soil placed in the flats can be adjusted to accommodate the depth of the soil at the translocation site. The soil in the flats should always be somewhat more shallow than the soil at the translocation site. The reason for this is that the translocated plants should be planted flush with or slightly below the existing soil surface to ensure that the newly translocated plants are in a slightly depositional rather than an erosional environment. If the underground stems are exposed above the soil surface by erosion the plants are likely to die. Short-leaved dudleyas and closely related species are adapted to live in areas where there is slow deposition of sand and clay (Doderer 1995). The plants can keep pace with the deposition of soil by elongating their stem upward through the soil. As long as deposition of soil is not too rapid, the plants can grow well in this type of environment.

The goal of any translocation or habitat restoration plan is the establishment of a self-sustaining population with a minimum population size which enables the species to retain the genetic resources necessary to adapt to changing environmental conditions (Guerrant 1996). To achieve the goal of creating a self-sustaining population, up to three establishment methods could be used: hand broadcasting of dudleya seed to weed-free areas, planting individuals germinated from seed collected on-site or if necessary planting of whole leaves that develop into new plants after a period of a few weeks. Each method of establishment, whether by seed, cuttings, or transplants, may have drawbacks, depending on site-specific conditions (Guerrant 1996).

Previous restoration experience with Blochman's dudleya, a closely related species, indicates propagation of seed-grown plants in cultivation results in the greatest survivorship of seedlings (approximately 90 percent) over direct seeding (approximately 10 percent). Because of the very thin soils or the presence of intact microbiotic crusts at some of the enhancement sites, flats of cultivated seedlings may not be able to be planted in many locations that otherwise have high restoration potential. In thin soil areas direct seeding may be the only method available to establish plants because flats of seedlings will not be able to be successfully translocated into soil only one centimeter thick. Direct seeding should also be used where planting of cultivated short-leaved dudleyas would impact existing microbiotic crusts.

Another option to solve the problem of thin soils is to bring in relatively small amounts of soil to replace soil lost through road grading and erosion in Subpopulations 2 and 3 on Carmel Mountain. Small amounts of salvaged sandy soil could be collected from the graded edge of the Neighborhood 8A park where it abuts the Preserve and this soil could be thinly spread across the graded road areas that have little or no soil. Soil could be placed up to one inch deep to restore growing areas for the dudleya. At this maximum depth the soils would still be too thin to support shrubs but the short-leaved dudleya is adapted to these conditions. The intent is to establish plants wherever the habitat is appropriate within the restoration sites using the methods and criteria outlined above.

6.1.6 Introduction of Other Plant Species

The following herbaceous species are suitable for use in restored and enhanced short-leaved dudleya habitat: Cleveland's shooting stars, dot-seed plantain, pygmy weed, skunkweed, spineflower, herba impia, popcorn flower, and everlasting nest straw. Other associated herbaceous species may also be suitable for revegetation around newly created dudleya populations. All native plant species intended for reintroduction into the restoration and enhancement sites should be collected within the Preserve and hand broadcast. Since the dudleya habitat areas to be restored are relatively small, sufficient seed can probably be collected in the vicinity of Carmel Mountain for hand broadcast. Seeds of other plant species directly into newly planted short-leaved dudleya patches to keep competition low. Seeding should be conducted in the fall or early winter just prior to anticipated rainfall. Timing seed dispersal to coincide with rainfall events reduces the amount of time the subject to herbivory and fungal attack and therefore is likely to increase germination success.

6.2 Maintenance of Enhancement and Restoration Sites

Exotic plants will be controlled throughout the length of the program. Non-native species will be removed primarily using hand tools, although some plants may need to be controlled by Roundup® or another appropriate herbicide sprayed by a licensed pesticide applicator under the supervision of the project biologist. Herbicides proposed for use in the Preserve must be on the pre-approved Park and Recreation list.

As exotics are removed, these areas will receive hand-broadcast native seed collected including the short-leaved dudleya from on-site in order to enhance the quality of the habitat. Native seeds other than short-leaved dudleya will not be placed directly in the dudleya planting sites in order to avoid competition early in the establishment process. Also, seeds will not be raked into the soil, as this action enhances weed germination and competition. The use of supplemental water for native species other than the dudleya is not anticipated because native seeds will be broadcast during the winter rainy season.

The restoration sites should be actively maintained for a minimum of five years depending on funding. If adequate money is not available in the early years, then the focus should be placed on limiting disturbance to habitat and restoration activities may be extended for a longer period at any particular site. Maintenance will commence following placement and establishment of dudleya seed, transplanted adults, and leaf cuts, if they are used. Maintenance activities will include continued control of exotics and visual inspections to identify incipient problems such as herbivory or vandalism. The monitoring biologist shall direct weeding crews to remove weeds and determine which plants require control during the five-year maintenance period. The need for weeding is expected to decrease substantially by the end of the five-year period, provided successful habitat restoration has been achieved.

In addition, exotic species shall be controlled and replaced with native species by hand broadcasting seed.

6.3 Monitoring of Enhancement and Restoration Sites

6.3.1 Planting and Seeding

After initial planting, the site will be checked twice a week by the project biologist for the first two months, once a week for the next four months, and monthly thereafter to determine if seeding and plantings are successful or if remedial measures including hand irrigation is needed.

Other site problems such as vehicle damage and erosion shall be reported to the City of San Diego and the Wildlife Agencies with recommended remedial measures.

6.3.2 Success Criteria

The success of the population expansion program should be evaluated in light of four goals, which include abundance, extent, resilience, and persistence (Pavlik 1996). The goal of maintaining abundance can be fulfilled by introducing large numbers of plants and propagules into the new site. Extent refers to the number and distribution of populations of a particular species. Resilience is maximized by maintenance of genetic variation, resistance to environmental perturbation, and ability of the plant to become dormant during unfavorable conditions. Persistence of populations is more likely when there is microhabitat variation within the translocation site and the natural community which the species occurs in is maintained.

The goal of the population expansion project is to create viable reproducing populations of short-leaved dudleya which are large enough to survive environmental perturbations and persist for the foreseeable future. Created populations should consist of a minimum of approximately 10,000 individuals. Specific success criteria have been established for enhancing and expanding the numbers of short-leaved dudleya on the Carmel Mountain Preserve. These criteria should be the success goals required of the consultant, agency, or non-profit organization charged with implementing the short-leaved dudleya population expansion project:

If, at end of the five-year period, the population of short-leaved dudleya at the new sites equals or exceeds 10,000 individuals (all age classes), with a minimum of 2,500 flowering plants (in any of the five years) then the expansion effort shall be deemed successful. No further transplanting, seeding of short-leaved dudleya, or other native plant species would be required. Monitoring and control efforts for exotic plants shall continue according to the MSCP guidelines. Since the short-leaved dudleya is a state-listed plant, the project biologist in coordination with the City of San Diego and CDFG plant ecologists will conduct an annual review to assess the effectiveness of restoration and seeding efforts. The long-term management of the

translocation/restoration areas will be performed in accordance with other management activities presented in this Management Plan for Carmel Mountain and Del Mar Mesa Preserves.

6.3.3 Reports

Annual reports will be submitted by September 30 of each year of the program, until the population reaches the success goals, at which time monitoring and reporting will decrease to once every five years for 20 years. Monitoring will then continue or end, based on the results of the 20 years of monitoring. The decision will be that of the Habitat Manager, based on the best science available at the time.

Reports will include the results of control efforts for exotic plants, native seed collection and seeding programs, photodocumentation of the restoration site from permanent locations taken annually, total counts of short-leaved dudleya actively growing each year, total counts of the number of flowering individuals, and annual assessments of the general health and condition of translocated short-leaved dudleya. Annual reports will be submitted to the City of San Diego and the CDFG Natural Heritage Division-Plant Conservation Program.

6.3.4 Restorationist Qualifications

The restoration project biologist should have a minimum of five years of general restoration experience in coastal southern California and a minimum of three years of experience with the monitoring, propagation, translocation of short-leaved dudleya or closely related species. The project biologist should be able to demonstrate an understanding of the special growing requirements of short-leaved dudleya as they relate to the restoration and enhancement of this state listed endangered species.

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APPENDIX 6

Vernal Pool Enhancement and Restoration Plan for the Carmel Mountain and Del Mar Mesa Preserves

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Vernal Pool
Enhancement and
Restoration Plan for the
Carmel Mountain and
Del Mar Mesa
Preserves, San Diego,
California

Prepared by

Mark Dodero, Biologist

Bobbie Stephenson, Biologist

October 2005

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1.0 San Diego Mesa Hardpan Vernal Pools

1.1 Introduction

San Diego mesa hardpan vernal pools are shallow, isolated, ephemeral wetlands. The micro-topography surrounding vernal pools often consists of small mima mounds or hummocks. Vernal pools fill with water during winter rains and the water evaporates after the rains cease. Plants in vernal pools may be aquatic or may germinate following the drying of the pool. San Diego Mesa hardpan vernal pools have a characteristic suite of plant and animal species. Hardpan vernal pools are primarily found north of Otay Mesa (Holland 1986). Vernal pools are considered to be sensitive habitat by local, state, and federal governments, and it is estimated that over 95 percent of the vernal pool habitat in San Diego County has been destroyed (Bauder 1986).

1.2 Recovery Criteria and Goals

1.2.1 USFWS Recovery Criteria for San Diego Mesa Hardpan Vernal Pools

The Recovery Plan for Vernal Pools of Southern California (USFWS 1998) describes actions USFWS believes are needed to recover or protect the federally listed species that occur in vernal pools. The Recovery Plan addresses three listed vernal pool species that occur within the Carmel Mountain or the Del Mar Mesa Preserve: San Diego fairy shrimp (*Branchinecta sandiegonensis*), San Diego button-celery (*Eryngium aristulatum* var. *parishii*), and San Diego mesa mint (*Pogogyne abramsii*).

The criteria and goal of the Recovery Plan is to increase and stabilize the populations of these species so they can be downlisted from endangered to threatened. Population trends must be shown to be stable or increasing for a minimum of 10 consecutive years prior to USFWS considering the reclassification of the listed species. Monitoring should continue for a period of at least 10 years following reclassification to ensure population stability.

This management plan addresses three actions identified by USFWS as being needed to move the populations toward recovery:

- a. Conduct surveys and research essential to the conservation of these species (described on p. 69 of the Recovery Plan),

- b. Where necessary, reestablish vernal pool habitat to the historical structure and composition to increase genetic diversity and population stability (described on p. 71 of the Recovery Plan), and
- c. Manage and monitor habitat and listed species (described on p. 72 of the Recovery Plan).

As identified in the Recovery Plan, this Vernal Pool Habitat Restoration section of this Management Plan addresses the reestablishment of the physical and biological characteristics of vernal pool habitat such as topography, hydrology, soil properties, water quality, nutrient cycling, species diversity, and species interactions to what they were prior to disturbance.

1.2.2 Goals of Vernal Pool Restoration and Enhancement Program on the Carmel Mountain and Del Mar Mesa Preserves

The restoration plans presented here for vernal pools on Carmel Mountain and Del Mar Mesa are conceptual. Additional detailed information should be gathered prior to implementation of any restoration activities for vernal pools including conducting focused surveys for listed fairy shrimp and listed and sensitive vernal pool plants. In addition, detailed topographic information should be gathered for each proposed restoration area and this data should be used to create a grading plan for implementation. Sensitive species survey data and topographic information will be included in a detailed restoration plan to be prepared for each site and approved by the wildlife agencies and land managers prior to implementation.

The goals of this Plan are to:

- a. Preserve, protect, and restore vernal pool habitat in the Carmel Mountain and Del Mar Mesa Preserves.
- b. Restore natural vernal pool functions and values in degraded and damaged pools.
- c. Minimize and try to eliminate vehicle, horse, and foot traffic disturbance of vernal pool habitat.
- d. Maintain and expand self-sustaining populations of vernal pool plant and animal species including listed and sensitive taxa as appropriate within the Carmel Mountain and Del Mar Preserves to ensure their long-term existence.
- e. Restore the associated disturbed upland habitat around the vernal pools within the Carmel Mountain and Del Mar Mesa Preserves to reduce weed invasion into the vernal pools.

To successfully attain the goals outlined above, the following management actions must be implemented:

- When possible, reroute foot, bike, and horse trails around existing vernal pool habitat areas.
- Close and restore roads that bisect vernal pool habitat in locations that are not part of the designated recreational trails system or roads that provide access routes for SDG&E and private inholdings.
- Erect wooden fences and repair existing barriers to discourage off-trail recreational travel.
- Recontour depressions to a more natural shape in roads and trails that are not part of the designated trail system.
- Repair tire ruts with hand tools in areas where repair activities will not adversely affect existing sensitive species or adjacent microbotic crusts.
- Collect 5 percent or less of the seed crop from the Carmel Mountain and Del Mar Mesa vernal pool plant species for redistribution into restored pools.
- Use collected seed to inoculate restored pools with appropriate vernal pool flora.
- Control exotic plants through hand removal from pool basins and control weeds in surrounding uplands.

2.0 Vernal Pool Resources on the Carmel Mountain Preserve

Approximately 93 vernal pool depressions and seeps have been mapped on Carmel Mountain. Vernal pools mapping for this plan was provided by the City of San Diego and revised in part by RECON (Figures A6-1a and A6-1b). Vernal pools and seeps on the Torrey Surf property were mapped by Helix Environmental Inc. The majority of the pools are located in the southwestern portion of the mesa top (see Figures A6-1a and A6-1b).

Mima mound topography typical of other vernal pool areas in San Diego County does not exist on Carmel Mountain. The vernal pools are depressions on the mesa top. Generally, the vernal pools are in openings of the surrounding southern maritime chaparral and adjacent to openings around mesic meadows, seeps, and ashy spike-moss-dominated areas (see Figures A6-1a and A6-1b).

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Carmel Mountain Preserve



Private lands

Vernal pools



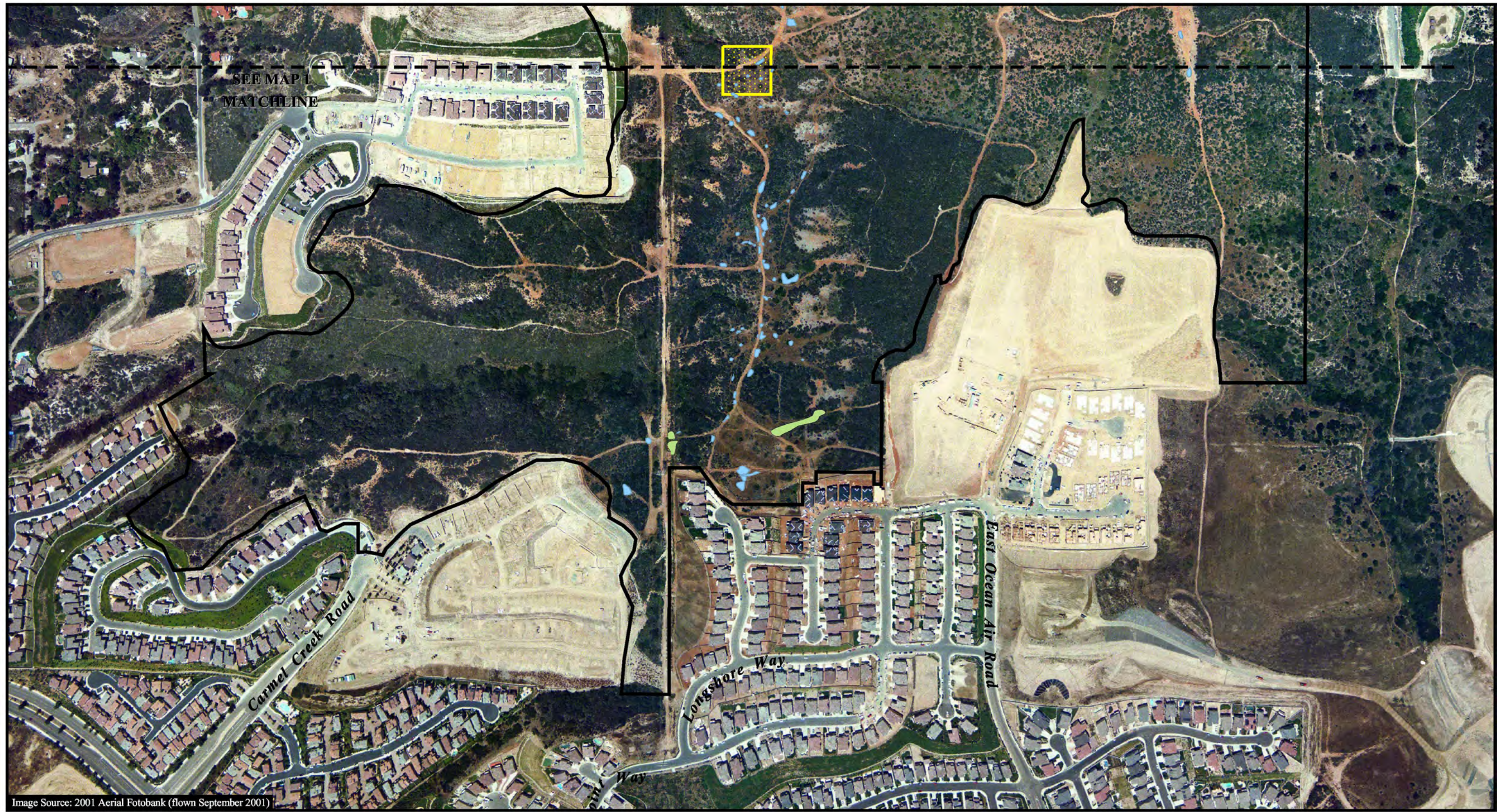
Source: City of San Diego
revised in part by RECCN (2001/2002)



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FIGURE A6-1a
Vernal Pool Locations
on Carmel Mountain Preserve
(Map 1)

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SEE MAP 1
MATCHLINE

Carmel Creek Road


Longshore Way


East Ocean Air Road

Image Source: 2001 Aerial Fotobank (flown September 2001)

 Carmel Mountain Preserve

 Private lands

Vernal pools
 Source: City of San Diego, revised in part by RECCN (2001/2002)

Seeps
 Source: City of San Diego, Helix Environmental Inc., revised in part by RECCN (2002)

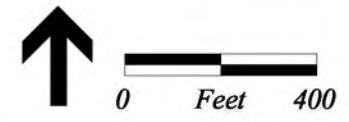


FIGURE A6-1b
Vernal Pool Locations
on Carmel Mountain Preserve
(Map 2)

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2.1 Existing Conditions

2.1.1 Disturbances

The vernal pools of Carmel Mountain have suffered different levels of disturbance from road grading and vehicle traffic particularly damaging during wet periods, and creation of new trails by mountain bikes and equestrian use. Levels of damage to the pools range from relatively undisturbed (a few pools) to the other extreme where pools have been virtually eliminated by road grading and trail use. The relatively undisturbed pools are located away from roads and trails in openings in the maritime chaparral vegetation. Other pools have single or multiple sets of tire tracks, but otherwise still support vernal pool indicator species such as woolly marbles (*Psilocarphus brevissimus*). In some cases, depressions along the graded roads that have been impacted by vehicle traffic each wet season, have no or few vernal pool plant indicator species, although the areas have the necessary hydrology to support those indicator species. Western spadefoot (*Spea hammondi*) tadpoles have been observed in depressions located in roads, and the tadpoles have been impacted in the past by unauthorized vehicle traffic. In some cases, very small remnant populations of woolly marbles are found in some of these the road depressions. Water starwort can be found growing in and along the edges of the road where water seeps along the hardpan from the somewhat higher elevations on Carmel Mountain.

2.1.2 Hydrology

The maritime chaparral areas on the mesa top are gently tilted to the west and south and these higher areas act as water catchment areas during the wet season. This rainwater infiltrates the topsoil and then eventually reaches the impervious hardpan. Rainwater appears to seep and percolate downhill along the upper surface of the hardpan as subsurface flows into the pools located in flatter portions of the mesa near the southwestern and southern periphery of the cemented sandstone strata. These seeps often stay wet well after rainfall has stopped. This subsurface flow may increase the amount of ponding in the some of the pools beyond that apparent from the visible surface watershed of individual pools.

Roads and trails that have removed all of the topsoil may have the effect of redirecting or channeling flow in unnatural patterns so that some pools may not be ponding much as they once did. Depressions located in graded roads may pond for longer periods because the road grading has either created or deepened existing depressions. In addition the compacted roads possibly direct both more surface flows into these areas than would occur naturally.

2.1.3 Vernal Pool Plant Species

Species dominating these pools are woolly marbles, stone-crop (*Crassula aquatica*), flowering quillwort (*Lilaea scilloides*), and water starwort (*Callitriche marginata*) (

Table A6-1). Less common vernal pool species include the Orcutt's brodiaea, chaffweed (*Centunculus minimus*), waterwort (*Elatine brachysperma*), and California adder's-tongue (*Ophioglossum californicum*).

Additional general wetland species present on Carmel Mountain include pale spike-rush (*Eleocharis macrostachya*), mariposa rush (*Juncus dubius*), and toad rush (*J. bufonius*). Areas that can best be described as mesic meadows and seeps, dominated by mariposa rush and blue-eyed grass (*Sisyrinchium bellum*), transition into vernal pool habitat and the herbaceous communities dominated by ashy spike-moss, shooting stars, dot-seed plantain, popcorn flower, wavy-leaved soap plant, and other herbaceous species as well as southern maritime chaparral vegetation.

No listed vernal pool plant species are historically known from Carmel Mountain. Redding soils, which are known to support populations of San Diego mesa mint in other coastal mesas in central San Diego, are limited in extent on Carmel Mountain and are located to the southeast of the main vernal pool complex on the western and central portions of the mesa top. The primary area of vernal pools on Carmel Mountain are found on Carlsbad gravelly loam soils located above the impermeable sandstone terrace. Like San Diego mesa mint, San Diego button celery and spreading navarretia are not known to have been present historically on Carmel Mountain.

Sensitive animal species associated with vernal pool habitat on Carmel Mountain include the listed San Diego fairy shrimp discussed below, as well as the two-striped garter snake (*Thamnophis hammondi*) and western spadefoot.

2.1.4 Endangered Vernal Pool Species on Carmel Mountain

The San Diego fairy shrimp is federally listed as endangered and is covered by the City of San Diego's Multiple Species Conservation Program (MSCP; 1995). This species is restricted to vernal pools in coastal southern California and south to northwestern Baja California, Mexico (USFWS 2000). The life cycle of fairy shrimp is relatively simple, with larvae hatching out of dormant cysts after being covered with water for a prescribed period of time, developing into adults, and mating and laying eggs before the pool dries. The development time is influenced both by the water temperature and the species-specific responses to environmental cues including water chemistry. San Diego fairy shrimp are found in the spring in vernal pools and other ponded areas that are generally

TABLE A6-1
VERNAL POOL PLANT INDICATOR SPECIES FOR THE CARMEL MOUNTAIN PRESERVE

Plant Species	Type
Orcutt's brodiaea <i>Brodiaea orcuttii</i>	Annual, vernal pools and foothill springs
Water-starwort <i>Callitriche marginata</i>	Annual, vernal pools and moist openings
Chaffweed <i>Centunculus minimus</i>	Annual, vernal pool specialist in region
Stone-crop <i>Crassula aquatica</i>	Annual, vernal pools and ephemeral wetlands
Waterwort <i>Elatine sp.</i>	Annual, ephemeral wetlands, muddy shores
Pale spikerush <i>Eleocharis macrostachya</i>	Perennial, ephemeral wetlands
Mariposa rush <i>Juncus dubius</i>	Perennial, wet places
Toad rush <i>Juncus bufonius</i>	Annual, weedy native of ephemeral wetlands
Rush <i>Juncus triformes</i>	Annual, vernal pools and ephemeral wetlands
Flowering quillwort <i>Lilaea scilloides</i>	Annual, ephemeral wetlands, streams & lake edges
Grass poly <i>Lythrum hyssopifolia</i>	Annual, wet habitats
Water chickweed <i>Montia fontana</i>	Annual, vernal pool specialist in region
California adder's tongue <i>Ophioglossum californicum</i>	Annual, vernal pools and chaparral
Hooked navarretia <i>Navarretia hamata</i>	Annual, vernal pool specialist in region
Lemon canary grass <i>Phalaris lemmonii</i>	Annual, moist areas
Adobe allocarya <i>Plagiobothrys acanthocarpus</i>	Annual, shallow vernal pools and moist openings
Plantain <i>Plantago elongata</i>	Annual, vernal pools, saline and alkaline places
Dot-seed plantain <i>Plantago erecta</i>	Annual, shallow vernal pools and moist openings
Dwarf woolly-heads <i>Psilocarphus brevissimus</i>	Annual, vernal pool specialist
Woolly-heads <i>Psilocarphus tenellus</i>	Annual, vernal pool specialist
Bladder clover <i>Trifolium depaupertum</i> var. <i>amplectans</i>	Annual, wet meadows, open alkaline or spring-moist heavy soils

SOURCE: RECON 1994 and Bauder and McMillan 1996.

NOTE: Vascular plant species known to occupy natural vernal pools in the Carmel Mountain region. Species identified as "vernal pool specialists" are found almost exclusively in natural vernal pools in the region.

less than 30 centimeters deep. This species takes between 3 and 8 days to hatch and development to the adult stage takes between 7 and 20 days.

3.0 Vernal Pool Resources on the Del Mar Mesa Preserve



Photograph 6-1: Vernal Pool on the Portion of Del Mar Mesa Preserve Owned by CDFG

Vernal pools are shallow, isolated, ephemeral wetlands. The microrelief surrounding vernal pools typically consists of small mima mounds or hummocks. Vernal pools fill with water during winter rains and the water evaporates after the rains cease. Plants in vernal pools may be aquatic or may germinate following the drying of the pool. San Diego mesa hardpan vernal pools have a characteristic suite of plant and animal species. Hardpan vernal pools are primarily found north of Otay Mesa (Holland 1986). Vernal pools are considered to be sensitive

habitat by local, state, and federal governments, and it is estimated that over 95 percent of the vernal pool habitat in San Diego County has been destroyed.

Sensitive plant species occurring in the vernal pools on Del Mar Mesa Preserve include San Diego button celery and San Diego Mesa mint. Sensitive animal species within vernal pool habitat on the Preserve include the two-striped garter snake (*Thamnophis hammondi*), western spadefoot (*Spea hammondi*), and San Diego fairy shrimp. Other sensitive species typically associated with vernal pools include California adder's-tongue, Orcutt's brodiaea (*Brodiaea orcuttii*), and San Diego goldenstar (*Muilla clevelandii*).



Photograph 6-2: Vernal Pool on Property Owned by CDFG on Del Mar Mesa Preserve

Numerous vernal pools are on Del Mar Mesa Preserve within areas mapped as chamise chaparral and southern mixed chaparral. Species dominating these pools are water starwort (*Callitriche marginata*), stone-crop (*Crassula aquatica*), woolly marbles (*Psilocarphus brevissimus*), and grass poly (*Lythrum hyssopifolium*). Some of the larger and deeper pools are distinguished by spikerush (*Eleocharis* sp.). Smaller populations of California adder's tongue are present in some pools, and San Diego button-celery is common in many of the pools. San Diego mesa-mint is found in some of the pools as well. Downingia (*Downingia cuspidata*) and little mousetail are present in the southeastern pool complex.

4.0 Vernal Pool Restoration Program for the Carmel Mountain Preserve

Lands formerly supporting San Diego mesa hardpan vernal pool habitat, eliminated by topographic disturbance and the loss of hydrologic ponding characteristics, have the potential to be restored. The vernal pools to be restored on Carmel Mountain will support vernal pool indicator species historically known to be present. Plants on the list of vernal pool indicator species (see Table A6-1) should be considered for reintroduction into restored vernal pools on Carmel Mountain.

Since the listed vernal pool plant species are not known to have occurred historically on Carmel Mountain no listed plant species are proposed for introduction to Carmel Mountain. Restored pools that do not currently support the federally listed San Diego fairy shrimp could be inoculated with shrimp cysts after reconstruction with USFWS approval.

Virtually all vernal pools on Carmel Mountain have been disturbed and these pools would all benefit from the proposed restoration program. The pools with the highest priority for restoration activities are located in and adjacent to roads and trails that are not part of the proposed trail system for Carmel Mountain. Restoration of pools and depressions present in and adjacent to roads and trails that are part of the proposed trail system have a lower priority for restoration due to potential conflicts with recreational uses and the necessity to maintain access routes for SDG&E and to private inholdings. Restoration of vernal pool resources in the SDG&E access roads would only be done if these roads are no longer needed by SDG&E or by private landowners to access their property.

The potential vernal pool restoration sites on Carmel Mountain are located in the southwest and southern portions of the Carmel Mountain Preserve (Figures 6-1a-b). Each mapped pool is numbered in these figures and Table A6-2 provides corresponding recommendations for potential vernal pool restoration activities for each numbered pool. Figures 6-2a-f also depict potential trail system rerouting possibilities around vernal pools. This proposed rerouting is intended to minimize impacts of recreational uses to sensitive vernal pool resources. Only trails that cross through vernal pools not located in the SDG&E and private landowner access roads are proposed for rerouting.

**TABLE A6-2
POTENTIAL VERNAL POOL RESTORATION
RECOMMENDATIONS FOR THE CARMEL MOUNTAIN PRESERVE**

Vernal Pool No.	Problems/Comments/ Recommendations	Sensitive Species Present	Hand Tools	Heavy Equipment
1	Vernal pool inside road, recontour. *Revised mapping by RECON. On SDG&E access road.			√
2	Vernal pool inside road, recontour. *Revised mapping by RECON. On SDG&E access road.			√
3	Vernal pool inside road, recontour. *Revised mapping by RECON. On SDG&E access road.	<i>Branchinecta</i>		√
4	*Vernal pool was not located, as mapped by City of San Diego. On SDG&E access road.			√
5	Close the road, weed. *Revised mapping by RECON.			√
6	Vernal Pool inside road. Close the road, recontour. *Revised mapping by RECON.			√
7	*Vernal Pool was not located, as mapped by City of San Diego.			
8	Vernal pool inside road, recontour and weed. *Revised mapping by RECON.			√
9	Recontour and weed. *Revised mapping by RECON.		√	
10	Recontour and weed, many road ruts in the pool. *Revised mapping by RECON.		√	√
11	Vernal pool in side road, recontour. Currently on private land, and SDG&E access road.			√
12	Weeding is needed.			√
13	Weeding is needed. *Currently on private land.			
14	Weeding is needed.			
15	Weeding is needed. *Currently on private land.			
16	Weed and recontour. *Currently on private land.		√	
17	Weed and recontour. *Currently on private land.		√	
18	Vernal pool inside road, recontour and weed. *Revised mapping by RECON.			√
19	Vernal pool inside road, recontour and weed. *Revised mapping by RECON.			√

**TABLE A6-2
POTENTIAL VERNAL POOL RESTORATION
RECOMMENDATIONS FOR THE CARMEL MOUNTAIN PRESERVE
(continued)**

Vernal Pool No.	Problems/Comments/ Recommendations	Sensitive Species Present	Hand Tools	Heavy Equipment
20	Weed and recontour, tire tracks in pool.		√	
21	Weed and recontour, tire tracks in pool.			√
22	Close the trail, and weed. Remove nearby trash. *Revised mapping by RECON.			
23	Weeding. *Revised mapping by RECON.			
24	Close the foot trail, and weed. *Revised mapping by RECON.			
25	Weed and recontour. Gopher activity present.		√	
26	Weed and recontour. Gopher activity present.		√	
27	Weed and recontour.		√	
28	Weed and recontour, tire tracks in pool.		√	
29	Weed and remove nearby trash.			
30	Vernal pool inside road, recontour. *Revised mapping by RECON.			√
31	Vernal pool inside road, recontour and weed. *Revised mapping by RECON.			√
32	Weed and recontour.		√	
33	Weed and recontour.		√	
34	Weed and recontour.		√	
35	Weed and recontour.		√	
36	Weed and recontour.		√	
37	Close the foot trail, and weed.			
38	Weed and recontour. *Revised mapping by RECON.			√
39	Weed and recontour.		√	
40	Weed.			
41	Close trail and weed.			
42	Weed. *Revised mapping by RECON.		√	
43	Close trail and weed. Heavy gopher activity.			
44	Close trail and weed. Heavy gopher activity.			

**TABLE A6-2
POTENTIAL VERNAL POOL RESTORATION
RECOMMENDATIONS FOR THE CARMEL MOUNTAIN PRESERVE
(continued)**

Vernal Pool No.	Problems/Comments/ Recommendations	Sensitive Species Present	Hand Tools	Heavy Equipment
45	Weed. Vernal pool within large meadow of <i>Juncus</i> sp, <i>Hemizonia fasciculatum</i> , and <i>Sysrinchium bellum</i> .			
46	Weed and recontour. Vernal pool within large meadow of <i>Juncus</i> sp, <i>Hemizonia fasciculatum</i> , and <i>Sysrinchium bellum</i> .		√	
47	Weed. Vernal pool next to road.			
48	Weed. *Revised mapping by RECON.			
49	Vernal pool in road, recontour.			√
50	Vernal pool in road, recontour. *Revised mapping by RECON.			√
51	Weed within the vernal pool.			
52	Weed within the vernal pool.			
53	*Unable to relocate vernal pool.			
54	*Unable to relocate vernal pool.			
55	Weeding.			
56	*Unable to relocate vernal pool.			
57	Vernal pool in road, recontour. *Revised mapping by RECON.			√
58	Vernal pool in road, recontour. *Revised mapping by RECON. Trim shrubs east side of pool.			√
59	Vernal pool in road, recontour. *Revised mapping by RECON. Trim shrubs west side of pool.			√
60	No restoration.			
61	Recontour. *Revised mapping by RECON.			√
62	Close trail. *Revised mapping by RECON.			√
63	Vernal pool in trail. *Revised mapping by RECON.			
64	Seep. *Revised mapping by RECON.			
65	Seep. *Revised mapping by RECON.			
66	Vernal pool in road, recontour. *Revised mapping by RECON.			√
67	Bulldozed. No longer intact.			
68	Recontour. *Revised mapping by RECON.			√

**TABLE A6-2
POTENTIAL VERNAL POOL RESTORATION
RECOMMENDATIONS FOR THE CARMEL MOUNTAIN PRESERVE
(continued)**

Vernal Pool No.	Problems/Comments/ Recommendations	Sensitive Species Present	Hand Tools	Heavy Equipment
68A	Recontour. *Revised mapping by RECON.			√
68B	Recontour. *Revised mapping by RECON.			√
69	Recontour. *Revised mapping by RECON.		√	
70	Weed pool.			
71	Close trail. Recontour and weed.			√
72	Close trail. Recontour and weed.			√
73	Close trail. Recontour and weed.			√
74	Recontour and weed, tire tracks present.		√	
75	Recontour and weed, tire tracks present. *Revised mapping by RECON.		√	
76	Recontour. *Revised mapping by RECON.			√
76A	Recontour. *Revised mapping by RECON.	<i>Branchinecta</i>		√
77	Recontour. *Revised mapping by RECON.	<i>Branchinecta</i>		√
78	Recontour and weed. *Mapped by RECON.		√	
79	Recontour and weed, tire ruts present. *Mapped by RECON.		√	
80	Recontour and weed. *Mapped by RECON.		√	
81	Recontour and weed. *Mapped by RECON.		√	
82	Recontour and weed. *Mapped by RECON.		√	
83	Seep. *Mapped by Helix Environmental Inc.			
84	Not relocated. *Mapped by Helix Environmental Inc.			
85	Not relocated. *Mapped by Helix Environmental Inc. Revised by RECON, smaller pools combined into one.			
86	Not relocated. *Mapped by Helix Environmental Inc.			




**TABLE A6-2
POTENTIAL VERNAL POOL RESTORATION
RECOMMENDATIONS FOR THE CARMEL MOUNTAIN PRESERVE
(continued)**





Vernal Pool No.	Problems/Comments/ Recommendations	Sensitive Species Present	Hand Tools	Heavy Equipment
87	Not relocated. *Mapped by Helix Environmental Inc.			
88	Not relocated. *Mapped by Helix Environmental Inc.			
89	Not relocated. *Mapped by Helix Environmental Inc. Revised by RECON, smaller pools combined into one.			
90	Not relocated. *Mapped by Helix Environmental Inc.			
91	Not relocated. *Mapped by Helix Environmental Inc.			
92	Not relocated. *Mapped by Helix Environmental Inc. Revised by RECON, smaller pools combined into one.			
93	Not relocated. *Mapped by Helix Environmental Inc.			

*Mapped vernal pool locations have been provided by the City of San Diego, RECON, and Helix Environmental Inc. Vernal Pools that have been revised, remapped, or added by RECON have been denoted. Restoration on those vernal pools which are located on private land would occur pending land acquisition. Restoration of vernal pools located on SDG&E access roads would occur if they are no longer in use, or if other access roads can be used on the Preserve.



Image Source: 2001 Aerial Fotobank (flown September 2001)

-  Carmel Mountain Preserve
-  Proposed trail
-  SDG&E access road

-  Vernal pools
-  Source: City of San Diego, revised in part by RECON (2001/2002)
-  Proposed fencing
-  Proposed gate for SDG&E access






 





FIGURE A6-2a
Potential Trail Rerouting
Around Vernal Pools
with the Potential for Restoration
on Carmel Mountain Preserve (Map 1)

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Image Source: 2001 Aerial Fotobank (flown September 2001)

-  Carmel Mountain Preserve
-  Proposed trail
-  SDG&E access road

- Vernal pools**
-  Source: City of San Diego, revised in part by RECON (2001/2002)
-  Vernal pools on private land (Restoration pending land acquisition)
-  Proposed fencing
-  Proposed gate for SDG&E access

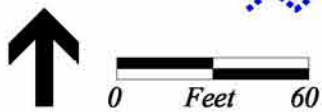


FIGURE A6-2b
Potential Trail Rerouting
Around Vernal Pools
with the Potential for Restoration
on Carmel Mountain Preserve (Map 2)

BLANK BACK OF FIGURE A6-2b



Carmel Mountain Preserve



Proposed trail

Vernal pools

Source: City of San Diego, revised in part by RECON (2001/2002)

Seeps

Source: City of San Diego, Helix Environmental Inc., revised in part by RECON (2002)



Proposed fencing



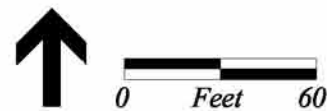
0 Feet 60




FIGURE A6-2c
Potential Trail Rerouting
Around Vernal Pools
with the Potential for Restoration
on Carmel Mountain Preserve (Map 3)



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Image Source: 2001 Aerial Fotobank (flown September 2001)



 Carmel Mountain Preserve
 Proposed trail
 SDG&E access road




Vernal pools
 Source: City of San Diego, revised in part by RECON (2001/2002)
 Seeps
 Source: City of San Diego, Helix Environmental Inc., revised in part by RECON (2002)



 Proposed fencing

FIGURE A6-2d
Potential Trail Rerouting Around
Vernal Pools with the Potential for Restoration
on Carmel Mountain Preserve (Map 4)

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 Carmel Mountain Preserve
 Proposed trail
 SDG&E access road

Vernal pools
 Source: City of San Diego, revised in part by RECON (2001/2002)
 Proposed fencing



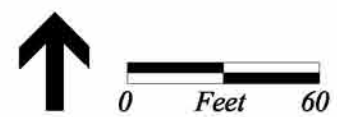

 0 Feet 60




FIGURE A6-2e
Potential Trail Rerouting Around
Vernal Pools with the Potential for Restoration
on Carmel Mountain Preserve (Map 5)

BLANK BACK OF FIGURE A6-2e



Image Source: 2001 Aerial Fotobank (flown September 2001)



 Carmel Mountain Preserve
 Proposed trail
 SDG&E access road



Vernal pools
 Source: City of San Diego, revised in part by RECON (2001/2002)
 Proposed fencing

FIGURE A6-2f
Potential Trail Rerouting Around
Vernal Pools with the Potential for Restoration
on Carmel Mountain Preserve (Map 6)

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Restoration activities that would be beneficial to individual vernal pools are briefly described in Table A6-2 including recommended weeding activities and topographic recontouring, if this restoration activity would benefit and restore more natural hydrologic conditions. The recommendation provided in Table A6-2 should be reevaluated at such time that a detailed restoration plan is prepared for each restoration site. In a few cases, previously mapped pools could not be relocated with certainty and this fact is also noted in Table A6-2.

Additional details and recommendations regarding establishment of vernal pool target species maintenance and monitoring schedules Implementation

5.0 Vernal Pool Resources on Del Mar Mesa

On Del Mar Mesa vernal pools occur in openings in the surrounding chaparral vegetation including chamise chaparral, southern mixed chaparral and scrub oak chaparral communities. Table A6-3 list vernal pool indicator species present in the area. Detailed vernal pool and depression mapping for restoration purposes was prepared for pools located in existing roads. Existing vernal pools located away from roads have not previously been mapped and mapping all the pools on Del Mar Mesa was beyond the scope of this Plan.

Intact vernal and relatively undisturbed vernal pools located and mima mound topography is associated with vernal pools in portions of Del Mar Mesa, but the mounds are not as readily apparent as in other portions of the County due to the dense upland vegetation particularly in the scrub oak community. Vernal pools on Del Mar mesa are known to support State and Federally listed pool species including San Diego mesa mint, San Diego button celery and spreading navarretia and another sensitive vernal pool species, little mouseling (*Myosurus minimus* var. *apus*).

Other sensitive species typically associated with vernal pools on Del Mar mesa include California adder's-tongue, Orcutt's brodiaea, and San Diego goldenstar. Sensitive animal species associated with vernal pool habitat on Del mar mesa include the two-striped garter snake, western spadefoot, and the federally endangered San Diego fairy shrimp, discussed below.

There are numerous vernal pools present on mesas within the eastern third of the Del Mar Mesa Preserve and these vernal pools have a better developed vernal pool flora than the Carmel Mountain pools. Species dominating these pools are San Diego button celery, San Diego mesa mint, water starwort, stone-crop, and woolly marbles. Some of the larger and deeper pools are distinguished by spikerush (*Eleocharus* sp.). Smaller

**TABLE A6-3
VERNAL POOL PLANT INDICATOR SPECIES FOR DEL MAR MESA PRESERVE**

Plant Species	Type
Orcutt's brodiaea <i>Brodiaea orcuttii</i>	Annual; vernal pools and foothill springs
Water-starwort <i>Callitriche marginata</i>	Annual; vernal pools and moist openings
Chaffweed <i>Centunculus minimus</i>	Annual; vernal pool specialist in region
Stone-crop <i>Crassula aquatica</i>	Annual; vernal pools and ephemeral wetlands
Annual hairgrass <i>Deschampsia danthonioides</i>	Annual; vernal pool specialist in region
Downingia <i>Downingia cuspidata</i>	Annual; vernal pool specialist
Waterwort <i>Elatine brachysperma</i>	Annual; ephemeral wetlands, muddy shores
Waterwort <i>Elatine californica</i>	Annual; ephemeral wetlands, muddy shores
Slender spikerush <i>Eleocharis acicularis</i> var. <i>acicularis</i>	Perennial; ephemeral wetlands
Pale spikerush <i>Eleocharis macrostachya</i>	Perennial; ephemeral wetlands
San Diego button celery <i>Eryngium aristulatum</i> var. <i>parishii</i>	Perennial; vernal pool specialist in region
Howell quillwort <i>Isoetes howellii</i>	Annual; vernal pool specialist
Orcutt quillwort <i>Isoetes orcuttii</i>	Annual; vernal pool specialist
Toad rush <i>Juncus bufonius</i>	Annual; weedy native of ephemeral wetlands
Flowering quillwort <i>Lilaea scilloides</i>	Annual; ephemeral wetlands, streams & lake edges
Grass poly <i>Lythrum hyssopifolia</i>	Annual; wet habitats
Candy-flower <i>Montia fontana</i>	Annual; vernal pool specialist in region
Little mouse tails <i>Myosurus minimus</i>	Annual; vernal pool specialist in region
Spreading navarretia <i>Navarretia fossalis</i>	Annual; vernal pool specialist in region
Hooked navarretia <i>Navarretia hamata</i>	Annual; vernal pool specialist in region
Lemon canary grass <i>Phalaris lemmonii</i>	Annual; moist areas
Pill-wort <i>Pilularia americana</i>	Perennial; ephemeral wetlands
Adobe allocarya <i>Plagiobothrys acanthocarpus</i>	Annual; shallow vernal pools and moist openings

TABLE A6-3
VERNAL POOL PLANT INDICATOR SPECIES FOR DEL MAR MESA PRESERVE
(continued)

Plant Species	Type
Plantain <i>Plantago elongata</i>	Annual; vernal pools, saline and alkaline places
Dot-seed plantain <i>Plantago erecta</i>	Annual; shallow vernal pools and moist openings
San Diego Mesa mint <i>Pogogyne abramsii</i>	Annual; vernal pool specialist
Dwarf woolly-heads <i>Psilocarphus brevissimus</i>	Annual; vernal pool specialist
Woolly-heads <i>Psilocarphus tenellus</i>	Annual; vernal pool specialist
Bladder clover <i>Trifolium depaupertaum</i> var. <i>amplectans</i>	Annual; wet meadows, open alkaline or spring-moist heavy soils

SOURCE: Bauder and McMillan 1996.

NOTE: Vascular plant species known to occupy natural vernal pools in the Del Mar Mesa Preserve region. Species identified as “vernal pool specialists” are found almost exclusively in natural vernal pools in the region.

populations of California adder's-tongue are present in some pools. *Downingia* (*Downingia cuspidata*) and little mousetail are present in the southeastern pool complex.

5.1 Current Status of Vernal Pools on Del Mar Mesa

Numerous vernal pools occur on Del Mar mesa in several areas (see Figures 10-1a and 10-1b, and Figures 10-2 through 10-3a–d of the Carmel Mountain and Del Mar Preserves Resource Management Plan). Vernal pools located away from existing roads and trails in the chaparral vegetation are the least disturbed and weedy. A portion of the vernal pools on Del Mar Mesa have been damaged by road grading, off-road vehicle traffic, and creation of unauthorized access paths. Levels of damage to the pools ranges from pools that are undisturbed relatively to pools that have been nearly eliminated by past road grading and associated vehicle traffic. Pools that have been the most severely impacted are located in and adjacent to unauthorized access paths through the California Department of Fish and Game (CDFG) vernal pool preserve area and along the graded access roads west of the preserve. In some cases vernal pools along the graded roads have been bisected and formerly contiguous sections of pools are now divided by the SDG&E access road.

5.1.1 Endangered and Threatened Vernal Pool Species on Del Mar Mesa

The restored vernal pools will be designed to support San Diego Mesa mint, San Diego button celery, spreading navarretia, and other vernal pool indicator plant species. Table A6-3 lists vernal pool indicator species for Del Mar Mesa.

5.1.1.1 San Diego Mesa Mint (*Pogogyne abramsii*)

San Diego mesa mint is a member of the Lamiaceae family. This annual herb flowers from April to June and is found only in vernal pools within San Diego County. This species is state and federally listed as endangered and is a CNPS *Inventory* (Skinner and Pavlik 1994) List 1B species. San Diego mesa mint is covered under the MSCP and is considered a narrow endemic species.

5.1.1.2 San Diego Button Celery (*Eryngium aristulatum* var. *parishii*)

San Diego button-celery is a member of the parsley family (Apiaceae). This annual/perennial herb is federally listed as endangered, state listed as endangered, and a CNPS List 1B species. San Diego button celery was designated as a federally listed endangered species on August 3, 1993 (USFWS 1993). It is also a covered species in the MSCP. San Diego button-celery is an annual/perennial species restricted in distribution to Riverside County, San Diego County, and Baja California, Mexico, where it occurs in vernal pools. *Eryngium* is one of the few perennial species found in vernal pools. While the plant can reproduce clonally, it relies largely on seed

germination for successful reproduction. This species has become endangered from habitat loss and fragmentation over recent decades.

5.1.1.3 Spreading Navarretia (*Navarretia fossalis*)

Spreading navarretia is a member of the phlox family (Polemoniaceae). This annual herb is federally listed as threatened, and a CNPS List 1B species. Spreading navarretia was designated as a federally listed threatened species on October 13, 1998 (USFWS 1998). It is also a covered species in the MSCP. Spreading navarretia is restricted in distribution to Riverside County, San Diego County, and Baja California, Mexico, where it occurs in vernal pools.

5.1.1.4 San Diego Fairy Shrimp (*Branchinecta sandiegonensis*)

The San Diego fairy shrimp is federally listed as endangered and is covered by the City of San Diego's MSCP (1995). This species is restricted to vernal pools in coastal southern California and south to northwestern Baja California, Mexico (USFWS 2000). The life cycle of fairy shrimp is relatively simple, with larvae hatching out of dormant cysts after being covered with water for a prescribed period of time, developing into adults, and mating and laying eggs before the pool dries. The development time is influenced both by the water temperature and the species-specific responses to environmental cues including water chemistry. San Diego fairy shrimp are found in the spring in vernal pools and other ponded areas that are generally less than 30 centimeters deep. This species takes between 3 and 8 days to hatch and development to the adult stage takes between 7 and 20 days.

5.1.2 Proposed Vernal Pools Restoration Areas

5.1.2.1 Vernal Pool Restoration Program for Del Mar Mesa

Lands formerly supporting San Diego mesa hardpan vernal pool habitat, eliminated by topographic disturbance and the loss of hydrologic ponding characteristics, will be restored. The vernal pools to be restored on Del Mar mesa will support vernal pool indicator species historically known to be present. Plants on the list of vernal pool indicator species for Del Mar Mesa (see Table A6-3) should be considered for reintroduction into restored vernal pools on Del Mar Mesa.

The potential to re-expand populations San Diego Mesa mint, San Diego button celery, spreading navarretia and other vernal pool indicator plant species is high. Restored pools that do not currently support the federally listed San Diego fairy shrimp (*Branchinecta sandiegonensis*) could be inoculated with shrimp cysts after reconstruction with USFWS approval.

RECON has mapped 93 vernal pools and depressions within the unauthorized road/trail on CDFG land and the SDG&E access roads to the west (Figures A6-3a–h). The pools that should have the highest priority for restoration activities are located in the CDFG preserve along the unauthorized road/trail east-west that traverses the site.

On Del Mar Mesa Preserve, an unauthorized access path crosses the California Department of Transportation (Caltrans) vernal pool reserve and ends at the southeastern corner of the site. Many of the roads and trails bisect vernal pool habitat within the chaparral. Vernal pools are located alongside and in some cases within the roads throughout the Preserve. Deep depressions and road ruts have been made by vehicles in these areas during the wet seasons. The southeastern unauthorized road/trail traverses the fenced off vernal pool reserve and is recommended for future formal closure. Unauthorized trespass is the primary cause of disturbance in the CDFG preserve.

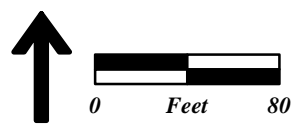
The portion of SDG&E access road that heads north through the preserve bisects vernal pools habitat. Restoration of pools in and adjacent to roads that are part of the proposed trail system are of lower priority for restoration due to the necessity to maintain access routes for SDG&E and to private inholdings. Table A6-4 lists the recommended restoration tasks for the 44 mapped depressions in the east-west path that traverses the CDFG vernal pool preserve and the approximately 44 additional depressions located in existing SDG&E access roads. It is important to note that impacts to vernal pools within the SDG&E access road that are due to SDG&E operations and maintenance activities are addressed in the SDG&E HCP. No restoration in these areas would occur without concurrence from SDG&E.

5.1.2.2 Past Vernal Pool Restoration Activities at Del Mar Mesa

In 1986, 40 artificial vernal pools were created by Caltrans on Del Mar Mesa. This project was intended to mitigate for loss of San Diego mesa mint that was impacted by the construction of Highway 52. A detailed summary of the restoration activities performed as part of this Caltrans mitigation program can be found in Black and Zedler 1998.

5.1.2.3 Management of Existing Vernal Pools on Del Mar Mesa

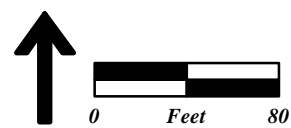
Long-term management of existing vernal pools not requiring restoration should focus on controlling recreational access and implementing the weeding program described later in this chapter. Pools adjacent to the graded roads west of CDFG preserve will require more intensive weeding efforts than pools located away from roads. The many undisturbed pools are currently relatively weed free and land managers will need to



 Del Mar Mesa Preserve  Potential Restoration Pools

FIGURE A6-3a
Mapped Vernal Pools
with the Potential for Restoration
on Del Mar Mesa Preserve (Map 1)

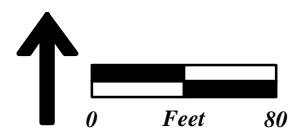
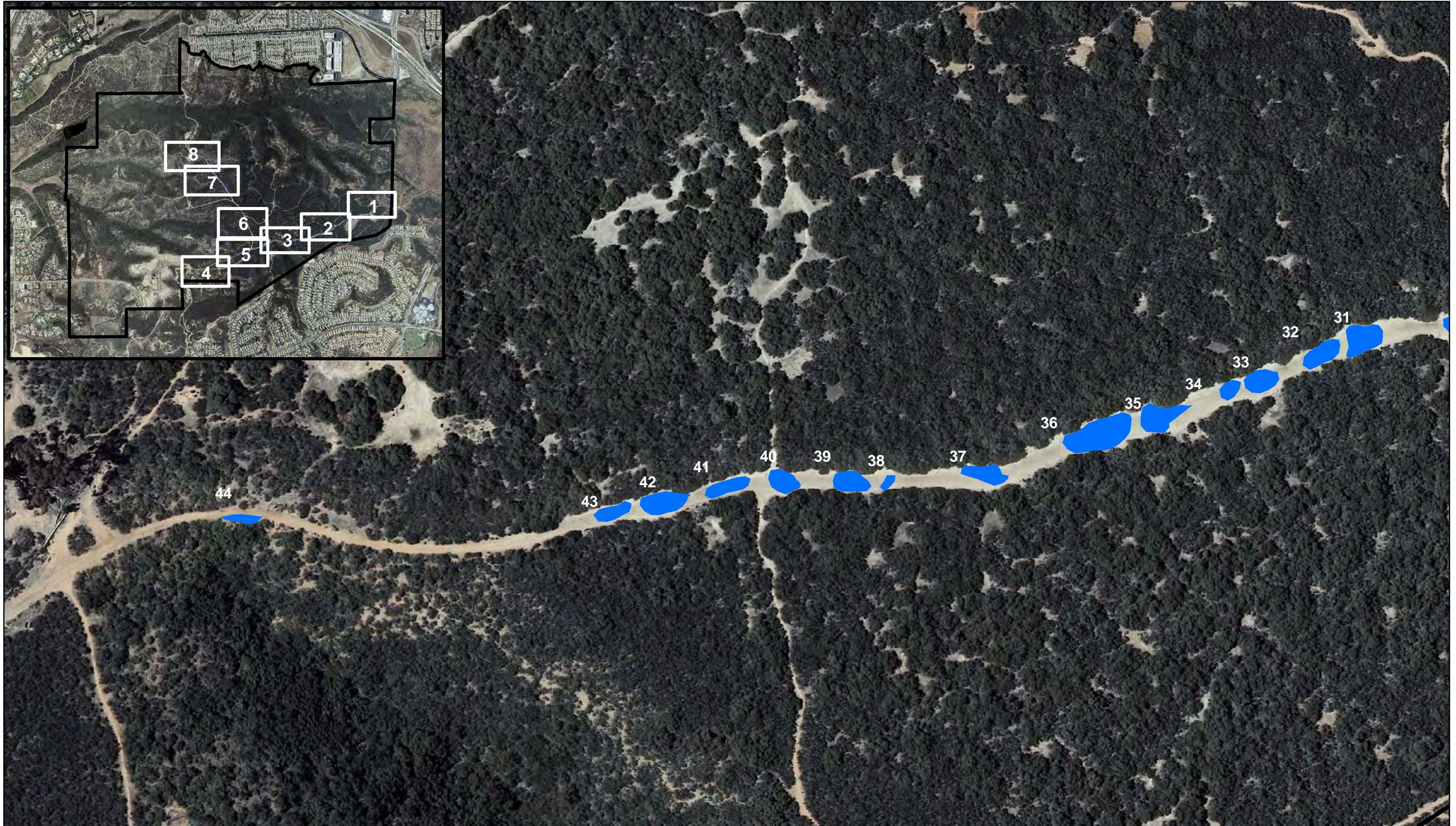
BLANK BACK OF FIGURE A6-3a



 Del Mar Mesa Preserve  Potential Restoration Pools

FIGURE A6-3b
Mapped Vernal Pools
with the Potential for Restoration
on Del Mar Mesa Preserve (Map 2)

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 Del Mar Mesa Preserve  Potential Restoration Pools

FIGURE A6-3c
Mapped Vernal Pools
with the Potential for Restoration
on Del Mar Mesa Preserve (Map 3)

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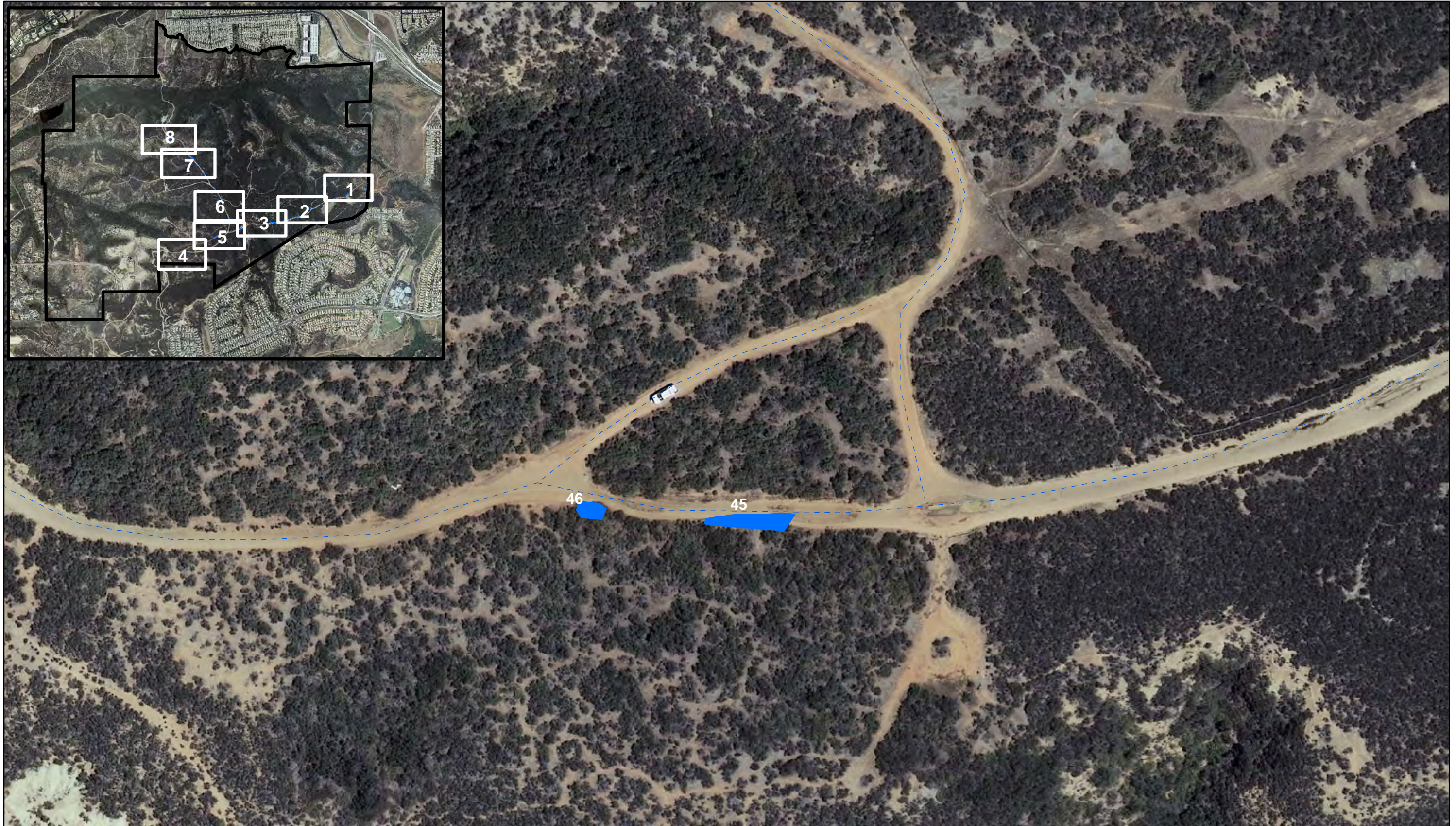
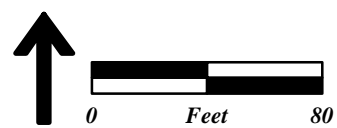


FIGURE A6-3d
Mapped Vernal Pools
with the Potential for Restoration
on Del Mar Mesa Preserve (Map 4)



 Del Mar Mesa Preserve  SDGE Access Road  Potential Restoration Pools

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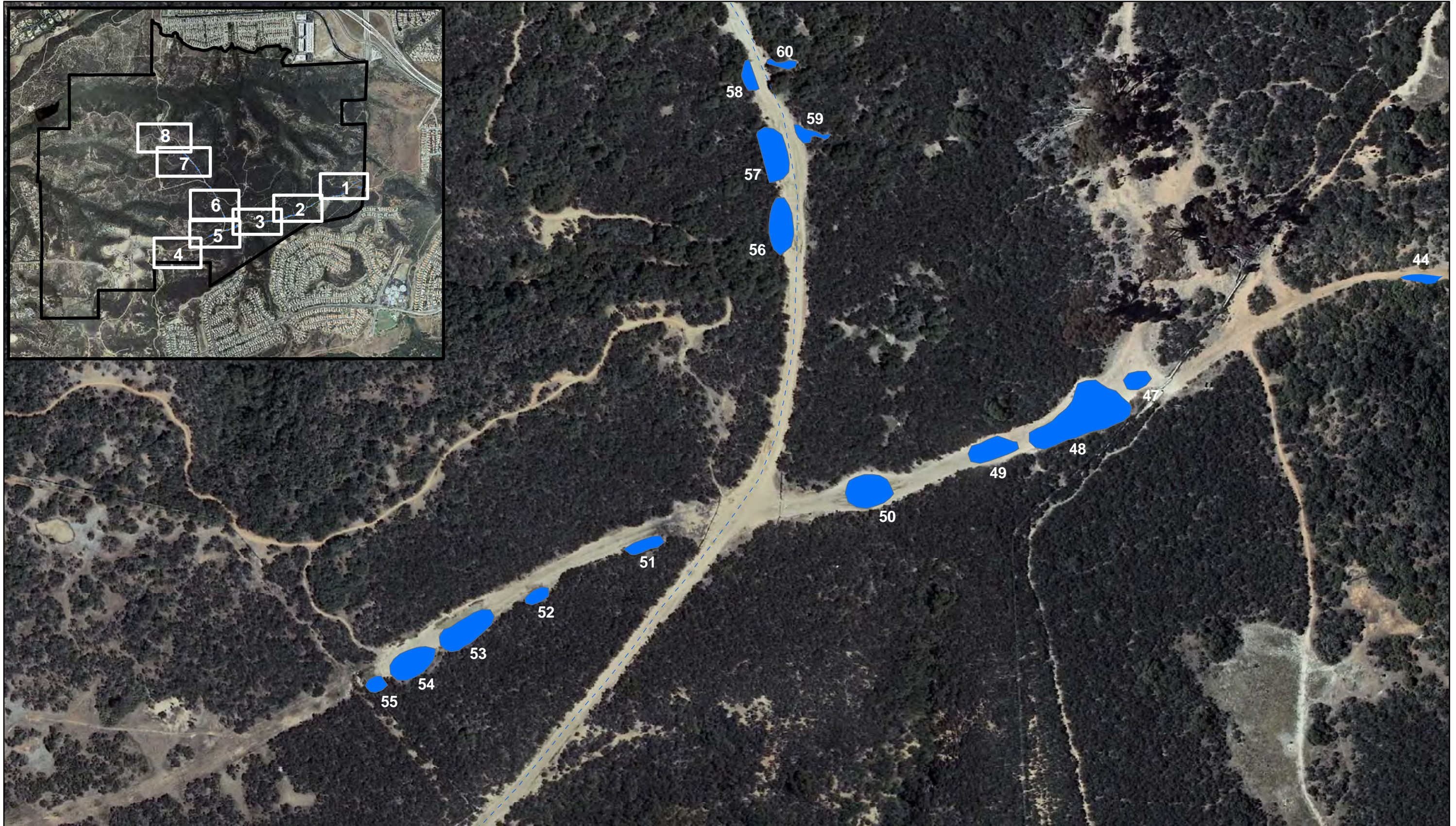
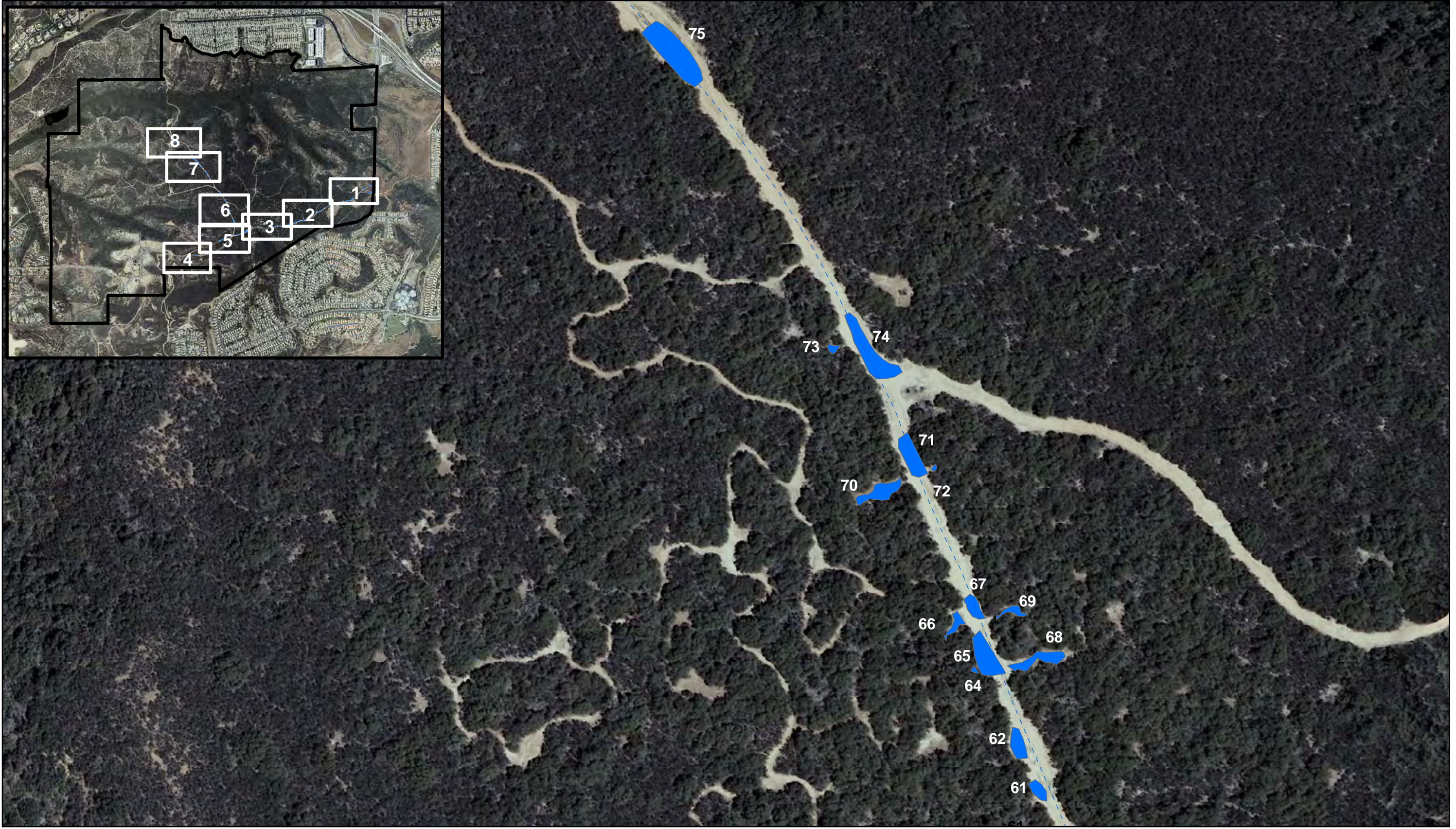


FIGURE A6-3e
Mapped Vernal Pools
with the Potential for Restoration
on Del Mar Mesa Preserve (Map 5)

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Del Mar Mesa Preserve
 - - - SDGE Access Road
 Potential Restoration Pools

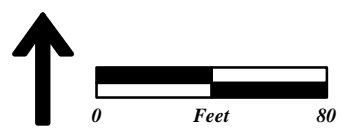


FIGURE A6-3f
Mapped Vernal Pools
with the Potential for Restoration
on Del Mar Mesa Preserve (Map 6)

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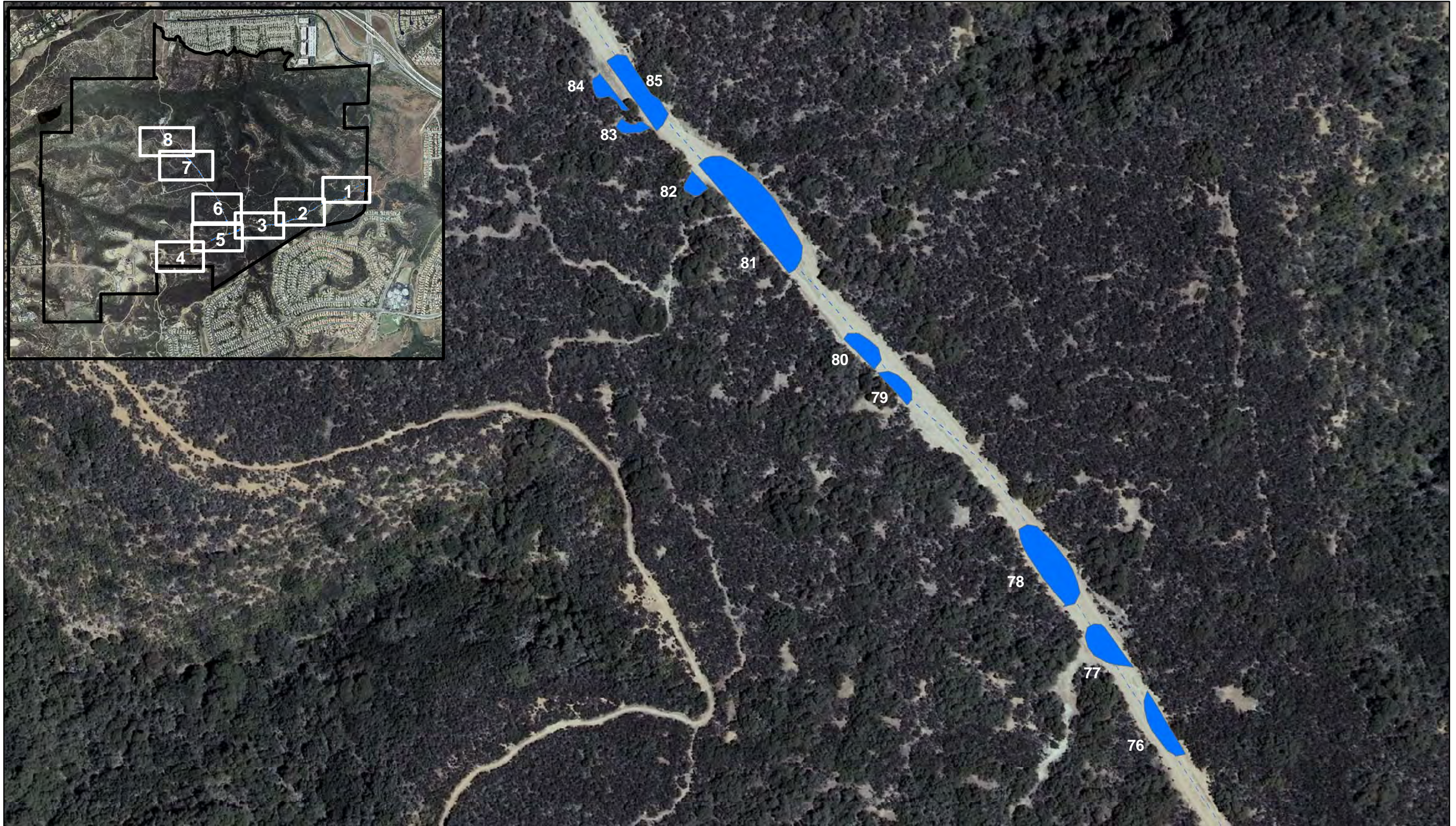
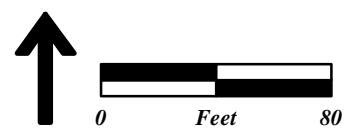
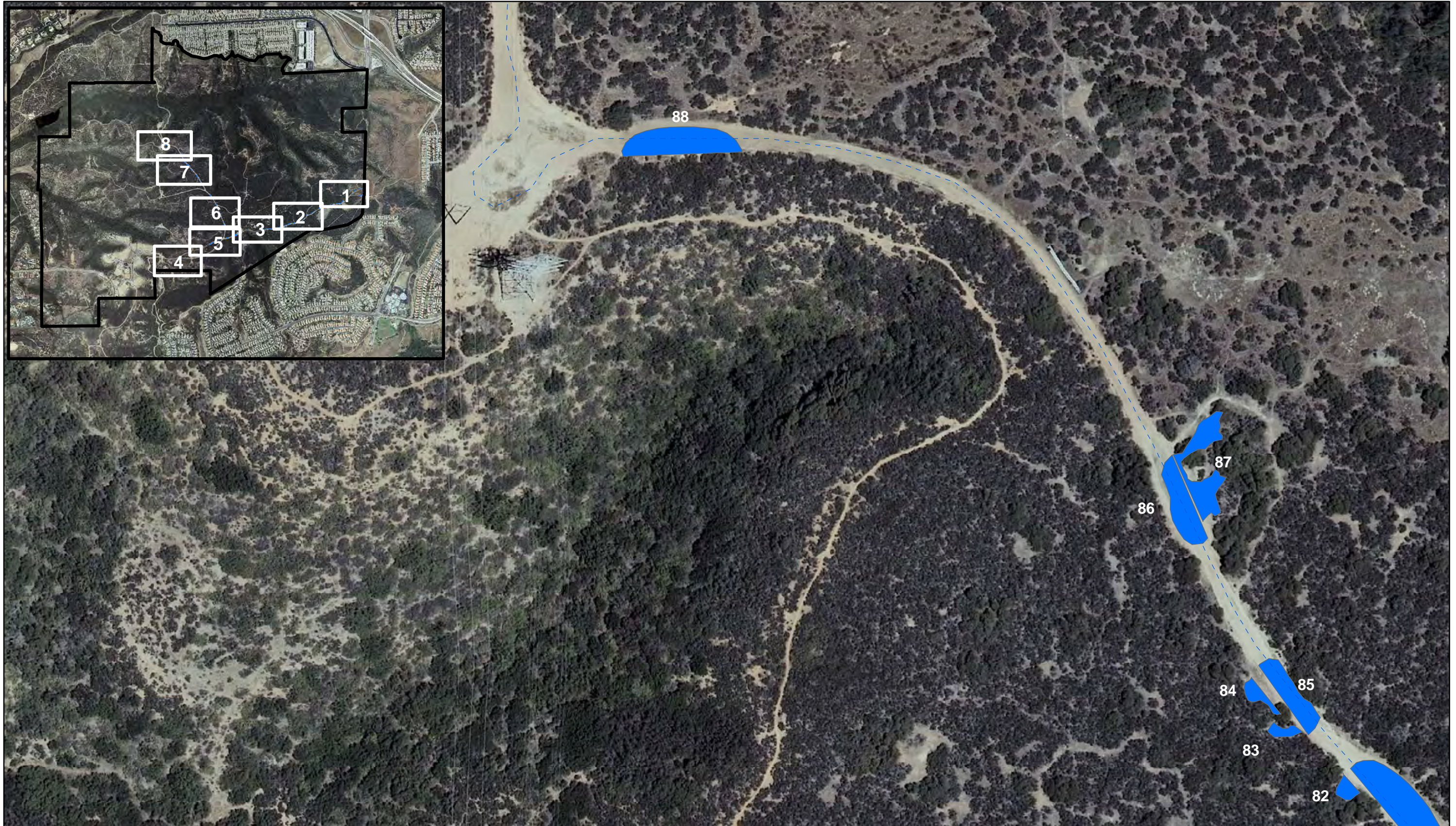


FIGURE A6-3g
Mapped Vernal Pools
 with the Potential for Restoration
 on Del Mar Mesa Preserve (Map 7)

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Del Mar Mesa Preserve
 - - - SDGE Access Road
 Potential Restoration Pools

FIGURE A6-3h
Mapped Vernal Pools
with the Potential for Restoration
on Del Mar Mesa Preserve (Map 8)

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**TABLE A6-4
POTENTIAL VERNAL POOL RESTORATION
RECOMMENDATIONS FOR THE DEL MAR MESA PRESERVE**

Vernal Pool No.	Problems/Comments	Sensitive Species Present	Hand Tools	Heavy Equipment
1	Close trail to pool.	<i>Eryngium aristulatum</i> var . <i>parishii</i>		
2	Minor road rut repair with hand tools.		√	
3	Smooth rough spots and trail/road rut ridges going through pool. Adjacent weedy areas.		√	
4	Enlarge pool. Remove weedy fill east of pool. Weedy area on east boundary.	<i>Eryngium aristulatum</i> var . <i>parishii</i>		√
5	Enlarge pool. Remove weedy fill east of pool.			√
6	Enlarge pool. Weed around pool.			√
7	Enlarge and recontour pool.	Immature fairy shrimp observed		√
8	Remove fencing and combine with existing adjacent pools to north/south.	Immature fairy shrimp observed		√
9	Enlarge pool. Remove road ruts and weed. Remove fencing on southside of road and connect with adjacent existing pools.	Immature fairy shrimp observed <i>Eryngium Aristulatum</i> var . <i>parishii</i>	√	√
10	Recontour and weed pool. Remove fence and connect with adjacent existing pools to south. Remove berm south of fence.	<i>Eryngium Aristulatum</i> var . <i>parishii</i>	√	√
11	Recontour and weed pool.			√
12	Enlarge and recontour pool.			√
13	Enlarge pool. Remove fence and connect with existing pool on south side.	<i>Eryngium aristulatum</i> var . <i>parishii</i>		√
14	Enlarge pool. Remove fence and connect with existing pool on south side.	<i>Eryngium aristulatum</i> var . <i>parishii</i>		√
15	Enlarge pool. Remove fence and connect with existing pool on south side.	<i>Eryngium aristulatum</i> var . <i>parishii</i>		√
16	Enlarge and recontour pool.			√
17	Enlarge and recontour pool.			√
18	Enlarge, weed, and recontour pool. Remove fence to south.	<i>Eryngium aristulatum</i> var . <i>parishii</i>		√

**TABLE A6-4
POTENTIAL VERNAL POOL RESTORATION
RECOMMENDATIONS FOR THE DEL MAR MESA PRESERVE
(continued)**

Vernal Pool No.	Problems/Comments	Sensitive Species Present	Hand Tools	Heavy Equipment
19	Enlarge and recontour pool.			√
20	Enlarge and recontour pool.			√
21	Enlarge and recontour pool.			√
22	Enlarge and recontour pool.			√
23	Enlarge and recontour pool.			√
24	Enlarge and recontour pool.			√
25	Enlarge and recontour pool.			√
26	Enlarge and recontour pool.			√
27	Enlarge and recontour pool.			√
28	Enlarge and recontour pool.			√
29	Enlarge and recontour pool.			√
30	Enlarge and recontour pool.			√
31	Enlarge and recontour pool.			√
32	Enlarge and recontour pool.			√
33	Enlarge and recontour pool.			√
34	Enlarge and recontour pool.			√
35	Enlarge and recontour pool.			√
36	Enlarge and recontour pool.			√
37	Enlarge and recontour pool.			√
38	Enlarge and recontour pool.			√
39	Enlarge and recontour pool.			√
40	Enlarge and recontour pool.			√
41	Enlarge and recontour pool.			√
42	Enlarge and recontour pool.			√
43	Smooth out road ruts and weed pool.		√	
44	Smooth out road ruts and weed pool.		√	
45	Recontour.			√
46	Recontour.			√
47	Recontour and weed pool.			√
48	Recontour and weed pool.	<i>Eryngium aristulatum</i> var. <i>parishii</i> , <i>Pogogyne</i> <i>ambramsii</i> present on north side of pool.	√	√

**TABLE A6-4
POTENTIAL VERNAL POOL RESTORATION
RECOMMENDATIONS FOR THE DEL MAR MESA PRESERVE
(continued)**

Vernal Pool No.	Problems/Comments	Sensitive Species Present	Hand Tools	Heavy Equipment
49	Recontour.			√
50	Recontour.			√
51	Recontour.			√
52	Recontour.			√
53	Recontour.			√
54	Recontour.			√
55	Recontour.		√	
56	Recontour.			√
57	Recontour, pool in road.			√
58	Recontour.			√
59	Recontour; and remove berm in road, join with pool #57.			√
60	Recontour; remove berm in road, join with pool #58.			√
61	Recontour.			√
62	Recontour.			√
63	Not relocated, as mapped by City of San Diego.			
64	Recontour; join with pools #65 and #68.			√
65	Recontour; join with pools #64 and #68.			√
66	Recontour; remove road berm and join with pools #67 and #69.			√
67	Recontour; join with pools #66 and #69.			√
68	Recontour; join with pools #64 and #65.			√
69	Recontour; remove road berm and join with pools #66 and #67.			√
70	Recontour; remove road berm and join with pools #71 and #72.			√
71	Recontour; join with pools #70 and #72.			√
72	Recontour; join with pools #70 and #71.			√
73	Remove road berm; join with pool #74		√	

**TABLE A6-4
POTENTIAL VERNAL POOL RESTORATION
RECOMMENDATIONS FOR THE DEL MAR MESA PRESERVE
(continued)**

Vernal Pool No.	Problems/Comments	Sensitive Species Present	Hand Tools	Heavy Equipment
74	Recontour pool.			√
75	Recontour pool.			√
76	Recontour pool.			√
77	Recontour and weed pool.			√
78	Recontour.			√
79	Recontour; join with pool #80.			√
80	Recontour; join with pool #79.			√
81	Recontour; join with pool #82.			√
82	Recontour; remove road berm and join with pool#81.			√
83	Recontour; remove road berm and join with pools #84 and #85. *Currently on private land.			√
84	Recontour; remove road berm and join with pool #83 and #85. *Currently on private land.			√
85	Recontour; remove road berm and join with pools #83 and #84. *Currently on private land.			√
86	Recontour; remove road berm and join with pools #87 and #88. *Currently on private land.			√
87	Recontour; remove road berm and join with pools #86 and #88.			√
88	Recontour and weed pool and join with pools #86 and #87. *Currently on private land.			√

NOTE: See Figures A6-2a-h.

*Mapped vernal pool locations have been provided by the City of San Diego, as well as by RECON. Vernal pools that have been revised, remapped, or added by RECON have been denoted. Restoration on those vernal pools that are located on private land would occur pending land acquisition. Restoration of vernal pools located in SDG&E access roads (pools #45, #46, #56 -#88) would occur if they are no longer in use, or if other access roads can be used on the Preserve.

perform annual monitoring checks to identify and address any new weed invasion problem areas.

6.0 Vernal Pool Restoration Implementation Plan

6.1 Rationale for Expecting Implementation Success

Existing examples of vernal pool restoration projects in the San Diego region range in age from one to 20 years. In the oldest example, which was a controlled study evaluating the effects of topographic restoration and seed dispersal facilitation (Scheidlinger et al. 1985), vegetation in the restored pools and disturbed areas of the site with persisting pool hydrology was equivalent after 14 years to that of natural pools (Patterson 1995). In restoration programs conducted on Lopez Ridge (Patterson and Netting 1994a) and Naval Air Station (NAS) Miramar (Patterson and Netting 1994b) and California Terraces on Otay Mesa (RECON 1997, 2000), restoration success criteria similar to those proposed herein were met within two seasons. Other local vernal pool restoration projects in various stages of planning and implementation are being undertaken on Otay Mesa, NAS Miramar, and Camp Pendleton.

Vernal pool creation projects in California have been undertaken in many localities in the Central Valley and in Santa Barbara (Ferren and Givertz 1990). Although these projects have met with mixed success, most workers in the field agree that while self-sustaining ephemeral wetland habitat for particular target species is possible to create, this habitat should not be considered an equivalent substitute for natural habitat (Ferren and Givertz 1990). In cases where limited natural habitat is available, vernal pool recreation and restoration becomes an important method in preserving vernal pool habitat and the species that depend on it.

6.1.1 Restorationist Qualifications

The restoration project biologist should have a minimum of five years of vernal pool restoration experience in coastal southern California. The project biologist should be able to demonstrate an understanding of the special growing requirements vernal pool plant species as they relate to the restoration and enhancement of vernal pools. The project biologist or biology team must have the necessary state and federal permits to work with listed vernal pools species.

6.2 Site Preparation

6.2.1 Preliminary Design and Engineering

Conceptual planning of the restoration area involves the creation of a preliminary design for the topographic reconstruction for each vernal pool site. The reconstruction concept plan below is based in part on the re-excavation of basins that appear to have been filled with soil due to the erosion and leveling of adjacent mounds, when present. The general locations for the proposed restoration basins have been determined and mapped in the field. Detailed final grading plans should be prepared prior to implementation of restoration activities.

A topographic base map depicting 0.5-foot topographic contours from the existing surface should be prepared by a topographic engineering survey within the proposed vernal pool restoration sites. After reconstruction, the boundary of the restored vernal pools will be recorded in the field using post-processed GPS with a horizontal accuracy of less than one foot. The final grading plans will be re-plotted at 1 inch equals 40 feet, showing pool boundary, existing path and level, and finished 0.5-foot topographic contours for use in the field. Each pool boundary will be marked with contractor sand and the finished basin floor and outflow elevations will be checked with laser survey equipment.

6.2.2 Topographic Reconstruction

Vernal pools to be restored on both Carmel Mountain and Del Mar Mesa are primarily located on existing roads and trails. In general, pool basin restoration will reverse the topographic effect of disturbance on the site, consisting primarily of erosion and the filling in of the depressions. The resulting hydrologic effect of this kind of disturbance is a reduction in the capacity of the site to capture and store rainwater. The primary physical change accomplished by this project will be the removal of a portion of the fill material from the restoration areas to restore pools and possibly restore the natural hydrology of existing depressions to enhance ponding and retention of water within the preserves. On Carmel Mountain, material removed from excavated basins could be salvaged and used to cover roads and trails proposed for closure where all the topsoil has been previously removed by road grading. Use of salvaged topsoil on closed roads that have been graded to the sandstone hardpan would create better conditions for plant restoration and establishment.

On Del Mar Mesa, within the CDFG preserve, soil removed from excavated basins can be used to reconstruct low mounds on the site, where appropriate. Some vernal pools on the site are associated with mounds, while others are not. Any excess fill material not used in mound reconstruction should be removed from the site. Existing non-natural features such as roadways and deep vehicle tracks will be regraded as appropriate to restore more natural soil conditions. Grading activities will be conducted during the fall, prior to seasonal rains, to minimize unintended compacting of the soils by grading equipment. The grading will be conducted under

the direction of a qualified biologist with vernal pool restoration experience. Areas that are to remain unaffected by restoration activities will be marked prior to implementation.

Grading will be implemented using small-tracked dozers with ripping tines and slope boards, and a sheep's foot for mound construction. The grading contractor and operators will also be experienced in vernal pool restoration work. The restoration team will include a qualified surveyor to assure that the grading plan is implemented as designed.

6.2.3 Barriers

Concurrent with the implementation of the restoration grading, vehicle barriers such as wooded split rail fences will need be erected and maintained around the perimeter of the vernal pool restoration sites on Carmel Mountain. On Del Mar Mesa gates and vehicle barriers are in need of repair and enforcement patrols will be needed to reduce and minimize the ongoing vandalism to fences and gates.

Steel signs attached to the fence will provide notice that the area is an ecological preserve, notify that trespassing is prohibited, and cite penalties for trespass violation including liability for repair of any damage within the barrier such as disturbance of soil or vegetation. Signage will be provided at 200-foot intervals around the entire restoration area.

6.3 Planting and Restoration Plan

6.3.1 Reintroduction of Vernal Pool Biota

Restoration of the native vernal pool habitats within the preserves requires the reintroduction of plants and animals at the site in addition to the physical reconstruction described above. The restoration of vernal pool habitat can be greatly accelerated by the active transport of propagules from donor sites into the restored ponds (Scheidlinger et al. 1985; RECON 1999). This will be accomplished by the redistribution of seeds, spores, bulbs, eggs, and other propagules from on-site vernal pools; as well as by the translocation of the propagules of individual species from off-site habitats.

6.3.2 Seed Collection

- Prior to the initiation of grading in the restoration site, vernal pool seed collection will be conducted both at Carmel Mountain and Del Mar Mesa Preserves. It has been experimentally demonstrated that it is best to collect seeds within five miles of the proposed restoration or enhancement site. Vernal pool indicator species listed in Table A6-1 for Carmel Mountain and Table A6-3 for Del Mar Mesa, should be considered for introduction to the created pools.

- The hand-collected vernal pool seeds would either be distributed in the basins immediately following the completion of topographic reconstruction or just prior to or after significant rain events at the discretion of the project biologist.

6.3.3 Translocation of Endangered Species

- Three listed plant species are known to currently still persist Del Mar Mesa Preserve vernal pool complex, San Diego button celery, San Diego Mesa mint and spreading navarretia. These species will be introduced into the restored pools from seed collected on site. San Diego fairy shrimp may also be introduced to restored vernal pools. As mentioned previously, San Diego fairy shrimp may be introduced into pools that do not currently support this species. Surveys determining their presence or absence will be conducted prior to this implementation.
- Less than 5 percent of the seed crop from San Diego button celery San Diego Mesa mint and spreading navarretia on the site would be collected while in fruit during the summer/fall. This seed will be stored in labeled bags or boxes that are adequately ventilated and kept out of direct sunlight in order to prevent the occurrence of fungus or excessively heating the seed. Seed will be distributed into restored pools that do not support existing populations of San Diego button celery, San Diego Mesa mint or spreading navarretia.

The San Diego fairy shrimp is known to currently still persist in the vernal pool complexes on the Preserves. Shrimp cysts would only be introduced into pools that do not support existing populations of San Diego fairy shrimp. The following translocation guidelines would be adhered to for any fairy shrimp translocation effort.

- Vernal pool soil would be collected when it is dry to avoid damaging or destroying fairy shrimp cysts, which are fragile when wet.
- A hand trowel or similar instrument shall be used to collect the sediment. Whenever possible, soil shall be collected in chunks. The trowel shall be used to pry up intact chunks of sediment, rather than loosening the soil by raking and shoveling which can damage the cysts.
- Soil containing fairy shrimp cysts shall not be introduced into pools that may already have populations of any species of shrimp.

6.3.4 Establishment of Vernal Pool Target Species

Necessary criteria for this restoration plan include enhancement of populations of three sensitive plant species in vernal pools on Del Mar Mesa: San Diego button celery, San Diego Mesa mint, and spreading navarretia. The introduction of these species will add to the plant diversity of the restored pools and enrich the vernal pool habitat. Following topographic

reconstruction, the vernal pools will be inoculated with these three species' seed that will be collected from the plants in the Del Mar Mesa Preserve.

If restored pools have suitable hydrologic conditions, San Diego fairy shrimp cysts will be introduced in the vernal pools following the guidelines listed above.

6.3.5 Off-Site Translocation for Species Diversity

In order to meet target species diversity criteria, translocation of plant species listed in Table A6-1 for Carmel Mountain and Table A6-3 for Del Mar Mesa may be implemented. All species represented in Tables A6-1 and A6-3, which are present in nearby control pools but not present on the restoration site, shall be considered for introduction to the site. Species proposed for introduction to the site shall be considered to be indicative of vernal pool habitat quality and likely to have formerly occupied vernal pools on the site prior to disturbance.

6.4 Irrigation

No irrigation of restored vernal pools is recommended. Water inputs to the pools should be confined to natural rainfall.

6.5 As-Built Implementation Reporting

The first year implementation and monitoring report will include a final as-built plan. The as-built status report will include topographic mapping showing as-built topographic pool contours, basin locations, barriers, photographs of the restoration site, and a summary of project activities taken place. The status of endangered species, planting and weeding efforts, and the progress towards reaching the restoration goals will be included.

7.0 Maintenance During Monitoring Period

7.1 Maintenance Activities

Regular maintenance of the vernal pool restoration area, including intensive weeding and remedial plantings, will be required during the construction year and subsequent five-year monitoring period. On-going maintenance of the barriers and prohibition of trespassing will also be necessary. Maintenance activities will include but are not limited to the following:

- Removal of aggressive non-native weeds shall be implemented during the five-year monitoring periods for the vernal pool and adjacent upland habitats. All weeding shall be done by hand in the pool basins. In adjacent upland areas weeds can be controlled through use of approved herbicide, hand tools, or a line trimmer. The frequency and amount of weeding will depend on the rainfall patterns and other contributing factors. The preserve should be weeded at least twice a month following initial germination of non-native seedlings and should continue until all non-native species have been eliminated or restricted from setting seed.
- The monitoring biologist shall direct weeding crews to remove weeds that require control during the five-year monitoring period. The need for weeding is expected to decrease substantially by the end of the monitoring period provided successful habitat restoration has been achieved.
- All fencing and signs shall be checked and repaired as necessary once every month.
- Trash in the Preserve areas shall be removed once every month, if present.
- Any persons found willfully damaging the habitat within the preserves, including but not restricted to trash dumping, off-road-vehicle activity, trespass, plant removal, and destruction of barriers, shall be prosecuted to the full extent of the law.
- After initial seeding, the site will be checked twice a week by the project biologist for the first two months, once a week for the next four months, and monthly thereafter.
- Other site problems such as vehicle damage and erosion shall be reported to the land managers with recommendations for remedial measures.

7.2 Schedule

Maintenance activities described above will be performed at the intervals listed in Table A6-5.

**TABLE A6-5
APPROXIMATE MAINTENANCE SCHEDULE OF VERNAL POOL
RESTORATION AREAS ON CARMEL MOUNTAIN AND DEL MAR MESA PRESERVES**

Type/Task	Construction Year	Year 1	Year 2	Year 3	Year 4	Year 5
Site protection	Monthly	Monthly	Quarterly	Quarterly	Quarterly	Quarterly
Weed control	As-needed	As-needed	As-needed	Quarterly	Quarterly	Twice a year
Trash removal	Monthly	Monthly	Quarterly	Quarterly	Quarterly	Quarterly
Replanting/ seeding	Winter	Winter	Winter	Winter	Winter	Winter

8.0 Monitoring Plan

8.1 Monitoring Methods

8.1.1 Hydrology

Hydrological characteristics of the restoration site to be monitored include assessment of the depth, periodicity, and duration of inundation in the created, restored, and control pools. Precipitation is recorded at the nearest reporting weather station. Field methods for the hydrological monitoring are described below.

- Each restored pool shall be topographically mapped at 0.5-foot contour intervals.
- Each monitored pool will be measured for water depth every two weeks until the standing water is gone. Water depth will be measured using a ruler placed in the low point of the pool.
- A water-depth versus time chart shall be prepared for each monitored pool illustrating water depth and ponding periodicity over the basin low-point.

8.1.2 Biota

Biological parameters of the mitigation site to be monitored include species presence and relative cover (for plants) within each created and control basin. For target and indicator species, a qualitative assessment of reproductive success will be made. Photodocumentation will provide a basinwide overview of the vegetative community.

- Biological observations shall be made by a field biologist trained in the methods described below and familiar with the plant taxa listed in Tables A6-1 and A6-3.
- During the aquatic phase of each monitored basin, all plant and animal taxa observed shall be recorded.
- During the aquatic phase, each monitored basin shall be dip-net sampled for aquatic invertebrates using pole-mounted dip-nets in appropriate mesh size to capture cladocerans, ostracods, branchiopods, and tadpoles at two-week intervals until there is no ponded water or the two listed shrimp species are detected, whichever comes first.
- Each monitored basin shall be sampled for plant species presence and estimated cover using a meander survey of at least a 15-minute duration per basin within 45 days of the disappearance of standing water.
- Each monitored basin shall be photographed from an established photo point during the vegetation sampling period.

8.2 Vernal Pool Performance Criteria

Intermediate yearly performance criteria demonstrating progress towards the final criteria are difficult to quantify due to the unpredictability of seasonal precipitation patterns and the sensitivity of recovering vernal pool and ephemeral wetland communities to that variability. Therefore, the yearly target criteria are semi-quantitative.

- Each of the specified success criteria will be evaluated following the completion of seasonal field monitoring to determine if the final success criteria have been met and to assess the likelihood that the criteria will ever be met (taking into account the seasonal conditions).
- The final assessment of success will be based on the combined performance over the monitoring period and an analysis of the trends established.

8.2.1 Location of Control Habitat

For the Carmel Mountain restoration program a minimum of 10 control pools shall be chosen from the least disturbed pools on Carmel Mountain as determined by the project biologist(s). For the Del Mar Mesa restoration program a minimum of 10 control pools shall be chosen from the least disturbed pools on Del Mar Mesa.

Control pools shall be chosen to include the ranges of both physical and biotic characteristics included in the long-term mitigation goals. All control pools shall support vernal pool vegetation, as defined below in the target vegetation and cover criteria.

8.2.2 Target Vegetation and Cover

- For each pool, the area of vernal pool vegetation shall be defined for purposes of this section as coincident with the area supporting a combined relative pool species cover of more than 50 percent, measured within 45 days of the disappearance of standing water. In a drought year, this criterion shall be considered to be met if the total relative cover by pool species equals that of the averaged value of control pools having similar hydrological characteristics in that year and if the qualifying area has met this criterion in a previous monitoring year.
- For each pool, the total absolute vegetative cover in areas of qualified vernal pool vegetation, not including target weed species, shall equal or exceed 50 percent of the averaged value of control pools having similar hydrological characteristics.

8.2.3 Target Plant Species Diversity

- Created basins shall support reproducing populations of a minimum number of vernal pool species equivalent to that supported by the control pools. Equivalence is met if

(1) the pool species richness value for each basin (see Monitoring Plan section, below) is equal to or greater than the minimum value found in the control pools and (2) the value of pool species richness in the combined restored pools is equal to or greater than that of the control pools.

8.2.4 Target Indicator Wildlife and Endangered Shrimp Species

Characteristic animal species of vernal pools in the Carmel Mountain and Del Mar Mesa Preserve are primarily aquatic invertebrates and amphibians, although terrestrial invertebrate (especially insect) and vertebrate species are important components of the vernal pool community (Zedler 1987). Of the aquatic invertebrates, species of branchiopods, which includes fairy shrimp (Anostraca), clam shrimp (Conchostraca), and tadpole shrimp (Notostraca), are among the most distinctive inhabitants of ephemeral aquatic habitat (Pennak 1989). Unlike most aquatic invertebrates, these species are found almost exclusively in ephemeral freshwater habitats.

A number of branchiopods that are thought to occur almost exclusively in natural vernal pools have been listed or proposed for listing as endangered by the USFWS, the San Diego fairy shrimp which are found in the Del Mar mesa vernal pools.

The seed shrimp (subclass Ostracoda) is another small crustacean group that is highly distinctive in vernal pools. In the United States, freshwater seed shrimp have been comprehensively studied only in the several eastern and midwestern states and in Washington (Pennak 1989). Vernal pools in the region invariably support one or more seed shrimp species, some of which may be undescribed endemic taxa (Zedler 1989).

The target indicator wildlife species listed in Table A6-6 includes species that are found primarily in natural vernal pools within the region and are therefore considered indicators of habitat quality and restoration success.

**TABLE A6-6
TARGET INDICATOR WILDLIFE SPECIES
FOR CARMEL MOUNTAIN AND DEL MAR MESA**

Group	Species
Anostraca	<i>Branchinecta sandiegonensis</i> (San Diego fairy shrimp)
Conchostraca	<i>Cyzicus</i> sp. (clam shrimp)
Ostracoda	<i>Bradleycypris</i> sp., <i>Eucypris</i> sp., <i>Heterocypris</i> sp., <i>Lymnocythere</i> sp., <i>Pseudoilicypris</i> sp. (seed shrimp)
Dytiscidae	<i>Agabus</i> sp. (predaceous water beetles)
Pelobatidae	<i>Scaphiopus hammondii</i> (western spadefoot toad)

- Each of the created vernal pools within the restoration area shall support populations of at least two of the species listed in Tables A6-1 and A6-3 (vernal pool indicator species).

- A plant life indicator species richness value shall be determined for each created and control pool and the richness value of created pools shall be equal to or greater than that of the control pools.

8.2.5 Target Weed Species

Non-native weed species expected to be potential significant factors in the vegetation of the vernal pools include annual grasses (*Bromus* spp.), rabbitfoot grass (*Polypogon monspeliensis*), brass buttons (*Cotula coronopifolia*), loose-strife (*Lythrum hyssopifolia*), filaree (*Erodium* spp.), sand-spurrey (*Spergularia bocconii*), curly dock (*Rumex crispus*), common knotweed (*Polygonum arenastrum*), perennial ryegrass (*Lolium perenne*), and Italian ryegrass (*Lolium multiflorum*). Of these, the *Lolium* species are some of the most significant competitors with native pool vegetation as it becomes established.

- Within the vernal pool vegetation in each restored and preserved vernal pool, the relative cover of non-native species shall not exceed one percent.
- All localities of non-native plant species within the vernal pool preserves will be eliminated as a part of ongoing maintenance activities.

8.3 Target Hydrological Regime

In coastal southern California, annual precipitation is highly seasonal, with most of the rainfall occurring in the winter and early spring from December through April. On the coastal mesas, summer and fall precipitation is rare and is never of sufficient magnitude to cause ponding in natural vernal pools. The first major rainfall event of the season rarely fills natural pools; this water being used to wet and recharge surface soils dried during the summer drought. Subsequent storms charge the perched water table formed in the low-permeability soil profile of natural vernal pool landscapes, which is expressed as surface ponding in basins and topographic depressions.

The formation of a perched water table and the occurrence of surface ponding requires a soil profile with very low permeability but is also highly dependent on the topography of the site. Depressions must be present as places for the ponding to be expressed and as reservoirs to capture precipitation. The shape of the perched water table surface is influenced by the pattern and capacity of basins, interbasin soil permeability, slope of the overall site, and variations in subsoil permeability such as sand lenses and holes in the hardpan. It is this surface shape, changing over time under the influence of gravity, evaporation, and precipitation, which determines the depth and duration of ponding in the depressions.

The depth and duration of water in these temporal ponds is highly dependent upon the magnitude and number of storm events, the time interval between each event, and the climactic determinants of evaporation and transpiration (temperature, humidity, sunlight, and winds)

between each storm event. Annual occurrences of winter rains in the region are remarkably variable. Therefore, the success criteria for hydrological characteristics also depend on a comparison with control habitats representing the expression of long-term performance goals during each monitoring year.

8.3.1 Watershed Analysis

The restoration of mound and basin topographic relief to the mitigation site is expected to result in the restoration of natural hydrologic conditions to the sites. Currently, graded roads and vehicles have caused siltation to the extent that of the precipitation falling on the sites is unable to pond adequately to support a diverse assemblage of vernal pool species. Topographic restoration will reestablish the ability of the landscape to capture and retain precipitation.

8.3.2 Duration, Periodicity, and Depth of Inundation

- All monitored vernal pools, including the control pools and pools within the preserves, shall be monitored to record water depth over the low point in each basin during the course of six rainy seasons following restoration. From this data, a water depth–time curve shall be prepared for each basin illustrating depth and periodicity of inundation.
- Prior to the end of the monitoring period, each restored pool shall demonstrate hydrological patterns of duration, periodicity, and depth of inundation which fall within the range of variation observed in the control pools.

8.4 Annual Reports

Vernal pool restoration efforts, whether conducted for mitigation or for habitat enhancement purposes, should include preparation of an implementation plan that is approved by the Wildlife Agencies and the City. The reporting guidelines outlined below are typically required for mitigation projects. Reporting requirements for each proposed restoration project will be determined by the Wildlife Agencies and the City during the plan approval process.

Following submittal and review from City of San Diego, annual reports presenting the monitoring results shall be submitted to the USFWS. These reports shall assess both the attainment of yearly target criteria and progress toward the final success criteria. Annual reports will be submitted following each of the six project years (one construction year and five years of monitoring) for the vernal pool restoration. Monitoring and reporting may be done by the same entity, or the monitoring may be done by qualified biologists hired by the City or qualified volunteer biologists, and the report done by the City, depending on staff availability and budget.

Annual reports shall include, at the minimum, the following:

- Names, titles, and organizations of everyone who participated in the monitoring activities for the year, including those who wrote the report.
- Quantitative and qualitative results for each monitored pool, including statements of success, failure, and remedial actions recommended to reach the success goals.
- A photograph of each pool.
- Topographic maps showing and identifying each monitored pool.

9.0 Completion of Restoration

9.1 Notification of Completion

If the final success criteria have been met at the end of the five-year monitoring program, notification of these events shall be provided to USFWS with the fifth-year report.

If the final success criteria have not been met by the end of the monitoring program, the fifth-year report will discuss the possible reasons for the failure and what should be done to bring the site to completed status. Included in the fifth-year report will be detailed plans to complete the restoration project and meet the final success criteria.

9.2 Agency Confirmation

Following receipt of the report the USFWS shall be permitted to visit the restoration sites to confirm completion of the restoration effort and accuracy of the jurisdictional delineation.

APPENDIX 7

California Invasive Plant Council (Cal-IPC) List

The CalEPPC List: Exotic Pest Plants of Greatest Ecological Concern in California

October, 1999

The CalEPPC list is based on information submitted by our members and by land managers, botanists and researchers throughout the state, and on published sources. The list highlights non-native plants that are serious problems **in wildlands** (natural areas that support native ecosystems, including national, state and local parks, ecological reserves, wildlife areas, national forests, BLM lands, etc.).

List categories include:

List A: Most Invasive Wildland Pest Plants; documented as aggressive invaders that displace natives and disrupt natural habitats. Includes two sub-lists; List A-1: Widespread pests that are invasive in more than 3 Jepson regions (see page 3), and List A-2: Regional pests invasive in 3 or fewer Jepson regions.

List B: Wildland Pest Plants of Lesser Invasiveness; invasive pest plants that spread less rapidly and cause a lesser degree of habitat disruption; may be widespread or regional.

Red Alert: Pest plants with potential to spread explosively; infestations currently small or localized. If found, alert CalEPPC, County Agricultural Commissioner or California Department of Food and Agriculture.

Need More Information: Plants for which current information does not adequately describe nature of threat to wildlands, distribution or invasiveness. Further information is requested from knowledgeable observers.

Annual Grasses: New in this edition; a preliminary list of annual grasses, abundant and widespread in California, that pose significant threats to wildlands. Information is requested to support further definition of this category in next List edition.

Considered But Not Listed: Plants that, after review of status, do not appear to pose a significant threat to wildlands.

Plants that fall into the following categories are not included in the List:

- Plants found mainly or solely in disturbed areas, such as roadsides and agricultural fields.
- Plants that are established only sparingly, with minimal impact on natural habitats.



1999 List Review Committee:

Dr. Lars W.J. Anderson,
Research Leader
U.S. Dept. of Agriculture-ARS
Aquatic Weed Research Lab.

Dr. Joe DiTomaso,
Extension Weed Ecologist
Weed Science Program
Department of Vegetable Crops
University of California, Davis

Dr. G. Fred Hrusa,
Senior Plant Systematist
Plant Pest Diagnostics Center
California Department of Food &
Agriculture

Dr. Marcel Rejmánek,
Professor of Plant Ecology
Section of Evolution and Ecology
University of California, Davis

CalEPPC List Committee:

Ann Howald, Instructor
Santa Rosa Junior College

Dr. John Randall,
Invasive Weed Specialist
The Nature Conservancy

Jake Sigg, President
California Native Plant Society

Ellie Wagner, Botanist
California Dept. of Transportation

Peter Warner,
Restoration Coordinator
Golden Gate National Parks
Association

The CalEPPC list is updated regularly. Please use the form provided to send comments, suggestions or new information to: **Peter Warner, 555 Magnolia Avenue, Petaluma, CA, 94952-2080**, or via email at **peterjwarner@earthlink.net**

Thanks to all those who submitted comments for the 1999 list.

The California Exotic Pest Plant Council

List A-1: Most Invasive Wildland Pest Plants; Widespread

Latin Name ¹	Common Name	Habitats of Concern and Other Comments	Distribution ²
<i>Ammophila arenaria</i>	European beach grass	Coastal dunes	SCo,CCo,NCo
<i>Arundo donax</i>	giant reed, arundo	Riparian areas	cSNF,CCo,SCo,SnGb,D,GV
<i>Bromus tectorum</i>	cheat grass, downy brome	Sagebrush, pinyon-juniper, other desert communities; increases fire frequency	GB,D
<i>Carpobrotus edulis</i>	iceplant, sea fig	Many coastal communities, esp. dunes	SCo,CCo,NCo,SnFrB
<i>Centaurea solstitialis</i> ^C	yellow starthistle	Grasslands	CA-FP (uncommon in SoCal)
<i>Cortaderia jubata</i>	Andean pampas grass, jubatagrass	Horticultural; many coastal habitats, esp. disturbed or exposed sites incl. logged areas	NCo,NCoRO,SnFrB,CCo,WTR,SCo
<i>Cortaderia selloana</i>	pampas grass	Horticultural; coastal dunes, coastal scrub, Monterey pine forest, riparian, grasslands; wetlands in ScV; also on serpentine	SnFrB,SCo,CCo,ScV
<i>Cynara cardunculus</i> ^B	artichoke thistle	Coastal grasslands	CA-FP, esp. CCo,SCo
<i>Cytisus scoparius</i> ^C	Scotch broom	Horticultural; coastal scrub, oak woodlands, Sierra foothills	NW,CaRF,SNF,GV,SCo,CW
<i>Eucalyptus globulus</i>	Tasmanian blue gum	Riparian areas, grasslands, moist slopes	NCoRO,GV,SnFrB,CCo,SCoRO,SCo,nChI
<i>Foeniculum vulgare</i>	wild fennel	Grasslands; esp. SoCal, Channel Is.; the cultivated garden herb is not invasive	CA-FP
<i>Genista monspessulana</i> ^C	French broom	Horticultural; coastal scrub, oak woodlands, grasslands	NCoRO,NCoRI,SnFrB,CCo,SCoRO,sChI,WTR,PR
<i>Lepidium latifolium</i> ^B	perennial pepperweed, tall whitetop	Coastal, inland marshes, riparian areas, wetlands, grasslands; potential to invade montane wetlands	CA (except KR,D)
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	Horticultural; lakes, ponds, streams, aquaculture	SnFrB,SnJV,SNH(?); prob. CA
<i>Pennisetum setaceum</i>	fountain grass	Horticultural; grasslands, dunes, desert canyons; roadsides	Deltaic GV,CCo,SCo,SnFrB
<i>Rubus discolor</i>	Himalayan blackberry	Riparian areas, marshes, oak woodlands	CA-FP
<i>Senecio mikanioides</i> (= <i>Delairea odorata</i>)	Cape ivy, German ivy	Coastal, riparian areas, also SoCal (south side San Gabriel Mtns.)	SCo,CCo,NCo,SnFrB,SW
<i>Taeniatherum caput-medusae</i> ^C	medusa-head	Grasslands, particularly alkaline and poorly drained areas	NCoR,CaR,SNF,GV,SCo
<i>Tamarix chinensis</i> , <i>T. gallica</i> , <i>T. parviflora</i> & <i>T. ramosissima</i>	tamarisk, salt cedar	Desert washes, riparian areas, seeps and springs	SCo,D,SnFrB,GV,sNCoR,sSNF,Teh,SCoRI,SNE,WTR
<i>Ulex europaeus</i> ^B	gorse	North, central coastal scrub, grasslands	NCo,NCoRO,CaRF,n&cSNF,SnFrB,CCo

¹Noxious Weed Ratings

- F: Federal Noxious Weed, as designated by the USDA; targeted for federally-funded prevention, eradication or containment efforts.
- A: CA Dept. of Food & Agriculture, on “A” list of Noxious Weeds; agency policies call for eradication, containment or entry refusal.
- B: CA Dept. of Food & Agriculture, on “B” list of Noxious Weeds; includes species that are more widespread, and therefore more difficult to contain; agency allows county Agricultural Commissioners to decide if local eradication or containment is warranted.
- C: CA Dept. of Food & Agriculture, on “C” list of Noxious Weeds; includes weeds that are so widespread that the agency does not endorse state or county-funded eradication or containment efforts except in nurseries or seed lots.
- Q: CA Dept. of Food & Agriculture’s designation for temporary “A” rating pending determination of a permanent rating.

For most species nomenclature follows *The Jepson Manual: Higher Plants of California* (Hickman, J., Ed., 1993).

Exotic Pest Plants of Greatest Ecological Concern in California

List A-2: Most Invasive Wildland Pest Plants; Regional

Latin Name ¹	Common Name	Habitats of Concern and Other Comments	Distribution ²
<i>Ailanthus altissima</i>	tree of heaven	Riparian areas, grasslands, oak woodlands, esp. GV, SCo	CA-FP
<i>Atriplex semibaccata</i>	Australian saltbush	SoCal, coastal grasslands, scrub, "high marsh" of coastal salt marshes	CA (except CaR,c&sSN)
<i>Brassica tournefortii</i>	Moroccan or African mustard	Washes, alkaline flats, disturbed areas in Sonoran Desert	SW,D
<i>Bromus madritensis</i> ssp. <i>rubens</i>	red brome	Widespread; contributing to SoCal scrub, desert scrub type conversions; increases fire frequency	CA
<i>Cardaria draba</i> ^B	white-top, hoary cress	Riparian areas, marshes of central coast; also ag. lands, disturbed areas	Problem only in CCo
<i>Conicosia pugioniformis</i>	narrow-leaved iceplant, roundleaf iceplant	Coastal dunes, sandy soils near coast; best documented in San Luis Obispo and Santa Barbara cos.	CCo
<i>Cotoneaster pannosus</i> , <i>C. lacteus</i>	cotoneaster	Horticultural; many coastal communities; esp. North Coast, Big Sur; related species also invasive	CCo,SnFrB,NW
<i>Cytisus striatus</i>	striated broom	Often confused with <i>C. scoparius</i> ; coastal scrub, grassland	SnFrB,CCo,SCo,PR
<i>Egeria densa</i>	Brazilian waterweed	Streams, ponds, sloughs, lakes; Sacramento-San Joaquin Delta	n&sSNF,SnJV,SnFrB,SnJt,SNE
<i>Ehrharta calycina</i>	veldt grass	Sandy soils, esp. dunes; rapidly spreading on central coast	CCo,SCoRO,WTR
<i>Eichhornia crassipes</i>	water hyacinth	Horticultural; established in natural waterways, esp. troublesome in Sacramento-San Joaquin Delta	GV,SnFrB,SCo,PR
<i>Elaeagnus angustifolia</i>	Russian olive	Horticultural; interior riparian areas	SnJV,SnFrB,SNE,DMoj
<i>Euphorbia esula</i> ^A	leafy spurge	Rangelands in far no. CA, also reported from Los Angeles Co.	eKR,NCo,CaR,MP,SCo
<i>Ficus carica</i>	edible fig	Horticultural; Central Valley, foothill, South Coast and Channel Is. riparian woodlands	nSNF,GV,SnFrB,SCo
<i>Lupinus arboreus</i>	bush lupine	Native to SCo, CCo; invasive only in North Coast dunes	SCo,CCo,NCo
<i>Mentha pulegium</i>	pennyroyal	Santa Rosa Plain (Sonoma Co.) and Central Valley vernal pools; wetlands elsewhere	NW,GV,CW,SCo
<i>Myoporum laetum</i>	myoporum	Horticultural; coastal riparian areas in SCo	SCo,CCo
<i>Saponaria officinalis</i>	bouncing bet	Horticultural; meadows, riparian habitat in SNE, esp. Mono Basin	NW,CaRH,nSNF,SnFrB,SCoRO,SCo,PR,MP,SNE,GV
<i>Spartina alterniflora</i>	Atlantic or smooth cordgrass	S.F. Bay salt marshes; populations in Humboldt Bay believed extirpated	CCo(shores of S.F. Bay)

²Distribution by geographic subdivisions per the Jepson Manual

CA=California	GV=Great Valley	ScV=Sacramento Valley
CA-FP=California Floristic Province	KR=Klamath Ranges	SnJV=San Joaquin Valley
CaR=Cascade Ranges	MP=Modoc Plateau	SN=Sierra Nevada
CaRF=Cascade Range Foothills	NCo=North Coast	SNE=East of SN
CCo=Central Coast	NCoRI=Inner NCo Ranges	SNF=SN Foothills
ChI=Channel Islands	NCoRO=Outer NCo Ranges	SNH=High SN
CW=Central Western CA	NW=Northwestern CA	SnFrB=San Francisco Bay Area
D=Deserts	PR=Peninsular Ranges	SnGb=San Gabriel Mtns
DMoj=Mojave Desert	SCo=South Coast	SW=Southwestern CA
DSon=Sonoran Desert	SCoRI=Inner SCo Ranges	Teh=Tehachapi Mtns
GB=Great Basin	SCoRO=Outer SCo Ranges	WTR=Western Transverse Ranges

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List B: Wildland Pest Plants of Lesser Invasiveness

Latin Name ¹	Common Name	Habitats of Concern and Other Comments	Distribution ²
<i>Ageratina adenophora</i> ^f	eupatory	Horticultural; coastal canyons, coastal scrub, slopes, Marin to San Diego Co; San Gabriel Mtns.	CCo,SnFrB,SCo,SCoRO
<i>Bassia hyssopifolia</i>	bassia	Alkaline habitats	CA (except NW,SNH)
<i>Bellardia trixago</i>	bellardia	Grasslands, on serpentine, where a threat to rare natives	NCoRO,CCo,SnFrB
<i>Brassica nigra</i>	black mustard	Coastal communities, esp. fog-belt grasslands; disturbed areas	CA-FP
<i>Cardaria chalapensis</i> ^B	lens-podded white-top	Wetlands of Central Valley	CA
<i>Carduus pycnocephalus</i> ^C	Italian thistle	Grasslands, shrublands, oak woodlands	sNCo,sNCoR,SNF,CW,SCo,ScV
<i>Centaurea calcitrapa</i> ^B	purple starthistle	Grasslands	NW,sCaRF,SNF,GV,CW,SW
<i>Centaurea melitensis</i>	tocalote, Malta starthistle	Widespread; sometimes misidentified as <i>C. solstitialis</i> ; perhaps a more serious invader than currently recognized	CA-FP,D
<i>Cirsium arvense</i> ^B	Canada thistle	Especially troublesome in riparian areas	CA-FP
<i>Cirsium vulgare</i>	bull thistle	Riparian areas, marshes, meadows	CA-FP,GB
<i>Conium maculatum</i>	poison hemlock	Mainly disturbed areas but may invade wildlands; known to poison wildlife; early expanding stage in many areas, esp. San Diego Co. riparian, oak understory	CA-FP
<i>Crataegus monogyna</i>	hawthorn	Horticultural; recent invader, colonizing healthy native forest around Crystal Springs reservoir on S.F. peninsula	SnFrB,CCo,NCo,NCoR
<i>Ehrharta erecta</i>	veldt grass	Wetlands, moist wildlands; common in urban areas; potential to spread rapidly in coastal, riparian, grassland habitats	SnFrB,CCo,SCo
<i>Erechtites glomerata</i> , <i>E. minima</i>	Australian fireweed	Coastal woodlands, scrub, NW forests, esp. redwoods	NCo,NCoRO,CCo,SnFrB,SCoRO
<i>Festuca arundinacea</i>	tall fescue	Horticultural (turf grass); coastal scrub, grasslands in NCo, CCo	CA-FP
<i>Hedera helix</i>	English ivy	Horticultural; invasive in coastal forests, riparian areas	CA-FP
<i>Holcus lanatus</i>	velvet grass	Coastal grasslands, wetlands in No. CA	CA exc. Dson
<i>Hypericum perforatum</i> ^C	Klamathweed, St. John's wort	Redwood forests, meadows, woodlands; invasion may occur due to lag in control by established biocontrol agents	NW,CaRH,n&cSN,ScV,CCo,SnFrB,PR
<i>Ilex aquifolium</i>	English holly	Horticultural; coastal forests, riparian areas	NCoRO,SnFrB,CCo
<i>Iris pseudacorus</i>	yellow water iris, yellow flag	Horticultural; riparian, wetland areas, esp. San Diego, Los Angeles cos.	SnFrB,CCo,sSnJV,SCo
<i>Leucanthemum vulgare</i>	ox-eye daisy	Horticultural; invades grassland, coastal scrub	KR,NCoRO,n&cSNH,SnFrB,WTR,PR
<i>Mesembryanthemum crystallinum</i>	crystalline iceplant	Coastal bluffs, dunes, scrub, grasslands; concentrates salt in soil	NCo,CCo,SCo,ChI
<i>Myriophyllum aquaticum</i>	parrot's feather	Horticultural; streams, lakes, ponds	NCo,CaRF,CW,SCo
<i>Olea europaea</i>	olive	Horticultural and agricultural; reported as invasive in riparian habitats in Santa Barbara, San Diego	NCoR,NCoRO,CCo,SnFrB,SCoRO,SCo
<i>Phalaris aquatica</i>	Harding grass	Coastal sites, esp. moist soils	NW,cSNF,CCo,SCo
<i>Potamogeton crispus</i>	curlyleaf pondweed	Scattered distribution in ponds, lakes, streams	NCoR,GV,CCo,SnFrB,SCo,ChI,SnGb,SnBr,DMoj
<i>Ricinus communis</i>	castor bean	SoCal coastal riparian habitats	GV,SCo,CCo
<i>Robinia pseudoacacia</i>	black locust	Horticultural; riparian areas, canyons; native to eastern U.S.	CA-FP,GB
<i>Schinus molle</i>	Peruvian pepper tree	Horticultural; invasive in riparian habitats in San Diego, Santa Cruz Is.	SNF,GV,CW,SW,Teh

Exotic Pest Plants of Greatest Ecological Concern in California

List B: Continued

Latin Name ¹	Common Name	Habitats of Concern and Other Comments	Distribution ²
<i>Schinus terebinthifolius</i>	Brazilian pepper	Horticultural; riparian areas	sSCo
<i>Senecio jacobaea</i> ^B	tansy ragwort	Grasslands; biocontrol agents established	NCo,wKR,s&wCaR, nSNF, nScV,SW
<i>Spartium junceum</i>	Spanish broom	Coastal scrub, grassland, wetlands, oak woodland, NW forests, esp. redwoods; also roadcuts	NCoRO,ScV,SnFrB, SCoRO,SCo,sChI,WTR
<i>Verbascum thapsus</i>	woolly or common mullein	SNE meadows, sagebrush, pinyon-juniper woodlands; shores of Boggs Lake (Lake Co.)	CA
<i>Vinca major</i>	periwinkle	Horticultural; riparian, oak woodland, other coastal habitats	NCoRO,SnFrB, CCo, sSCoRO,SCo

Red Alert: Species with potential to spread explosively; infestations currently restricted

Latin Name ¹	Common Name	Habitats of Concern and Other Comments	Distribution ²
<i>Alhagi pseudalhagi</i> ^A	camel thorn	Noxious weed of arid areas; most infestations in California have been eradicated	GV,sSNE,D
<i>Arctotheca calendula</i> ^A	Capeweed	Seed-producing types are the problem; most are vegetative only	NCo,SnFrB,CCo
<i>Centaurea maculosa</i> ^A	spotted knapweed	Riparian, grassland, wet meadows, forest habitats; contact CA Food & Ag if new occurrences found	CaR,SN,nScV,nCW,MP, nSNE,sPR,NW
<i>Crupina vulgaris</i> ^{F,A}	bearded creeper, common crupina	Aggressively moving into wildlands, esp. grassland habitats	NCoR (Sonoma Co.),MP
<i>Halogeton glomeratus</i> ^A	halogeton	Noxious weed of Great Basin rangelands; report locations to CA Food & Ag; goal is exclusion from CA	GB
<i>Helichrysum petiolare</i>	licorice plant	North coastal scrub; one population on Mt. Tamalpais, w. Marin Co.	Not in Jepson
<i>Hydrilla verticillata</i> ^{F,A}	hydrilla	Noxious water weed; report locations to CA Food & Ag; eradication program in place; found in Clear Lake (Lake Co.) in 1994	NCoRI,n&cSNF,ScV,SCo,D
<i>Lythrum salicaria</i> ^B	purple loosestrife	Horticultural; noxious weed of wetlands, riparian areas	sNCo,NCoRO,nSNF,ScV, SnFrB,nwMP
<i>Ononis alopecuroides</i> ^Q	foxtail restharrow	Eradication efforts underway in San Luis Obispo Co.; to be looked for elsewhere in CA	CCo; not in Jepson
<i>Retama monosperma</i>	bridal broom	First noted at Fallbrook Naval Weapons Station, San Diego Co; could rival other invasive brooms	San Diego Co.; not in Jepson
<i>Salvinia molesta</i> ^F	giant waterfern	Ponds, lakes, reservoirs, canals	Napa, Sonoma cos., lower Colorado River; not in Jepson
<i>Sapium sebiferum</i>	Chinese tallow tree	Horticultural; riparian, wetland habitats, open areas and understory	ScV,SnFrB; not in Jepson
<i>Sesbania punicea</i>	scarlet wisteria tree	Horticultural; riparian areas; American River Parkway, Sacramento Co., Suisun Marsh, San Joaquin River Parkway	ScV,SnJV; not in Jepson
<i>Spartina anglica</i>	cord grass	Scattered in S.F. Bay	Not in Jepson
<i>Spartina densiflora</i>	dense-flowered cord grass	Scattered in S.F. Bay, Humboldt Bay salt marshes	CCo,NCo
<i>Spartina patens</i>	salt-meadow cord grass	One site in S.F. Bay, also Siuslaw Estuary, OR and Puget Sound, WA	CCo

The California Exotic Pest Plant Council

Need More Information

Latin Name ¹	Common Name	Habitats of Concern and Other Comments	Distribution ²
<i>Acacia dealbata</i>	silver wattle	Aggressive in natural areas?	SnFRB,SCoRO,SCoRI,CCo
<i>Acacia decurrens</i>	green wattle	Sometimes confused with <i>A. dealbata</i> ; aggressive in natural areas?	Unknown
<i>Acacia melanoxylon</i>	blackwood acacia	Reported from S.F. Bay area, central coast, Santa Cruz Is.; spreads slowly; other areas?	SnFrB,SCoRO,SCo,CCo
<i>Aeschynomene rudis</i> ^B	rough jointvetch	Princeton area, Colusa Co.; pest of rice crops; potential threat to riparian, wetland habitats?	ScV
<i>Agrostis avenacea</i>	Pacific bentgrass	Invading vernal pools in San Diego area; attempts at manual eradication unsuccessful so far; problem in other areas?	sNCo,sNCoR,SNF, GV,CW,nSCo
<i>Aptenia cordifolia</i>	red apple	Habitats where invasive?	CCo,SCo,sChI
<i>Asphodelus fistulosus</i>	asphodel	Common in SCo highway rights-of-way, other disturbed sites; threats to wildlands?	sSnJV,SCo
<i>Carduus acanthoides</i> ^A	giant plumeless thistle	Threatens wildlands?	NCoRI,nSN,SnFrB, nSCoRO,MP
<i>Cistus ladanifer</i>	gum cistus	Horticultural; invades coastal sage scrub, chaparral; areas where problematic?	sCCo,SnGb
<i>Cordyline australis</i>	New Zealand cabbage	Infestation at Salt Point State Park; bird-dispersed; other problem areas?	Not in Jepson
<i>Cotoneaster</i> spp. (exc. <i>C. pannosus</i> , <i>C. lacteus</i>)	cotoneaster	Horticultural; bird-distributed; which species are problems in wildlands?	Unknown
<i>Cupressus macrocarpa</i>	Monterey cypress	Native only to Monterey Peninsula; planted and naturalized CCo, NCo; threat to wildlands?	CCo
<i>Descurainia sophia</i>	flixweed, tansy mustard	Entering Mojave wildlands through washes; threat to wildlands?	CA
<i>Dimorphotheca sinuata</i>	African daisy, Cape marigold	Horticultural; reported as invasive in w. Riverside Co., Ventura Co.; problem elsewhere?	SnJV,SCoRO,SCo,PR
<i>Echium candicans</i> , <i>E. pininana</i>	pride of Madeira, pride of Teneriffe	Horticultural; riparian, grassland, coastal scrub communities; spreads by seed	CCo,SnFrB,SCo,sNCo
<i>Ehrharta longiflora</i>	veldt grass	Reported from San Diego	Not in Jepson
<i>Erica lusitanica</i>	heath	Threat to wildlands?	NCo (Humboldt Co.)
<i>Euphorbia lathyris</i>	caper spurge, gopher plant	Invades coastal scrub, marshes, dunes; Sonoma, Marin cos.; threat to wildlands?	NCo,CCo,GV,SCo
<i>Gazania linearis</i>	gazania	Horticultural; invades grassland in S.F., coastal scrub?	CCo,SCo
<i>Glyceria declinata</i>		Although reported from Central Valley vernal pools, genetic research is needed to confirm identity; plants that have been called <i>G. declinata</i> key in Jepson to native <i>G. occidentalis</i>	Uncertain; not in Jepson
<i>Hedera canariensis</i>	Algerian ivy	Horticultural; invasive in riparian areas in SoCal?	Not in Jepson
<i>Hirschfeldia incana</i>	Mediterranean or short-pod mustard	Increasing in western, southern Mojave; threat to wildlands?	NCo,SNF,GV,CW,SCo, DMoj
<i>Hypericum canariense</i>	Canary Island hypericum	Reported in San Diego area, coastal sage scrub, grassland; threat to wildlands?	SCo
<i>Hypochaeris radicata</i>	rough cat's-ear	Widespread in coastal grasslands, wetlands; threat to wildlands?	NW,CaRF,nSNF,ScV, CW,SCo
<i>Isatis tinctoria</i> ^B	dyers' woad	Well-known invader in Utah; threat to wildlands?	KR,CaR,nSNH,MP
<i>Ligustrum lucidum</i>	glossy privet	Horticultural; spreading rapidly on Mendocino coast; problem in other areas?	NCo; not in Jepson
<i>Limonium ramosissimum</i> ssp. <i>provinciale</i>	sea lavender	Reported spreading in Carpinteria Salt Marsh; problem in other areas?	Not in Jepson

Exotic Pest Plants of Greatest Ecological Concern in California

Need More Information: Continued

Latin Name ¹	Common Name	Habitats of Concern and Other Comments	Distribution ²
<i>Ludwigia uruguayensis</i> (= <i>L. hexapetala</i>)	water primrose	Invasive in aquatic habitats; non-native status questioned?	NCo,sNCoRO,CCo, SnFrB,SCo
<i>Malephora crocea</i>	ice plant	Invades margins of wetlands, bluffs along SCo	CCo,SCo,sChI
<i>Maytenus boaria</i>	mayten	Horticultural; scattered in riparian forests, ScV; east SnFrB	ScV,SnFrB
<i>Mesembryanthemum nodiflorum</i>	slender-leaved iceplant	Abundant on Channel Islands; invades wetlands; habitats where problematic?	SnFrB,SCo,ChI
<i>Nicotiana glauca</i>	tree tobacco	Disturbed places; not very competitive with natives in coastal scrub, chaparral; spreading along Putah Creek (Yolo Co.); problems elsewhere?	NCoRI,c&sSNF, GV,CW,SW,D
<i>Oxalis pes-caprae</i>	Bermuda buttercup	Invades disturbed sites; invasive in undisturbed habitats?	NCo,NCoRO,CCo, SnFrB,SCoRO,SCo
<i>Parentucellia viscosa</i>		Threat to NCo (Humboldt Co.) dune swales?	NCo,NCoRO,CCo,SCo
<i>Passiflora caerulea</i>		Horticultural; reported from SoCal; threat to wildlands?	SCo; not in Jepson
<i>Pennisetum clandestinum</i> ^{FC}	Kikuyu grass	Disturbed sites, roadsides; threat to wildlands?	NCo,CCo,SnFrB,SCo, Santa Cruz Is.
<i>Phyla nodiflora</i>	mat lippia	Most varieties in CA are native; taxonomy unclear; status of plants in vernal pools, wetlands?	NW(except KR,NCoRH), GV,CCo,SnFrB,SCo, PR,DSon
<i>Pinus radiata</i> cultivars	Monterey pine	Cultivars invading native Monterey, Cambria forests, where spread of pine pitch canker is a concern	CCo
<i>Piptatherum miliaceum</i>	smilo grass	Aggressive in SoCal creeks, canyons; threats to wildlands?	NCo,GV,CW,SCo
<i>Pistacia chinensis</i>	Chinese pistache	Horticultural; invades riparian areas and woodlands in ScV	ScV
<i>Prunus cerasifera</i>	cherry plum	Oak woodland, riparian areas; esp. Marin, Sonoma cos.; bird-distributed; problems elsewhere?	SnFrB,CCo
<i>Pyracantha angustifolia</i>	pyracantha	Horticultural; spreads from seed in S.F. Bay area; bird-distributed; problem elsewhere?	sNCoRO,CCo,SnFrB, SCo
<i>Salsola soda</i>	glasswort	Threat to salt marshes?	nCCo,SnFrB
<i>Salsola tragus</i> ^C	Russian thistle, tumbleweed	Abundant in dry open areas in w. Mojave Desert, Great Basin; not limited to disturbed sites; threats?	CA
<i>Salvia aethiops</i> ^B	Mediterranean sage	Creates monocultures in E. Oregon grasslands; threat to CA wildlands?	MP
<i>Stipa capensis</i>		Distribution and threats?	Not in Jepson
<i>Tamarix aphylla</i>	athel	Spreading in Salton Sea area; threats to wildlands?	nSnJV,nSCo,D
<i>Tanacetum vulgare</i>	common tansy	Jepson reports as uncommon, escape from cultivation in urban areas; problem in wildlands?	NCo,NCoRO,CaRH, SCoRO
<i>Verbena bonariensis</i> , <i>V. litoralis</i>	tall vervain	Horticultural; invades riparian forests, wetlands; extensive along ScV riparian corridors; roadsides (Yuba Co.); elsewhere?	ScV,nSnJV,nSnFrB,CCo



The California Exotic Pest Plant Council

Annual Grasses

Latin Name ¹	Common Name	Habitats of Concern and Other Comments	Distribution ²
<i>Aegilops triuncialis</i> ^B	barbed goatgrass	Serpentine soils, grasslands	sNCoR, CaRF, n&cSNF, ScV, nCW
<i>Avena barbata</i>	slender wild oat	Lower elev. in SoCal; coastal slopes, coastal sage scrub, disturbed sites	CA-FP, MP, DMoj
<i>Avena fatua</i>	wild oat	Lower elev. in SoCal; coastal slopes, coastal sage scrub on deeper soil, disturbed sites	CA-FP, MP, DMoj
<i>Brachypodium distachyon</i>	false brome	Expanding in SoCal; common in Orange Co.	sNCoR, sCaRF, SNF, GV, CW, SCo, sChI
<i>Bromus diandrus</i>	ripgut brome	Coastal dunes, coastal sage scrub, grasslands	CA
<i>Lolium multiflorum</i>	Italian ryegrass	Wetland areas, esp. vernal pools in San Diego Co.; common in disturbed sites	CA-FP
<i>Schismus arabicus</i>	Mediterranean grass	Threat to Mojave and Colorado desert shrublands?	SnJV, CW, sChI, D
<i>Schismus barbatus</i>	Mediterranean grass	Threat to Mojave and Colorado desert shrublands?	SnJV, SW, D

Considered, but not listed

Latin Name ¹	Common Name	Habitats of Concern and Other Comments
<i>Albizia lophantha</i>	plume acacia	Not invasive
<i>Anthoxanthum odoratum</i>	sweet vernal grass	Disturbed sites on coast; Marin, Sonoma, Mendocino cos.
<i>Carpobrotus chilensis</i>	sea fig	Native status in question; not a threat to wildlands
<i>Centranthus ruber</i>	red valerian	Horticultural; roadcuts in Marin Co.; not a threat to wildlands
<i>Convolvulus arvensis</i> ^C	field bindweed	Disturbed sites; ag lands
<i>Coprosma repens</i>	mirror plant	No evidence of wildland threat
<i>Crocosmia x crocosmiiflora</i>		Generally in disturbed coastal, urban areas, roadsides
<i>Digitalis purpurea</i>	foxglove	Horticultural; scattered in prairies, meadows, disturbed sites; not a major wildland threat
<i>Dipsacus sativus</i> , <i>D. fullonum</i>	wild teasel, Fuller's teasel	Roadsides, disturbed sites
<i>Fumaria officinalis</i> , <i>F. parviflora</i>	fumitory	S.F. Bay area, Monterey Bay salt marshes, sandy disturbed sites
<i>Medicago polymorpha</i>	California bur clover	Grasslands, moist sites; mainly restricted to disturbed sites
<i>Melilotus officinalis</i>	yellow sweet clover	Restricted to disturbed sites in CA
<i>Nerium oleander</i>	oleander	Horticultural; not invasive, although reported from riparian areas in Central Valley, San Bernardino Mtns.
<i>Picris echioides</i>	bristly ox-tongue	Disturbed areas
<i>Silybum marianum</i>	milk thistle	Disturbed areas, especially overgrazed moist pasturelands; may interfere with restoration
<i>Xanthium spinosum</i>	spiny cocklebur	Identified as native in <i>The Jepson Manual</i> (Hickman, 1993) and <i>A California Flora</i> (Munz and Keck, 1968); restricted to disturbed areas
<i>Zantedeschia aethiopica</i>	calla lily	Horticultural; mainly a garden escape in wet coastal areas
<i>Zoysia cultivars</i>	Amazoy and others	Horticultural; no evidence of wildland threat

Request for Information: Exotic Pest Plants of Greatest Ecological Concern in CA

Please use this form to propose adding a new plant to the CalEPPC list or to provide other comments. Please provide as much detail as possible. Use the second side of this form or attach additional sheets if more space is needed. Please mail completed form to: **Peter Warner, 555 Magnolia Avenue, Petaluma, CA, 94952-2080**. Comments can be submitted by email to peterjwarner@earthlink.net

Species Name: _____

Does this weed displace healthy native communities, or is it mainly restricted to disturbed sites like roadsides, agricultural areas, etc.? _____

In which region(s) of California does this weed infest wildlands? Indicate county(ies) and/or Jepson regions (see page 3). _____

Which native communities does it infest? _____

List any rare plants, animals or communities threatened by this weed: _____

How does it spread? (Seeds carried by wind, birds, other animals; vegetative runners?) _____

Is this plant a recent invader of California wildlands? Ideas about how it got here? _____

Is this plant sold by nurseries, or used in landscaping, restoration or other activities that might lead to its further spread in wildlands? _____

Describe any techniques that have been used to eradicate this plant. Have they been successful? If not, why is the plant difficult to eradicate? _____

Other comments? _____

Name: _____ Affiliation: _____

Address: _____ City: _____ State: _____ Zip: _____

Phone: _____ FAX: _____ email: _____

Who We Are:

Throughout California, natural wildlands and parks are under attack from invasive pest plants. As natural habitat is replaced by exotic plants, we also lose many of the state's native birds, insects, fish and other wildlife species. People concerned with the protection, management and enjoyment of our natural areas have become increasingly alarmed about the spread of invasive exotic vegetation. Since its formation in 1992, CalEPPC has been dedicated to finding solutions to problems caused by non-native pest plant invasions of the state's natural areas. The objectives of CalEPPC are to:

- provide a focus for issues and concerns regarding exotic pest plants in California;
- facilitate communication and the exchange of information regarding all aspects of exotic pest plant control and management;
- provide a forum where all interested parties may participate in meetings and share in the benefits from the information generated by this council;
- promote public understanding regarding exotic pest plants and their control;
- serve as an advisory council regarding funding, research, management and control of exotic pest plants;

- facilitate action campaigns to monitor and control exotic pest plants in California; and
- review incipient and potential pest plant management problems and activities and provide relevant information to interested parties.

What We Do:

CalEPPC:

- Holds an annual statewide symposium;
- Co-sponsors regional workshops on control of problem wildland weeds;
- Publishes a quarterly newsletter with timely, practical information;
- Maintains an informative web site at www.caleppc.org
- Sponsors rigorous experiments on control methods for French broom, German ivy, pampas grass and other invasive pest plants;
- Advances public and professional awareness of wildland weed problems and solutions by sponsoring illustrated brochures and a soon-to-be published book on California's worst wildland weeds;
- Is recognized as an authoritative source of new information on all aspects of wildland weed management.

1999 CalEPPC Membership Form

If you would like to join CalEPPC, please remit your calendar dues using the form provided below. All members will receive the CalEPPC newsletter, be eligible to join CalEPPC working groups, be invited to the annual symposium and participate in selecting future board members. Your personal involvement and financial support are the keys to success. Additional contributions by present members are welcomed!

Individual

- Low Income/Student* \$15.00
- Regular \$25.00
- Family \$40.00
- Contributing \$50.00
- Sustaining \$100.00
- Lifetime \$1000.00

Institutional

- N/A
- Regular \$100.00
- Contributing \$250.00
- Patron \$500.00
- Sustaining \$1000.00

Please make an additional contribution in my name to:

Student/Low Income membership: \$ _____

Cape Ivy Biocontrol Fund: \$ _____

Please make your check payable to **CalEPPC** and mail with this application form to:

CalEPPC Membership
c/o Sally Davis
32912 Calle del

Name

Affiliation

Address

City/State/Zip

Office Phone

Home Phone

Fax

email

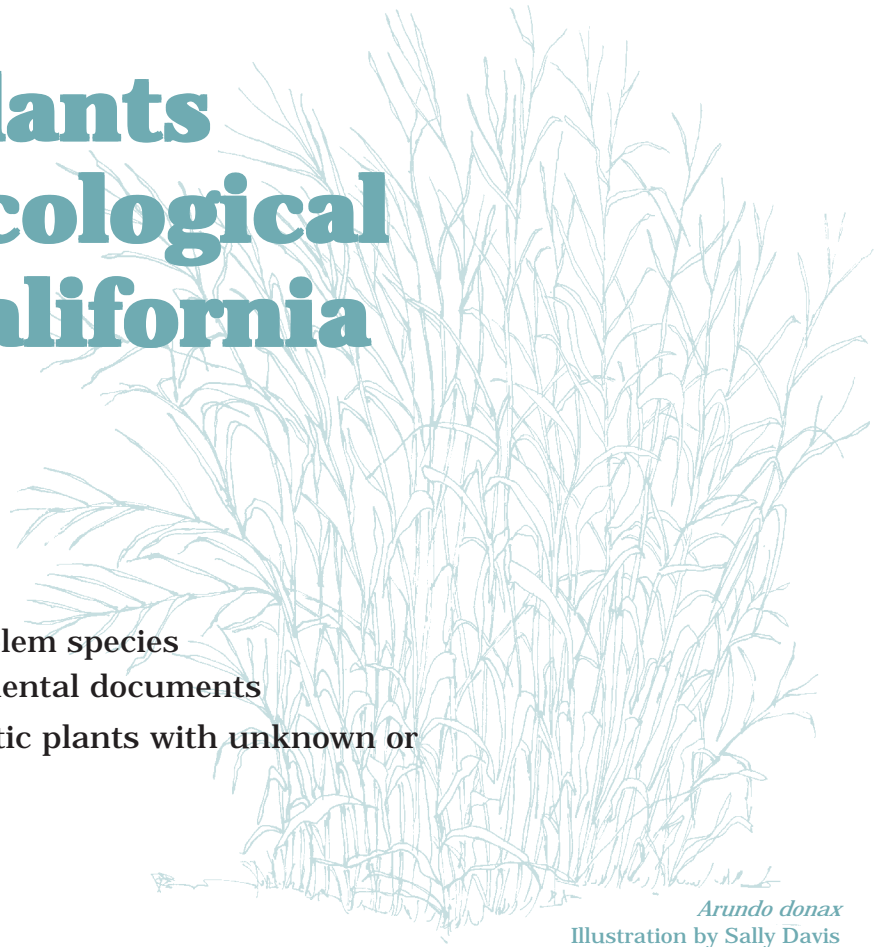
** Students, please include current registration and/or class schedule*

The CalEPPC List:
**Exotic Pest Plants
of Greatest Ecological
Concern in California**
October, 1999

Potential uses for this list:

- Informing the public
- Targeting species for control efforts
- Alerting restorationists to potential problem species
- Aiding those who comment on environmental documents
- Soliciting additional information on exotic plants with unknown or changing status

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APPENDIX 8

Advisory Council on Historic Preservation Guidelines



Federal Register

Tuesday,
December 12, 2000

Part II

Advisory Council on Historic Preservation

36 CFR Part 800

Protection of Historic Properties; Final
Rule

ADVISORY COUNCIL ON HISTORIC PRESERVATION**36 CFR Part 800**

RIN 3010-AA05

Protection of Historic Properties**AGENCY:** Advisory Council on Historic Preservation.**ACTION:** Final rule; revision of current regulations.

SUMMARY: The Advisory Council on Historic Preservation is publishing its final rule, replacing the previous rule which implemented the 1992 amendments to the National Historic Preservation Act (NHPA), and improved and streamlined the rule in accordance with the Administration's reinventing government initiatives and public comment. Litigation earlier this year challenged that previous rule. This rulemaking has addressed questions and concerns raised by that litigation, and has given the public a chance to provide input to determine how the rule has operated and revise the rule as appropriate. The final rule modifies the process by which Federal agencies consider the effects of their undertakings on historic properties and provide the Council with a reasonable opportunity to comment with regard to such undertakings, as required by section 106 of the NHPA. The Council has sought to better balance the interests and concerns of various users of the section 106 process, including Federal agencies, State Historic Preservation Officers (SHPOs), Tribal Historic Preservation Officers (THPOs), Native Americans and Native Hawaiians, industry, and the public.

DATES: This final rule is effective January 11, 2001.

FOR FURTHER INFORMATION CONTACT: If you have questions about the rule, please call Frances Gilmore or Paulette Washington at the regulations hotline (202) 606-8508, or e-mail us at regs@achp.gov. When calling or sending e-mail, please state your name, affiliation, and nature of your question, so your call or e-mail can then be routed to the correct staff person. Informational materials about the new rule will be posted on our web site (<http://www.achp.gov>) as they are developed.

SUPPLEMENTARY INFORMATION: The information that follows has been divided into five sections. The first one provides background information introducing the agency and summarizing the history of the rulemaking process. The second section highlights the changes incorporated into

the final rule. The third section describes, by section and topic, the Council's response to public comments on this rulemaking. The fourth section provides a description of the meaning and intent behind specific sections of the final rule. Finally, the fifth section provides the impact analysis section, which addresses various legal requirements, including the Regulatory Flexibility Act, the Paperwork Reduction Act, the National Environmental Policy Act, the Unfunded Mandates Act, the Congressional Review Act and various relevant Executive Orders.

I. Background

The Advisory Council on Historic Preservation ("Council") is the major policy advisor to the Government in the field of historic preservation. Twenty members make up the Council. The President appoints four members of the general public, one Native American or Native Hawaiian, four historic preservation experts, and one governor and one mayor. The Secretary of the Interior and the Secretary of Agriculture, four other Federal agency heads designated by the President, the Architect of the Capitol, the chairman of the National Trust for Historic Preservation and the president of the National Conference of State Historic Preservation Officers complete the membership.

This final rule sets forth the revised section 106 process. Section 106 of the National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470f (NHPA), requires Federal agencies to take into account the effect of their undertakings on properties included in or eligible for inclusion in the National Register of Historic Places and to afford the Council a reasonable opportunity to comment on such undertakings.

Through Section 211 of the National Historic Preservation Act, the Council is authorized to "promulgate such rules and regulations as it deems necessary to govern the implementation of section 106 * * * in its entirety."

After publishing two Notices of Proposed Rulemaking (59 FR 50396, October 3, 1994; and 61 FR 48580, September 13, 1996), the Council published a final rule setting forth a revised process implementing section 106 in its entirety (64 FR 27044-27084, May 18, 1999). Such rule went into effect on June 17, 1999, and superseded the rule previously issued in 1986.

Two major forces behind that revision process were the 1992 amendments to the National Historic Preservation Act (NHPA), and the Administration's reinventing government efforts. In

October, 1992, Public Law 102-575 amended the NHPA and affected the way section 106 review is carried out. Among other things, the 1992 amendments:

1. Clarified that "[p]roperties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be determined to be eligible for inclusion on the National Register." 16 U.S.C. 470a(d)(6)(A);

2. Required that "[i]n carrying out its responsibilities under section 106, a Federal agency shall consult with any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to properties described" above. 16 U.S.C. 470a(d)(6)(B). Also see 36 CFR 800.2(c)(3) (granting such tribes and Native Hawaiian organizations, "consulting party" status in the section 106 process). Implementation of this statutory consultation requirement is found throughout the proposed rule. See, for example, 36 CFR 800.3(f)(2), 800.4(a)(4), 800.4(b), 800.4(c)(1), 800.5(a), 800.6(a)-(b).

3. Added a provision in the NHPA prohibiting Federal agencies from granting a license or assistance to applicants who, with the intent to avoid the requirements of section 106, significantly adversely affected historic properties related to the license or assistance. In such cases, the Federal agency can only grant the license or assistance if it determines, after consulting with the Council, that circumstances justify granting the license or assistance despite the effects to the historic property. 16 U.S.C. 470h-2(k). See 36 CFR 800.9(c).

4. Explicitly recognized the long-standing practice of having Federal agencies develop agreements to address adverse effects of their undertakings to historic properties. This practice had also been recognized in the earlier, 1980 amendments, where Section 205(b) of the NHPA was changed to state that the Council could be represented in court by its General Counsel regarding "enforcement of agreements with Federal agencies." It also clarified that where such an agreement is not reached, the head of the relevant Federal agency must document his/her decision pursuant to section 106. Such agency head cannot delegate that responsibility. It also provided that agreements executed pursuant to the section 106 process would govern the relevant Federal undertaking and all its parts. 16 U.S.C. 470h-2(l). See 36 CFR 800.6, 800.7.

5. Added a member to the Council. This Council member would be a Native

American or Native Hawaiian appointed by the President. 16 U.S.C. 470i(a)(11).

6. Explicitly clarified the fact that the Council has authority to “promulgate such rules and regulations as it deems necessary to govern the implementation of section 106 of this Act *in its entirety*.” 16 U.S.C. 470s (emphasis added) (highlighted text was added by the 1992 amendments); and

7. Amended the definition of the term “undertaking,” by adding “[projects, activities, and programs] subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency” to the list of actions constituting an “undertaking.” 16 U.S.C. 470w(7)(D). The amended, statutory definition of “undertaking” was adopted verbatim in the rule. 36 CFR 800.16(y).

Additionally, as part of the Administration’s National Performance Review and overall regulatory streamlining efforts, the Council undertook a review of its regulatory process to identify potential changes that could improve the operation of the section 106 process and conform it to the principles of the Administration. A description of the Council’s revision efforts from 1992, which led to the final rule that went into effect in 1999 (“1999 rule”), is found in its preamble (64 FR 27044–27084, May 18, 1999). That preamble extensively details its history, purpose, intent, and response to public comment.

On February 15, 2000, the National Mining Association (“NMA”) filed a lawsuit challenging the 1999 rule. Among other things, the lawsuit alleged violations of the Appointments Clause of the Constitution and certain provisions of the Administrative Procedure Act pertaining to rulemaking. After assessing the allegations contained in the lawsuit, the Council decided to move forward with the present rulemaking process that culminates today with this final rule. The Council believed that this rulemaking would provide an opportunity to address assertions about the procedural adequacy of the promulgation of the 1999 rule, including those about the participation of the National Trust for Historic Preservation (“Trust”) and the National Conference of State Historic Preservation Officers (“NCSHPO”), as Council members, in the adoption of the final, revised rule. It would also give the public a chance to provide input to determine how the rule has operated and revise the rule as appropriate. This rulemaking does not evidence Council agreement with the merits of the allegations but, rather, the Council’s

desire to remove these issues from litigation.

Accordingly, at the June 23, 2000 Council meeting in Maine, the Chairman of the Council asked the Council members to take two actions. The first action was a new vote on the adoption of the 1999 rule, without the participation of the Trust and NCSHPO. The Council members voted 16–0 in favor of the 1999 rule, with the Trust and NCSHPO voluntarily recusing themselves from the vote and any deliberation on it.

The second action was a vote on undertaking the present rulemaking process, using the text of the 1999 rule as the proposed rule. Again, the Council members voted in favor of moving forward with the rulemaking by a vote of 16–0, with the Trust and NCSHPO voluntarily recusing themselves from the vote and any deliberation on it. Accordingly, on July 11, 2000 the Council published a proposed rule for public comment (65 FR 42833–42849).

The public was given a 30-day period, until August 10, in which to comment on the proposed rule. All those who filed a timely request for an extension of the comment period were given until August 31 to submit their comments. We believe the extension granted was reasonable in light of the circumstances.

As stated above, the text of the proposed rule submitted for public comment was the same as the one for the final rule that had been in effect for more than a year. That final rule, in turn, was the product of a rulemaking process that afforded the public ample opportunity, throughout six years, to participate and comment. The preamble of that 1999 final rule (found at 64 FR 27044–27084, May 18, 1999) extensively details its history, purpose, intent, and response to public comment. It is a lengthy document and will not be reprinted here.

After the close of the public comment period, the Council, minus the Trust and NCSHPO, considered the comments and incorporated changes into a draft rule as was deemed appropriate. On November 17, 2000, the Council voted on whether to adopt the draft rule as a final rule. As stated before, the Council members representing the Trust and NCSHPO had already recused themselves from the rulemaking process and proposed suspension. They accordingly removed themselves from the table and took no part in the deliberations and vote on this matter.

The Council voted to adopt the draft rule as the final rule now being published, by a vote of 17 for, 1 abstention, and none against.

The Council reiterates that the Trust and NCSHPO did not participate in any way whatsoever in the deliberations, decisions, votes, or any other Council activities regarding this rulemaking. Their only participation in this rulemaking took the form of a written comment filed by NCSHPO on the proposed rule. Such comment was submitted by NCSHPO, as a member of the general public, during the commenting period provided by the notice of proposed rulemaking.

II. Highlights of Changes

The Council retained the core elements of the section 106 process that have been its hallmark since 1974. The Council also retained the major streamlining improvements that were adopted in June, 1999. Changes adopted were primarily modifications to remove operational impediments in the process and clarifications of certain provisions and terms. In addition, a number of technical and informational edits were made throughout the rule. Major changes are as follows:

1. Clarification of the Role of State Historic Preservation Officers.

Section 800.2(c)(1) was amended to acknowledge the statutory responsibility of SHPOs to cooperate with agencies, local governments, and organizations and individuals to ensure that historic properties are considered in planning.

2. Clarification of the Role of Indian Tribes and Tribal Historic Preservation Officers

Section 800.2(c)(2) was completely rewritten to better distinguish the roles of Indian tribes that had assumed the responsibilities of SHPOs on their tribal lands under section 101(d)(2) of the Act from that of Indian tribes which had not. The Council notes that these amendments do not change the substantive role of non-101(d)(2) Tribes or any other party in the section 106 process under the proposed rule, but simply provide for a clearer rule. Section 800.2(c)(2)(ii) was also amended to clarify that the Act requires agency consultation with Indian tribes and Native Hawaiian organizations that attach religious and cultural significance to historic properties regardless of whether the historic properties are located on or off tribal land. Section 800.2(c)(2)(ii)(B) was amended to better reflect the sovereignty of Indian tribes over their tribal lands.

3. More Flexibility To Involve Applicants

Section 800.2(c)(5) was amended to resolve a major problem regarding the participation of applicants for Federal assistance or permission in the Section 106 process. Under the change, an agency may authorize a group of applicants to initiate the section 106 process, rather than being required to grant individual authorizations. Language was also added to clarify that such authorizations do not relieve the Federal agency of its obligations to conduct government-to-government consultation with Indian tribes.

4. Clarification of Undertakings Covered by the Section 106 Process

Section 800.3(a)(1) was amended to better state the premise of the rule that only an undertaking that presents a type of activity that has the potential to affect historic properties requires review. The previous language implied that making such a determination related to the circumstances of the particular undertaking, rather than the more generic analysis of whether the type of undertaking had the potential to affect historic properties.

5. Reinforcement of the Federal Agency's Responsibilities in Identifying Historic Properties

Section 800.4(a) was amended to assert that determinations in this subsection are made unilaterally by the Agency Official, after consultation with SHPO/THPO. Some had misunderstood the previous version as providing for consensus determinations.

6. Revision of the Role of Invited Signatories

Section 800.6(c)(2) was rewritten to remove confusion about the ability of the Federal agency to invite other parties to become formal signatories to Memoranda of Agreement and to clarify their rights and responsibilities as invited signatories. Also regarding memoranda of agreement, § 800.6(c)(8) was amended to provide that the option for their termination exists not only when one party simply cannot comply with its terms, but also when the terms are not being followed for whatever reason.

7. Revision of the Use of Environmental Impact Statements (EIS) To Comply With Section 106

Section 800.8(c)(4) was rewritten to more clearly state the actions a Federal agency must take in making a binding commitment in an NEPA documents to carry out measures to avoid, minimize or mitigate adverse effects and thereby

use the NEPA process to comply with section 106 requirements.

8. Redefinition of the Role of the Council When Improving the Operation of Section 106

Section 800.9(d)(2) was amended to require the Council to participate in section 106 reviews in a manner parallel to SHPOs/THPOs when the Council decides to join individual case reviews it would not otherwise engage in. This occurs when the Council has determined that section 106 responsibilities are not being properly carried out by an agency or SHPO/THPO and the Council's participation can remedy the problem.

9. Modification of Documentation Standards

Section 800.11(a) was amended to state that a Federal agency's responsibility to provide documentation was limited by legal authority and the availability of funds. Section 800.11(c)(2) was also amended to require Federal agencies to include the views of the SHPO/THPO when consulting with the Council on withholding confidential information.

10. Inclusion of National Register Eligibility Assessment in Consideration of Post-Review Discoveries

Section 800.13(b)(3) was amended to add a requirement that a Federal agency seeking expedited section 106 review for properties discovered after approval of an undertaking provide information on the eligibility of affected properties for the National Register.

11. Increased Flexibility for Programmatic Agreements

Section 800.14(b) was amended by the addition of a new section authorizing the Council to create "prototype programmatic agreements" which could be executed by a Federal agency and an SHPO/THPO without Council participation. This would permit routine programmatic agreements that follow an accepted model to be completed more expeditiously.

12. Improved Consideration of Stakeholder and Public Views on Proposed Exemptions

Section 800.14(c)(5) was amended to add Council consideration of the views of SHPOs/THPOs and others consulted when determining whether to approve an exemption from the section 106 process. The Council was also required to notify the agency and SHPOs/THPOs of its decision on the requested exemption.

13. More Flexibility for Federal Agencies When Consulting With Indian Tribes on Nationwide Program Alternatives

Section 800.14(f) was amended to reemphasize a Federal agency's obligation under various authorities to consult with Indian tribes and Native Hawaiian organizations when developing nationwide program alternatives, but to acknowledge that it is the agency's responsibility to determine the appropriate means of meeting those obligations.

III. Response to Public Comments

Following is a summary of the public comments received in response to the notice of proposed rulemaking, along with the Council's response. The public comments are printed in bold typeface, while the Council response follows immediately in normal typeface. They are organized according to the relevant section of the proposed rule or their general topic.

Section 800.1

The Council should expand the definition of SHPO responsibilities beyond cooperation with the Secretary, Advisory Council and Federal agencies to include explicit reference to organizations and individuals, such as regulatees and their consultants. The Council noted that such language was warranted by the NHPA, and therefore inserted language regarding such SHPO duties per section 101(b)(3)(F) of the NHPA.

The very last sentence of this section should be changed to: "The Agency Official is encouraged to initiate the section 106 process as early as practicable in the undertaking's planning so that it may consider impacts on historic resources." The language on the proposed rule stated that the Agency Official "shall ensure that the section 106 process is initiated early in the undertaking's planning * * *". The Council disagreed with the commenter's proposed change since it is crucial that agencies initiate the section 106 process at a point where alternatives have not yet been foreclosed. Otherwise, the review would be rendered meaningless.

Council is urged to preserve flexibility provision under the 1986 regulations, which stated: "The Council recognizes that the procedures for the Agency Official set forth in these regulations may be implemented by the Agency Official in a flexible manner reflecting different program requirements, as long as the purposes of section 106 of the Act and these regulations are met." Specific areas of

flexibility are incorporated in the proposed rule to embody the general flexibility term found in the 1986 rule. Among these are: phased identification, compression of steps, NEPA coordination, and the various program alternatives under § 800.14 of the rule.

Section 800.2(a)

The regulations should state that Federal agencies that authorize applicants to initiate consultation are still responsible for their government to government relationships with tribes.

The Council agreed and incorporated such change at § 800.2(c)(5) since the statement comports with Executive Orders and Memoranda regarding the government-to-government responsibilities of Federal agencies towards federally recognized tribes.

Requirements of § 800.14 preclude implementation of § 800.2(a) insofar as it calls for utilization of the agency's existing procedures to fulfill consultation requirements. The Council disagreed. The comment failed to consider the difference between procedures that implement 36 CFR part 800 (those under § 800.2(a)) and procedures that actually substitute/modify the process under 36 CFR part 800 (those under § 800.14).

Nothing in NHPA requires Federal agencies to consult with a particular party, thus, while such consultation may be beneficial, it should be left to the discretion of the Federal agency under NHPA. The Council not only believes that such consultation is beneficial, but it also believes it has the required authority to justify this and all other sections of the proposed rule. Consultation occurs in the section 106 process propounded by the rule in a way that is fully consistent with the statute. See, for example, the statutory language under section 101 of the NHPA regarding SHPO and THPO assistance to Federal agencies in the section 106 process, the consultation requirements with Indian tribes and Native Hawaiian organizations under the 1992 amendments to the NHPA, and language under Section 110 of the NHPA ensuring that public involvement occurs in the section 106 process. Such consulting entities have the specialized knowledge and interest that Federal agencies may lack. Consultation with these parties provides the Federal agency with the information it needs to make reasoned assessment of how its undertakings affect historic properties. Furthermore, it is clear to the Council through its years of experience, that such consultation is necessary and that Federal agencies heavily rely on such assistance (in particular that of the

SHPOs). Please also refer to responses given under the legal topics.

Federal officials (and not State, local or tribal government officials) are responsible for taking into account the effects of their undertakings on historic properties. Furthermore, it is inappropriate to mention Section 112 of the NHPA in this section since the Council has no authority to enforce it.

The Council agrees that the responsibility for section 106 compliance lies with Federal agencies, including the "take into account" responsibility. The Council clarifies that section 112 is merely restated in the rule for reference purposes (as opposed to enforcement).

ACHP refusal to take a position regarding delegation of authority have resulted in SHPOs disregarding FCC's jurisdiction and emphasizes on enforcement over historic preservation.

During the time frame of this rulemaking, the Council issued a memorandum to the FCC, all SHPOs and the telecommunications industry clarifying its position on delegations of authority. This and several other issues mentioned by the telecommunications industry in this rulemaking process have been or are in the process of being addressed through ongoing discussions with the industry, the FCC and SHPOs. These discussions commenced before the present rulemaking process. Such ongoing discussions are referred hereinafter as "Telecommunications Working Group."

Although section 101 of the NHPA establishes an advisory role for SHPOs to assist Federal agencies, the rules fail to establish consistent objective standards for SHPOs to apply in carrying out their duties. It undermines the ability of SHPOs and Federal agencies to adequately serve the Council's goal of protecting historic properties. The Council believes that the rule contains adequate standards that guide SHPOs in carrying out their functions. These standards can be found in various parts of the rule (e.g., criteria of adverse effect under § 800.5(a), and various definitions of terms under § 800.16). Further standards, such as the National Register Criteria of Eligibility (36 CFR part 63), are referenced in the present rule, and guide SHPO duties. Furthermore, pursuant to the NHPA, the Department of the Interior regularly reviews SHPO programs and ensures such programs and their personnel have the necessary expertise to guide their performance of their statutory duties, which include "to consult with * * * Federal agencies * * * on Federal undertakings that may affect historical properties." 16 U.S.C. 470a(b)(3)(I).

"Delegation authority" should be expanded to include "approved" state agencies and other pre-approved designees to conduct section 106 coordination on behalf of the Agency Official. The Council disagrees since the comment fails to realize that such authority can only come through statute. Congress specifically placed section 106 compliance responsibilities on Federal agencies. Only Congress can shift that responsibility. The Council is only aware of certain Department of Housing and Urban Development programs containing such a statutory delegation.

Section 800.2(b)

Licensees should be recognized as consulting parties under the regulations. Applicants for licenses, permits, approvals or assistance are specifically listed in the rule as consulting parties (see §§ 800.2(c)(5) and 800.3(f)(1)).

Add the following to § 800.2(b)(2): "Within 30 days of receipt of a request for such advise, the Council shall reply in writing with advise, or it shall reply in writing that it will not offer advice stating its reason(s) for so doing." This is needed to ensure Council responds in a timely fashion. The Council disagreed with this proposal. Time limits, and the consequences of not replying in time, are already specified in the proposed rule as needed.

Section 800.2(c)

Remove the first sentence of § 800.2(c)(1)(I). It is unrealistic to charge the SHPO with "reflecting the interests of the State and its citizens in the preservation of their cultural heritage." This only encourages agencies to treat SHPO coordination as the be-all and end-all of consultation, even where large numbers of a State's citizens violently disagree with a SHPO position. The rule reasonably supports the idea that the SHPO reflects the interests of the State by virtue of being a State official appointed by the elected State Governor.

Several comments requested that the rule distinguish the roles of Tribes that have an approved "Tribal Historic Preservation Officer" (THPO) pursuant to section 101(d)(2) of the NHPA, and those that do not. The use of the term "THPO" for both was deemed to be highly confusing. As stated in the highlight of changes above, § 800.2(c)(2) was completely rewritten to better distinguish the roles of Indian tribes that had assumed the responsibilities of SHPOs on their tribal lands under section 101(d)(2) of the Act from that of Indian tribes which had not. The Council notes that these amendments do

not change the substantive role of non-101(d)(2) Tribes or any other party in the section 106 process of the proposed rule, but simply provide for a clearer rule.

Many THPO's have construed this provision to mean that they must be invited to participate as "consulting parties" on all undertakings affecting properties of traditional religious and cultural importance, a position at odds with the NHPA. It is requested that the role of tribal representatives and THPO's in consultation off tribal land to be clarified consistent with the statute. The Council believes that section 101(d)(6)(B) of the NHPA clearly gives federally recognized tribes and Native Hawaiian organizations a right to be consulted regarding historic properties of religious and cultural significance to them. The cited section of the statute does not qualify that right depending on whether the historic property is located on or off tribal lands. It also does not qualify that right depending on whether the tribe has a THPO certified pursuant to section 101(d)(2) of the NHPA.

Too difficult to implement requirements of § 800.2(c)(2) when the project is not on reservation land. It is unreasonable for each Federal agency to develop on their own information as to which tribe(s) may be associated with specific geographic areas. While the Council acknowledges certain initial difficulties in identifying tribes to consult outside tribal lands, it believes the statute is clear in mandating such consultation regardless of the location of the historic property. The Council and the National Park Service are currently conducting a guidance project to assist agencies in identifying Indian tribes to be consulted.

Regulations do not create a "consultative" role for SHPO staff who would prefer to spend their time and efforts preserving historic properties rather than enforcing procedures on telecommunications projects. The SHPOs have a specific statutory duty to consult with Federal agencies and assist them with their section 106 duties. 16 U.S.C. 470a(b)(3)(I). Moreover, the SHPOs do spend their time directly preserving historic properties through their involvement in the section 106 process. The Council has not received contrary views from any SHPOs. Finally, similar issues of SHPO/telecommunications industry work in the section 106 process is being addressed by the ongoing Telecommunications Working Group.

Definition of "additional consulting parties" is too open ended, since it makes it possible for anyone who can

claim a "concern" to become a consulting party, adding delays and expenses to the process (§ 800.2(c)(6)). Even if Council had authority over this issue, at a minimum the rule should require a demonstration of some form of protectable interest similar to the concept of legal standing. Standards for additional consulting parties adequately balance the project's need for expediency and the right of those with defined interests in getting involved in the process. To ensure this provision is not abused, the rule gives the Agency Official the ultimate discretion to invite additional consulting parties or not. The Council believes the Agency Official is in a better position to balance the benefits of including these parties against the costs of so doing. The Agency Official will be able to do this on a case by case basis, according to the particulars of the specific undertaking at issue.

Use of the phrase "SHPO/THPO" has led to misunderstandings concerning the different regulatory roles of the SHPOs and THPOs in consultation on projects located off tribal lands. Guidance is needed to clarify these roles. The Council believes the rule is clear in that Federally recognized tribes have to be consulted regarding historic properties of cultural and religious significance to them, regardless of the location of such properties. With the changes regarding the use of the term THPO, there should be no confusion as to consultative rights of tribes.

Expanded definition of consulting parties has made it difficult and time consuming for agency officials to establish an appropriate consultation process. Guidelines for determining formal consulting parties should be developed. The Council believes that §§ 800.2 and 800.3(f) set forth clear standards for who should be a consulting party, and a clear process for who makes the determination and when. A further expansion on this topic to aid Federal agencies is better suited for guidance.

Regulations give tribes a secondary role to SHPOs with respect to tribal cultural and sacred properties which are not on tribal lands. The 1992 Amendments were intended to provide tribes with rights at least equivalent to SHPOs regardless of where the properties are located. Tribes want same consultation rights as SHPO for tribal cultural properties located off tribal lands. SHPO role is a creation of the regulations and is not required in the Act. The Council does not believe that Tribes have a secondary role to SHPOs. They do have a different role however. The rule recognizes that

Tribes are entitled to consult regarding historic properties of religious and cultural significance to them that may be affected by an undertaking. The SHPO is also entitled to consult, consistent with the definition of SHPO responsibilities in the Act, regarding historic properties. 16 U.S.C. 470a(b)(3).

The regulations assume that the THPO is a regulatory/executive body of a tribal government. Federal agencies believe that consulting with the THPO or tribal cultural resource manager fulfills the government-to-government responsibility. Agencies need to become familiar with this responsibility. The regulations fail to address or identify the process for government-to-government consultation. It is the duty of the relevant Federal agency (and not the Council) to specify how they meet their government-to-government responsibilities. See Executive Memorandum on Government-to-Government Relations with Native American Governments, dated April 29, 1994.

Granting SHPOs a role on tribal lands where there is no 101(d)(2) THPO is an intrusion on tribal sovereignty and is hypocritical since tribes are not given an equivalent role for their traditional cultural and sacred properties off tribal lands. The Council disagrees. Tribes that attach religious and cultural significance to historic properties must be invited to consult, regardless of where the property is located. The proposed rule follows statutory roles given to Tribes and SHPOs. See 16 U.S.C. 470a in general, and 470a(d)(2)(D)(iii).

The regulations provide a significant role for the THPO, above the tribal government leader. Federal agencies now have an "out" to avoid the government-to-government responsibility. Agencies need to learn, and ACHP trainers need to emphasize, the difference. The regulations should include a section that requires agencies to develop a process that recognizes the THPO role. The Council reasonably assumes 101(d)(2) THPOs are the appropriate contact for government to government relations. Nevertheless, the Council will confirm this statement with the Department of the Interior.

800.2(c)(3)(vi) is confusing. This allows for the SHPO and Council to ignore and avoid tribal involvement. It also provides an outlet for Federal agencies to disregard Federal law, E.O.s, etc. Finally, the SHPO then becomes a decision maker on tribal lands. This provision was requested by Tribal comments that wanted to avoid Tribes being required to sign an agreement if they chose not to sign it. A

waiver under § 800.2(c)(3)(vi) requires positive action from the Tribe, and therefore does not present a loophole to be used by Federal agencies or any other entities.

A tribe that does not have a 101(d)(2) THPO does not have the same authority as a tribe that does. This gives the SHPO the ability to come onto reservation lands and dictate how the tribe handles its preservation program and individual projects. Would like the regulations to provide tribes the option of inviting the SHPO into consultation on tribal lands. Section 101(d)(2) of the NHPA provides for THPO substitution of the SHPO on tribal lands if approved by DOI. If there is no approved 101(d)(2) THPO, NHPA provides that the SHPO shall consult with Federal agencies on any undertaking within the State. Also, NHPA specifically states the right of private owners of land within tribal boundaries to request SHPO involvement in undertakings on tribal lands. See section 470a(d)(2)(D)(iii) of NHPA.

Change last sentence to: Nothing in this part alters, repels, interprets, or modifies tribal sovereignty or preempts, modifies, or limits the exercise of any such rights. This change would delete "is intended to . . ." The Council agreed with such a change since it was needed to more properly accord with tribal sovereign rights and the original intent of the section.

Section 800.2(c)(5)

Several comments requested that the rule be changed so that Federal agencies will not be required to give specific authorization for each applicant to initiate consultation with SHPO/THPOs. The Council supported amending the proposed rule to allow agencies to authorize applicants to initiate consultation on a broader basis than individual authorizations.

Because of the time and resources required to consult with Tribes, more Federal agencies are delegating their consultation responsibilities, without guidance, to consultants, applicants and others. Many tribes, however, refuse to interact with parties other than the Federal agency or agency director. The Council responds to this concern by clarifying that such insistence is due to the Federal agencies' government-to-government responsibilities under Executive Orders and Memoranda.

Delegating authority to applicants is delegating Federal agency responsibility. This process lacks the integrity of upholding the intent of laws and EOs. Generally, tribes are insisting on formal consultation with Federal

agencies, not applicants. Federal agencies are required to consult with Indian Tribes on a government-to-government basis pursuant to Executive Orders, Presidential memoranda, and other authorities. The proposed rule therefore was amended to acknowledge this responsibility. The authorization to applicants to initiate consultation does not include consultation with Tribes.

Section 800.2(d)

Proposed part 800 elaborate procedures for public participation go well beyond the provisions of NHPA. NHPA does not require separate public notice and comment requirements at every stage of the review process. Recommend that part 800 recognize Federal agencies' existing public participation procedures and permit agencies to rely on those procedures in addressing adverse effects only. The rule does not require separate public notice and comment requirements at each step. Also, the proposed rule already allows for use of agency procedures. Nevertheless, it is simply impractical and illogical to solely rely on agency procedures for public involvement regarding section 106 if such procedures fail to address historic preservation issues.

Public participation provisions are an improvement over the 1996 proposed rule, but still invite problems. Council is not vested with authority to regulate public participation. Section 106 does not address this topic. Council has no authority to vest anyone, but itself, with a reasonable opportunity to comment on the Federal undertaking. The Council believes it has the required authority to justify this and all other sections of the proposed rule. Please refer to our response regarding legal authority, below.

This provision lies outside of the NHPA section 106 authority, and is a back door mechanism to impose upon Federal agencies the Council's interpretation of the interested public instead of leaving the interpretation of that role to the agencies, in consultation with the Secretary of Interior as provided for in section 110(a)(2)(E) of the NHPA. Deleting this provision is recommended. The Council disagrees. As stated below, the Council has the required authority to justify this and all other sections of the proposed rule. Furthermore, § 800.2(d)(3) allows the use of agency procedures to the extent they provide pertinent information on historic preservation.

Section 800.3(a)

Several comments requested clarification that under § 800.3(a) the

agency should not be considering case-specific issues, and that in this section the reference is to "type and nature" of the undertaking. In light of these comments and practical experience, the Council agreed that such a change was necessary. The language in § 800.3(a) was amended to state that the determination is as to whether the undertaking is a "type" of activity that has the potential to cause effects on historic properties, assuming such properties would be present.

Regulations should address what happens with program alternatives or PAs that were executed before the effective date of the new regulations. Such agreements are still valid and will continue to be in effect according to their terms.

Section 800.3(b)

The section should read that the Agency Official "may coordinate * * *." Council cannot require such coordination. The comment misreads the proposed rule. It only states that the Agency Official "should coordinate," implying encouragement, but not requirement.

Section 800.3(c)

30 day response period is too long and only ensures the destruction or damage to an archeological site where the project went forward because of the necessities of the mission. A 15 day response period would be much more appropriate in recognition of the rapid forms of communication available. The Council disagrees. The 30 day time period reflects an adequate balance between project need for expediency and workload requirements on reviewers.

Either delete section 3(c)(3) altogether, or add further guidance or regulatory definition of the phrase "* * * and to the nature of the undertaking and its effects on historic properties." Also, delete any discussion of timing in section 3(c)(4). It erroneously implies that nearly everything submitted to the SHPO falls under a 30 day review period. Review time periods should simply be referenced in the various sections of §§ 800.4–800.6. The rule indeed imposes a 30 day limit on SHPO/THPO at each step of the process where a formal response is required to findings and determinations, unless otherwise noted. See § 800.3(c)(4). SHPO/THPO cannot require the process to stop by failing to respond by the end of this period. On the other hand, there is no such clock for consultation alone (e.g., regarding APE or for seeking ways to avoid, minimize or mitigate adverse

effects). All that the Federal agency needs to do regarding such consultation is to make a reasonable effort to consult (which may or may not take 30 days) and move forward with the process.

Section 800.3(d)

Once SHPO declines to participate, Federal agencies should have no further burdens. To the extent that the Council is relying on SHPOs to comment or consult on its behalf under section 106, the agency complies with section 106 by providing SHPO (Council) an opportunity to comment. Rule should also contain presumption that SHPO concurs with a written finding if it does not respond within 30 days. Accordingly, § 800(d) should read: (1) If the SHPO declines in writing to participate, or otherwise cooperate, in the section 106 process, the Agency Official shall proceed as it believes appropriate; (2) If the SHPO does not respond within 30 days to a written finding under this part, or sooner if reasonably requested by the Agency Official, a presumption of concurrence with such finding shall be created.

Federal agency obligations under section 106 of the NHPA do not terminate when the SHPO or any other entity declines to continue participating. SHPOs do not comment or participate in consultation on behalf of the Council. A process of allowing the agency to proceed without any Council review when SHPO declines to participate or respond within the 30 days is inconsistent with the letter, intent and spirit of the law. Nothing in the NHPA indicates in any way whatsoever that Federal agency responsibilities under section 106 disappear once a SHPO refuses to participate. The statute mandates Federal agencies to take into account the effects of their undertakings on historic properties and afford the Council a reasonable opportunity to comment regardless of what any other entity does or does not do. 16 U.S.C. 470f. It is noted that the rule does have certain, reasonable presumptions of concurrence when a response does not come in time. See particularly, § 800.3(c)(4).

Section 800.3(f)

The regulations do not give adequate guidance regarding federally designated THPO's, Federally recognized tribes without a designated THPO, and federally recognized tribes not occupying tribal lands. Guidance is also needed to identify associated tribes, crosscutting boundaries or ancestral lands, differentiate among differing views of ancestral lands to ensure that tribes' rights are addressed

without impinging upon the property rights of private landowners. Such information can be provided in a guidance but is not appropriate in a rule. Furthermore, see information above regarding Council/NPS project regarding assistance to Federal agencies regarding ancestral lands.

Section fails to establish who is responsible for establishing the list of consulting parties, setting a time limit in which the SHPO should respond, and defining what constitutes a good faith effort in doing so. This comment is incorrect. The proposed rule does establish that the Agency Official is ultimately responsible for establishing the list of consulting parties. It also sets forth the 30 day comment period. The meaning of a "good faith effort" will be better handled through guidance.

Section 800.4(a)

This is a useful and important provision. Minor wording changes are proposed to remove any suggestion that the SHPO is responsible for the decision: "(a) Determine scope of identification efforts. In consultation with the SHPO/THPO and other consulting parties, the Agency Official shall (1) Determine and document the area of potential effects, as defined in § 800.16(d); etc." The Council agreed with this recommended amendment since it clarifies that the ultimate decision here is made by the Agency Official. However, the phrase "and other consulting parties" was removed from the recommended language since the obligation to consult at this stage would not extend to other consulting parties.

Section on determining Area of Potential Effect fails to include time limit for a response by SHPO or other consulting parties to an agency's determination of APE. As stated above, the agency obligation is to consult. Failure by SHPO/THPO to respond to consultation within a reasonable time would allow agency to finalize its unilateral determination of the area of potential effect and move forward in the process.

Indian Tribes are given broad discretion to designate any property to which they attach religious and cultural significance, whether or not within tribal lands, as historic in the context of the consultation process. There are no standards directly relevant to the eligibility of such properties for the National Register. The broad discretion creates great uncertainty, delay, and costs. The rule should contain criteria on designating religiously or culturally significant properties. This comment is incorrect. These properties must be "historic

properties" and therefore meet the National Register criteria. They must follow the same process as other potentially historic properties.

Requirement to consult with SHPO regarding the APE should be deleted. It needlessly extends the already protracted consultation process without any concomitant benefits. The Council believes that consultation with SHPO is valuable at this critical point to avoid later problems. Furthermore, consultation with the SHPO/THPO at this critical decision making point has always been viewed as an important part of the process. The Council decided to retain the duty to consult with the SHPO/THPO since the Council believes that SHPO/THPOs have special expertise as to the historic areas in their jurisdiction and the idiosyncracies of such areas, and can greatly assist the Agency Official, using such expertise, in determining an accurate area of potential effects. Nevertheless, it is noted that the Federal agency is ultimately responsible for making the final determination about the area of potential effect (*i.e.*, the concurrence of the SHPO/THPO in such determination is not required).

In the case of scattered site housing rehabilitation program, the Agency Official should have the authority to determine that (1) the area of potential effect is limited to the property to be rehabilitated, and (2) any structure to be rehabilitated that is less than 50 years old is not considered eligible. The result would allow scattered site housing rehabilitation to proceed in a responsible manner without adding a time-consuming consultation process with no apparent benefit to the public or environment. The Council disagrees. Not all scattered site projects are the same. Where a block of properties are to be rehabilitated, the historic district may be affected. The less than 50 years old exemption should be handled during negotiation of a Programmatic Agreement.

Given that some of the tribes with ancestral interest in a project area are no longer physically located within the state, it is difficult or unfeasible to comply with this provision. The reg needs to set some practical limits on consulting with Tribes in identifying historic properties. The NHPA does not set such limits on consultation. The location of tribes and the boundaries of tribal lands are consequences of history to which tribes were subjected. Accordingly, the fact that a tribe may not live on or near a significant property should not be an impediment to its participation in consultation. As stated above, this is the subject of a guidance

project currently under way between the Council and the National Park Service.

The regulations should set forth a process to follow when the SHPO disagrees with an agency determination of the area of potential effects (APE)—similar to the process for determinations of eligibility. Also, we need further guidance on what is considered “documenting” the APE.

The Council believes the process in the rule regarding APE should remain unchanged. The determination of APE should be ultimately done by the Federal agency in consultation with the SHPO. SHPO can seek informal advice from the Council. Guidance could be developed regarding what is considered “documenting” the APE.

Section 800.4(b)

Comments recommended that the provisions of section 106 be extended only to properties formally determined eligible, and that this section should therefore be deleted. The Council disagrees. Both the Council and the Department of the Interior have interpreted the NHPA to require section 106 consideration of all properties that are listed on the Register, as well as all those that meet the criteria of eligibility on the National Register, regardless of whether a formal determination by the Keeper has been made. Well established Department of the Interior regulations regarding formal determinations of eligibility specifically acknowledge the appropriateness of section 106 consideration of properties that Federal agencies and SHPOs determine meet the National Register criteria. See 36 CFR 63.3. The NHPA specifically defines “historic properties” as those that are “included in, or eligible for inclusion on the National Register.” 16 U.S.C. 470W(5). Not only does the statute allow this interpretation, but it is the only interpretation that reflects (1) the reality that not every single acre of land in this country has been surveyed for historic properties, and (2) the NHPA’s intent to consider all properties of historic significance. It has been estimated that of the approximately 700 million acres under the jurisdiction or control of Federal agencies, more than 85 percent of these lands have not yet been investigated for historic properties. Even in investigated areas, more than half of identified properties have not been evaluated against the criteria of the National Register of Historic Places. These estimates represent only a part of the historic properties in the United States since the section 106 process affects properties both on Federal and non-Federal land. Finally, the fact that a property has never been considered by

the Keeper neither diminishes its importance nor signifies that it lacks the characteristics that would qualify it for the National Register.

Rule should clarify that the section 106 process does not impose identification burdens upon the private applicant. Although identification obligations are placed on Federal agencies, in reality the burden is often passed on to the applicant through delays or conditioning the agency’s decision until the applicant has funded the identification efforts. Federal agency ability to shift burden to applicant is dependent on that agency’s independent authority. The section 106 rule does not confer such authority nor relieve Federal agencies of its duties. This may be an appropriate guidance topic to be developed.

Regulations fail to respect the National Register nomination and listing process and grant unbridled authority to impose section 106 requirements on properties already deemed ineligible. Properties that are determined ineligible are not subject to section 106 consideration. Revisiting eligibility determinations is encouraged on certain occasions, but not mandatory.

Any imputation of a new substantive duty under section 106 to discover unidentified properties is negated by the detailed provisions for the discovery of unknown properties contained elsewhere in NHPA. The Council disagrees. The obligation to identify during planning is different than coming across something during construction. Further obligation is limited in scope, duration and intensity. The “discovery” provisions of the NHPA do impose a continuing duty to survey and identify historic properties. See 16 U.S.C. 470h–2(2)(A). However, the reality is that such an effort has not reached every acre of land of this country that could be affected by a Federal undertaking, and the NHPA seeks to protect historic properties even if they had not been identified prior to the proposition of an undertaking. This is clearly reflected in the statute where it provides, for example, that agency procedures implementing the Council’s section 106 rule would provide a process for identifying historic properties. 16 U.S.C. 470h–2(a)(2)(E)(ii). The NHPA would not contain this language if it believed the other, general surveying provisions were sufficient.

Since SHPOs are statutorily required to conduct comprehensive statewide surveys of historic properties (section 101(b)(3) of NHPA), Federal agencies and permit applicants should not have to be required to engage in field investigations or surveys. SHPOs

should already know what historic properties exist. No. Agency obligation to “take into account” effects on historic properties necessarily places an affirmative duty to identify historic properties. The Council notes that the rule does not compel shifting of such agency burden to applicants. Also, please refer to the immediately preceding response.

Although proposed rule on its face may place identification efforts on Federal agencies, the reality is that these burdens are borne by applicants. This is usually done by delaying or conditioning the Federal decision until the applicant has funded the identification effort requested by the SHPO or Council. This tactic is improper and the rule should clarify that the process does not impose the burden upon applicants through either direct or indirect means, including delays. The rule does not compel shifting of this or other Federal agency burdens to applicants. Section 106 obligations lie with the Federal agency. Although Federal agencies may be requiring submissions, as a basis of accepting applications, this is not compelled by the rule.

Council only has authority to promulgate rules regarding section 106. Since section 106 does not address the identification of historic properties or evaluation of historic significance, the Council has no authority to regulate these activities. The duty to identify historic properties are placed upon Federal agencies, the Secretary of the Interior, and SHPOs under other sections of the NHPA (namely sections 101 and 110). The Council disagrees. The NHPA grants the Council the authority to promulgate regulations regarding section 106 “in its entirety,” 16 U.S.C. 470s. It would be impossible for an agency to take into account the effects of its undertakings on historic properties (which include those listed on the Register, as well as those eligible for listing), as section 106 requires, if it does not know what those historic properties are in the first place. Accordingly, the identification and evaluation provisions of this rule are reasonable under the authority. Also, see response to comment above regarding ongoing identification duties.

This provision for phased identification and evaluation using an MOA is inconsistent with our prior understanding that an MOA should be used exclusively to stipulate mitigation measures for properties that have been identified and fully evaluated. With this change, why would an agency do a project specific PA? Phased identification acknowledges the reality

of large projects. A programmatic agreement may be an alternative, but this provision expands the flexibility of the rule.

Section 800.4(c)

This section should be revised to overcome the current perception that agencies are required to identify every single specific property that may be affected and study each sufficiently to apply the National Register criteria. This drives up the cost of S. 106 consultation, unnecessarily delays the process, discourages consideration of indirect and cumulative effects, and complicates coordination with NEPA. The provision for phased ID and evaluation helps, but § 800.4(a) should be revised to make it clear that it is permissible to address eligibility prospectively, and to focus on “types of properties” rather than to identify every single property. The phased identification provisions of the rule are intended to deal with this issue. The Council intends to provide guidance regarding phasing.

Section 800.4(c)(1) is misleading in stating that tribes have “special expertise in assessing the eligibility of historic properties that may possess religious and cultural significance to them.” Their expertise is not in applying the criteria of eligibility, it is in identifying some kinds of historic properties and in identifying effects that might not be apparent to others. The current wording sets up the tribes to overrule decisions made by agencies and SHPOs. The Council clarifies that tribal expertise is not in applying the eligibility criteria per se, but in bringing a special perspective to how a property possesses religious and cultural significance. This reflects the fact that such Tribes are particularly well placed to provide insights and information on those properties of religious and cultural significance to them. It is common sense to reach out to the Tribes regarding these issues.

Requiring eligibility determination from the Keeper when SHPO disagrees with Agency Official determination gives SHPO a veto over the project. The Keeper eligibility process is so lengthy that applicants have no alternative but to go along with the SHPO’s position regarding time-sensitive projects. SHPO can delay projects simply by claiming not to have sufficient information.

Department of the Interior regulations require a response from the Keeper within 45 days. Those regulations also recognize the concurrent Agency/SHPO determination scheme. See 36 CFR part 63. The section 106 rule does not encourage wrongful delays by any party.

Cases where an abuse of the process is suspected can always be brought to the attention of the Federal agency conducting the review and/or the Council.

Proposed rule gives Tribes the de facto ability to designate any property to which they attach religious and cultural significance as a historic property. Tribes can then pressure the Agency Official to take their concerns into account above all others. Proposed rule effectively requires Federal agencies to defer to Indian tribes on what properties are reached by section 106, and give added (if not dispositive) weight to religious considerations in that determination. The Council disagrees. Properties of religious and cultural significance to Tribes must meet the National Register criteria in order to be considered “historic” and subject to section 106 consideration. The fact that a Tribe attaches religious and cultural significance to them does not make them “historic,” but neither does it preclude them from meeting the National Register criteria. The Federal agency makes the determination of eligibility, and disputes are ultimately resolved by the Keeper based on the secular National Register criteria. The Tribe is consulted but, again, the ultimate decision in the case of a dispute with the Federal agency finding by a SHPO/THPO, is the Keeper.

The NHPA does not empower the Council to require Agency Officials to obtain a determination of eligibility from the Keeper. In fact the NHPA prohibits “any person or local government” from providing a nomination for inclusion of a property on the Register unless such property is located within a State where there is no SHPO. Moreover, this is redundant with 36 CFR part 63. There is no basis for requiring SHPO concurrence or agreement. Finally, the NHPA expressly prohibits the nomination of any historic property for the Register where the owner objects. 16 U.S.C. 470(a)(6). Such prohibition should be integrated into the proposed rule to reflect that when such objection is lodged with a Federal agency, they may terminate their section 106 review. The comment fails to realize that a determination of eligibility is not the same as a nomination/listing on the National Register. The Council also points out that under the NHPA, an owner’s objection to a nomination/listing still can lead to the Secretary of the Interior determining the eligibility of the property. It should also be noted that this rule provides that an owner of an affected property can, and should be, invited as an additional consulting party

in the section 106 process. See § 800.2(c)(6) of the rule. Finally, see responses above to the issue of Agency/SHPO concurrence determinations of eligibility.

Various comments comment suggested that in the last sentence, the word “special” should be changed to “unique.” The Council disagreed. The word “unique” excludes everyone else and gives the incorrect impression that Tribes have the final word that cannot really be challenged by the Agency. Also, see response above regarding the need of properties of “religious and cultural significance” to Tribes to meet National Register criteria in order to be considered “historic.”

Section 800.4(d)

The addition of a 30 day waiting period, even when no historic properties are identified, is unreasonable. Suggest that the waiting period after submission to SHPO/THPO be eliminated consistent with previous regulations. The Council disagreed. This period is necessary so the consulting parties and the Council can review the finding responsibly and object if appropriate. Such review also allows mistakes to be caught in time before they potentially lead to costly litigation.

Move this subsection under § 800.5 and re-title § 800.5 to “Assessment of Effects.” The proposed change was rejected since these are outcomes of identification and effect assessments. However, the Council may draft guidance on the topic of assessment of effects.

Section 800.5(a)

A tribal comment stated that the exemption of properties of religious and cultural significance from the demolition by neglect provision (§ 800.5(a)(2)(vi)) is so broadly written that it could lead to the loss of National Register districts in pueblos and other Native communities. This provision had been added at the request of Indian tribes. It specifies that the exception only applies where neglect and deterioration are recognized qualities of the property. A further safety valve is that a “no adverse effect” determination is subjected to review by consulting parties (which would include Tribes that attach religious and cultural significance to the historic property at issue). See § 800.5(c). Lastly, the Council is not aware of this provision having been applied inappropriately or over the objections of Tribes.

Criteria of adverse effect too broad, and encompasses activities of benefit to the public. Accordingly, such activities

are delayed. Examples of such activities are: reclamation of abandoned mines, creation of wetlands, "hazardous material remediation" (§ 800.5(a)(2)(ii)), rehabilitation of historic properties, and provision of handicapped access.

Adverse effect criteria are linked specifically to objective National Register criteria published by the National Park Service, which are used to determine characteristics that contribute to a property's historic significance. If those characteristics are adversely affected, then the historic significance is impaired. It is noted that program alternatives under § 800.14 are intended to deal with repetitive or minimal impact situations. Finally, while the listed activities may be of benefit to the public, it does not necessarily follow that such positive activities could not also cause an adverse effect on historic properties. Again, all that the section 106 process requires is that such effects be taken into account. The section 106 process does not prohibit any projects, beneficial or otherwise.

Proposed rule uses impermissibly vague and overbroad terms, in violation of the Due Process Clause. Its definition of "adverse effects" includes those when an undertaking "may" alter "indirectly" "any" of the characteristics making the property eligible in a way that would diminish the integrity of the property's "feeling" or "association." Such definition does not give fair notice as to what it requires, and is not grounded on intelligible principles. This further complicates, expands, and lengthens the process, adding difficulties, costs and uncertainty. As stated above, adverse effect criteria are linked specifically to objective National Register criteria published by the National Park Service. The National Register criteria itself expands on the meaning of its terms and provides various examples. These criteria have been fleshed out through consideration and application countless times, over the years, since the program began, and explained through various guidance documents. For example, see National Register Bulletin 15, "How to Apply the National Register Criteria for Evaluation," which includes definitions of the terms "feeling" and "association."

Criteria of adverse effect should exclude "insignificant" transfers of property. De minimis transfers of property are being subjected to lengthy section 106 process. The rule provides for an avenue, under § 800.14(c), whereby the appropriate agency can pursue an exemption.

The criteria of Adverse Effect is devoid of any limitations on the proximity of an undertaking to a historic site, allowing the SHPO to be inconsistent and subjective when evaluating effects. The standard set forth under section 106 is effect, not proximity. While it is possible that distance separating an undertaking from a particular historic property may remove any effects, such a determination should be made on a case by case basis, and is not suitable for a generalization. Different undertakings simply have different areas of potential effects according to several factors such as the nature of the undertaking itself, the nature of the historic property at issue and topography.

The current and proposed rule do not take into account the fact the cumulative impact of adding a monopole to areas with modern intrusions would not be an adverse effect. The proposed rules, therefore, will lead to consultative gridlock as the expansion of wireless services continues. This and several other issues mentioned by the telecommunications industry in this rulemaking process have been or are in the process of being addressed through ongoing discussions with the industry, the FCC and SHPOs. These discussions commenced before the present rulemaking process. Such ongoing discussions are referred hereinafter as "Telecommunications Working Group."

Section 800.5(b)

Final decision regarding adverse effects is charged on the Agency Official. Council has no authority to impose its determination on this matter. Council may comment on the issue, but the final decision is to be made by the Agency Official. The Council has used its expertise in setting up the criteria of adverse effects on this rule. It therefore has a justifiable role and the expertise in ensuring the correct interpretation of its rule. Section 800.7 of the rule is clear in stating that the Agency Official can terminate consultation on ways to avoid, minimize or mitigate adverse effects, and request Council comments. The Agency Official can then proceed with its undertaking in any way it wants, after taking the Council's expert comments into account.

There is no basis for mandating consultation regarding adverse effects. To the extent that other sections of the NHPA require Agency Official consultation with the SHPO, these provisions are not to be implemented by section 106 regulations of the Council. The Council believes this consultation is reasonable and necessary

in that it provides the Federal agency with the information and considerations needed for it to take into account the effects of its undertakings on historic properties. Consulting parties are defined in such a way as to ensure they have the necessary interest and competence in informing Federal agency decisions on historic properties. As elsewhere in the process, consultation ensures that correct and informed decisions are made and that mistakes are not overlooked. See response regarding legal authority, below.

To address agreements like Community Development Block Grant (CDBG) Programmatic Agreements, the Council should add language which recognizes situations where the specific details of future activities are unknown and the consulting parties agree that adverse effects will be avoided through review and standard mitigation measures. Such language can, and many times is, used and provided for in the Programmatic Agreements themselves. There is no need to add this language to the process under the rule to reach such agreements. As stated before, the Council has revised the rule to provide for prototype agreements, which could be particularly helpful in the CDBG context.

Section 800.5(c)

Proposed rule gives Tribes power to require further analysis (and therefore delay) under the process whenever they attach religious or cultural significance to a property. Tribes are provided the same consultative opportunities to review an agency's findings that other consulting parties are provided. The rule only encourages, but clearly does not require, the agency to reach such concurrence. See response above to comments regarding properties of "cultural and religious significance." Also see section 101(d)(6)(B) of the NHPA.

Subsection (c)(1) is directly contrary to NHPA since NHPA only requires documentation when an adverse effect is found. 16 U.S.C. 470(l). This comment misreads the statute. Section 110(l) of the NHPA simply indicates that when no solution to adverse effects is reached and embodied in an agreement in accordance with this rule, the Federal agency must document its decision after considering Council comment. This is completely different than providing the documentation necessary for reviewers to understand agency decisions in the normal section 106 process, which is reasonable and not precluded by anything in the statute.

Subsection (c)(2) must clarify that a finding of adverse effect does not require consultation under section 106. The Council is provided a reasonable opportunity to comment under section 106. The Council disagrees. Section 110(l) of the NHPA explicitly indicates its blessing of the Memorandum of Agreement consultation concept when it states that when no such solution is reached in accordance with this rule, then the agency head must document its decision after considering Council comment. Furthermore, the rule clearly states that once a Federal agency has entered into such consultation, it can terminate and proceed to Council comment.

Regarding § 800.5(c)(2)(i), anytime a consulting party objects to a finding, the Federal agency should notify all consulting parties and consult again with all parties prior to seeking consultation with the Council. Regarding 5(c)(3), the Council should also notify all consulting parties of its determination. Regarding the § 800.5(c)(2)(i) point, the Council clarifies that if consultation with the objecting party leads to changes affecting other parties, the Agency should go back to them. The Council also notes that it would notify all consulting parties regarding its § 800.5(c)(3) determination.

Section 800.6(a)

The regulations grant an unconstrained authority to require mitigation to avoid adverse effects with no constraints on cost and without requiring any nexus between the mitigation and actual adverse effect. Comment is incorrect. The agency can, based on the applicant's position, refuse any mitigation measures and terminate consultation. Furthermore, the rule is quite clear in that the consultation that may lead to an agreement is to avoid, minimize or mitigate the adverse effects on the historic properties.

Rules should provide that any Adverse Effect comment should include recommendations and core criteria for mitigation to reduce the effects to No Adverse Effect. While this is permissible, the Council believed the rule should not require it as a duty of SHPO/THPO at the determination of adverse effect step. Review at that point is intended to focus on identifying whether adverse effects exist, and not to provide a full range of mitigation options.

Section 800.6(b)

Proposed rule inappropriately attempts to require parties to sign an MOA to avoid additional delays from

Council comment on the undertaking. Federal Register Council has no authority to require execution of a binding contractual agreement of any kind. Section 110(l) does not mean that the Council may compel the use of MOAs. This is beyond Council authority and must be deleted from the rule. The rule does not require or compel execution of an MOA. Furthermore, section 110(l) of the NHPA explicitly indicates its endorsement of the Memorandum of Agreement (MOA) consultation concept when it states that (1) when no such solution is reached in accordance with this rule, then the agency head must document its decision after considering Council comment, and (2) when such an agreement is reached, it shall govern the undertaking and all its parts.

There is no specific time period for Council review of a MOA when Council is participating in consultation which can significantly lengthen the section 106 compliance process. Regulatory time limits or guidelines (30–45 days) should be promulgated. Similarly, there is no review time specified for Council response to the submission of an executed MOA. Recommend time limit or guidelines of 30 days. The Council consults regarding MOAs but does not "review" them. The Council does not review executed MOAs, so there are no delays of agency action.

Section 800.6(c)

Several comments requested changes to the rule to clarify the issue of invited signatories. The Council agreed that this section needed to be changed. The changes to the rule indicate that the Agency Official is the one that ultimately decides who is an invited signatory, and that the rights to seek amendment or termination of an MOA attach to those that actually sign the MOA.

A comment regarding 36 CFR 800.6(c)(2)(I) supported retention of the permissive "may" in allowing agency to invite an Indian Tribe or Native Hawaiian organization to become a signatory to a MOA, but would find a language such as "should" or "shall" to be unacceptable. Several tribal comments, on the other hand, requested that the tribes be given a signatory right. This was a major issue during the development of the 1999 rule. After careful consideration, the Administration made a policy decision that is reflected in the proposed rule. Indian tribes are not mandatory signatories to an MOA dealing with effects on historic properties off tribal lands. The Council has no new evidence to support changing that position.

SHPOs are given broad discretion to determine appropriate mitigation for an MOA, resulting in the process being unregulated. This comment is incorrect. The Federal agency has the discretion to agree or disagree with SHPO/THPO views regarding an MOA. When an agreement is not reached, the agency goes for Council comment to wrap up the process.

Section 800.7(c)

There is no authority for the Council to dictate to Federal agencies how they consider Council comments, how they document or prepare records of decisions, nor how or whether they notify the public, nor require the agency to provide the Council with the decision prior to approving the undertaking. The NHPA specifically grants the Council the authority to promulgate rules to implement section 106 in its entirety. Section 106 requires Federal agencies to give the Council a reasonable opportunity to comment. Section 110(l) of the NHPA explicitly requires the Federal agency to document its decision made pursuant to section 106. The Council is well within its authority to implement these requirements and determine how such opportunity is provided the Council, and how the required documentation is provided.

Time for Council comment should be limited to 30 days, and the Agency Official could decide to grant an extension if it so desired. The Council believes the 45 day comment period is reasonable, takes into account the reality of staff and Council workload and need for adequate consideration, and reflects a shorter time period than previous rules (the section 106 rule adopted in 1986 set a 60 day period).

Section 800.8(a)

Rule contravenes NEPA by seeking to require processing under NEPA of undertakings that have no significant or no adverse impact on historic properties. The Council emphasizes that the rule clearly does not require NEPA processing for anything. That is something the Federal agency must decide independently.

Rule contravenes NEPA in that it undermines the categorical exclusion provisions of NEPA by requiring section 106 processing for all categorically excluded Federal actions and failing to provide a compatible process for excluding from section 106 those actions that have small or insignificant impacts, thus causing waste of enormous public and private compliance resources struggling with the least measurable and least

important Federal actions. The statement is incorrect. Section 106 of the NHPA covers “undertakings” regardless of NEPA categorical exclusions. The NHPA and NEPA are independent statutes with separate obligations for Federal agencies. Furthermore, § 800.14(c) provides for a way that agencies can request and obtain exemptions.

Section 800.8(c)

Comments suggested need for guidance to facilitate use of provisions allowing substitution of NEPA for section 106 process. The Council is committed to develop such guidance and assist Federal agencies that desire to follow these provisions of the rule.

Any integration of the NEPA process with section 106 should allow EAs as well as EISs to constitute full compliance with section 106. Section 800.8(c) of the rule allows just that when certain reasonable standards are met. Those standards ensure that historic properties are taken into account in a manner consistent with the NHPA.

Council has no authority to prescribe rules regulating Federal agencies’ use of NEPA to comply with section 106. Such an approach was rejected during the 1992 amendments. The Council notes that the NEPA coordination provisions of this rule only apply when the Federal agency independently chooses NEPA documents/process to substitute for the regular section 106 process that they would have had to follow otherwise. The Council has the authority to set conditions for an agency to substitute another process for the Council’s government-wide rule.

Requirement that the NEPA documents include mitigation measures should be deleted. The Supreme Court has stated repeatedly that NEPA mandates that mitigation measures be discussed, but that there is no requirement that a detailed mitigation plan be adopted. The Council has no authority to attach such a requirement to the NEPA process. Again, the NEPA/106 substitution provisions of this rule apply only when the NEPA process is used to substitute regular section 106 process that the Federal agency would have had to follow otherwise. Nothing in the rule requires adoption of mitigation measures since the option of getting formal Council comments instead is still available.

Section 800.9(a)

It is not the responsibility of the Council to decide whether or not their procedures have been followed regarding Agency determinations. The

only Council right is to expect a reasonable opportunity to comment and that its comments will be considered before the agency proceeds with the undertaking. The rule makes it clear that this is not a binding “decision” by the Council, but an advisory opinion (see section 202 of the NHPA). The Council, as the agency promulgating the section 106 rule, has the specific expertise and interest in opining as to whether its rule has been correctly followed.

Section 800.9(b)

The process in § 800.9(b) regarding the Council’s determination of a foreclosure lies outside of the Council’s authority. A finding of foreclosure is an advisory opinion within the Council’s authority (see Section 202 of the NHPA). The Council, as the agency promulgating the section 106 rule, has the specific expertise and interest in opining as to whether its rule has been correctly followed.

Section 800.9(c)

Comments questioned the statutory authority for Council to promulgate regulations implementing section 110(k) of the NHPA. Section 211 of the NHPA authorizes the Council to promulgate regulations to implement section 106 in its entirety. Section 110(k) directly relates to the section 106 and what an agency must do when an applicant’s actions may have precluded section 106 review. Moreover, section 110(k) specifies a requirement that the Council be consulted. The rule simply re-states Section 110(k), sets forth how the Council will be consulted, and reminds agencies of their further section 106 responsibilities.

Section 800.9(d)

Council’s assertion, under § 800.9(d)(2), that it can participate in individual case reviews, however it deems appropriate, finds no support in any section of the NHPA and should be deleted. The Council changed the rule in response to this comment. The change expressly limits the role of the Council in such reviews to accord with the role already given to the Council under subpart B and parallel to that of SHPO/THPOs.

Section 800.10

A comment questioned the statutory authority for Council to promulgate regulations implementing Section 110 of the NHPA. Section 211 of the NHPA authorizes the Council to promulgate regulations to implement section 106 in its entirety. The Council notes that undertakings affecting National

Historical Landmarks (NHLs) are subject to section 106 review. NHLs are “historic properties” listed on the National Register. The provisions of § 800.10 lay out how the Council may participate in the section 106 review of these particularly important historic properties, how the Council may request a report from the Secretary of the Interior pursuant to section 213 of the NHPA, and how the Council will provide a report to the Secretary on the outcome of the consultation.

Section 800.11(a)

NHPA section 470k limits the substance and extent of any documentation requirement dependent upon each Federal agency’s authority and funding; therefore the proposed § 800.11 should be revised to clarify that the rules’ documentation requirements are not mandatory but are recommended guidelines consistent with NHPA 470k and the Council’s advisory role. To better comport with statutory language, § 800.11 was changed by adding language that clarifies that documentation requirements are mandatory but limited “to the extent permitted by law and within available funds.” 16 U.S.C. 470k. The documentation provisions remain mandatory since the Council and other reviewers simply cannot comment without a basis, which can only be provided by adequate documents. The Council believes that the document requirements are not only minimal, but should be readily available to any agency as its record supporting its decisions in the process.

When a documentation dispute is presented to the Council, it must be resolved in a timely manner. When documentation disputes are referred to the Council, the Council is committed to expeditiously providing a resolution to them. The resolution provided by the Council will include guidance as to when the relevant party should complete their review of the finding or determination at issue—taking into account how long the party disputing the documentation has had the documentation, particularly in cases where such documentation is deemed by the Council to have been adequate.

Documentation standards are extremely broad, and likely to create confusion. Specific standards should be included that reference and adopt, at a minimum, documentation sufficient to satisfy the definition of “sacred site” in EO 13007 (“any specific, discrete, narrowly delineated location on Federal land that is identified by” an authoritative Indian tribal source). Documentation standards are

adequately specific and far more specific than those of past regulations. The matter about defining "sacred sites" is better handled through guidance. Nevertheless, the Council clarifies once more that sites, sacred or otherwise, must meet the National Register criteria in order to be considered in the section 106 process.

Questions statutory authority for Council to impose extensive documentation requirements. Section 110(l) of the NHPA requires agencies to document their section 106 decisions, but does not authorize Council to elaborate. Section 203 of the NHPA authorizes the Council to obtain information from Federal agencies, but does not require those agencies to provide the information. Section 203 of the NHPA would be meaningless if it authorized the Council to obtain documents from Federal agencies, but did not require such agencies to comply according to the law. Furthermore, the Council is within its statutory authority to promulgate regulations implementing section 106 in its entirety, in setting the rule's reasonable documentation requirements. Documenting decisions not only assures meaningful compliance with the requirement to take into account effects to historic properties, but it produces the necessary information for consulting parties to assist the Federal agency in meeting its duties. Furthermore, the Council would not have a reasonable opportunity to comment on an undertaking without having adequate documentation on the undertaking and relevant historic properties, as provided in this section of the rule.

Section 800.11(c)

It is too cumbersome for the agency to be required to consult the Secretary of the Interior and the Council every time it wishes to withhold information under this provision. This consultative process is set forth and mandated by section 304 of the NHPA. The rule simply outlines a reasonable process for the Council participation required by section 304.

Regarding § 800.11(c)(2), the Agency official should also submit to Council the views of SHPO regarding the confidentiality of information. The Council agreed and changed the rule to reflect this. SHPOs views as to confidentiality and harm to resources are relevant, and confidentiality is not limited to tribal issues.

Section 800.11(d)

Documentation level for a finding of no Historic Properties Affected is unreasonable. The Council believes the

level of documentation is more than reasonable, if not minimal, since the agency should already have the listed documentation readily on hand in order to have been able to reach such a decision.

Section 800.11(e)

Section 800.11(e)(5) should require that each criteria of adverse effect be explained, whether found applicable or inapplicable, to ensure consistency in agency documentation. The Council disagreed with this proposal. Many criteria may have no relevance whatsoever to a particular project. Nevertheless, the Council believes some guidance may be warranted in the future to promote consistency in agency documentation.

Section 800.12(a)

It is not clear how the regulations apply during rehabilitation work, monitoring the emergency from a cultural resources perspective, or when to implement the regulations during emergency situations. The Council believes the rules are clear that the emergency provisions are triggered when an agency proposes an emergency undertaking in response to a declared disaster. The provisions require notification and a seven day review period.

Section 800.12(d)

Implementation time for emergency procedures should be extended from 30 days for a formally declared event to 90 days in order to allow for limited agency resources to adequately address all the issues that arise from a disaster related event. The longer an implementation time is extended, the lesser the justification for emergency, abbreviated procedures. Furthermore, the rule already allows requests for extensions of time when needed. The Council has not declined any such extension requests.

Section 800.13(b)

Agencies often do not often want to assume a new find to be National Register eligible. To address this, the comment offered a proposed change. The Council believed the suggested concept was useful and incorporated changes to the rule. The changes state that the subject of eligibility can be raised (and be considered by agency) in comments. As explained above, section 106 applies to those properties listed or eligible for listing on the National Register. This change acknowledges the importance of National Register eligibility at this point.

Section 800.13(b)(2) should be removed for the same reason that the data recovery exemption was removed from the 86 regulations. The Council disagreed. A short cut for these post-review discoveries of archaeological resources of value only for their data is necessary. The Council believes that tribal involvement will provide an adequate safeguard.

Section 800.14

The program alternative provisions are too rigid, intimidating and difficult to apply and create a one-size-fits all approach. The revised regulations should make this provision more useful so that it can be applied more productively to Federal agencies and industry. What the alternatives under § 800.14 do is to provide vehicles to tailor the section 106 process to the particular needs of each agency, agency program or group of undertakings. While the intent is to provide such flexibility in the final product, it is still essential to maintain the role of the public, preservation officers and other stakeholders in providing necessary input in shaping those products.

Section 800.14(a)

Include a provision for Council monitoring and evaluation of whether Federal agency program alternatives are working or not. Council monitoring of program alternatives should be on a regular basis, including, but not limited to, how agencies implement the "exempted categories" projects. Also, add a provision for the Council to publish a list of acceptable Federal Agency alternative programs and make them available to the public.

Monitoring measures would be included, as appropriate, in the alternatives' agreements themselves. Regarding a list of Council approved alternatives, the Council does not need a change to its rule to publish such a list.

Since agency must submit any proposed alternate procedures for review by Council and NCSHPO, requirement for publication in the Federal Register should be eliminated. The Council disagrees. Federal Register notice of final adoption of these alternatives is needed to notify the public as to these changes in how Federal agencies comply with section 106.

Regarding all of § 800.14, the Council is granted no rights under the NHPA to be consulted with about Federal agency development of their procedures. Section 110(a)(2) requires consultation with the Secretary of the Interior, but not with the Council. Federal agencies

may find consultation with the Council desirable, but it is not required by the statute. The comment simply misreads section 110(a)(2) of the NHPA. That section deals with non-binding procedures that agencies may use to implement the Council's binding, section 106 regulations under 36 CFR part 800. The alternatives under section 800.14 directly modify or substitute for the Council's binding regulations regarding certain programs or undertakings, and therefore require our direct involvement. The Council believes it has the internal experience and expertise to make such evaluations. Also, the diversity of its membership ensures that a balanced perspective is brought to final determinations regarding consistency. Section 211 of the NHPA states that the Council "is authorized to promulgate such rules and regulations as it deems necessary to govern implementation of section 106 * * * in its entirety." Section 110(a)(2) of the NHPA states that the "(Federal agency historic preservation) program[s] shall ensure * * * that the agency's procedures for compliance with section 106 * * * are consistent with regulations issued by the Council * * *" (emphasis added). It must be understood, among other things and upon closer examination, that section 110 of the NHPA does not specifically provide for Federal agencies to substitute their programs for the section 106 regulations promulgated by the Council. Through § 800.14 of the rule, the Council is allowing for such substitution, believing this may help agencies in their section 106 compliance. However, the Council will not allow such substitution if the agency procedures are inconsistent with the Council's 106 regulations. The Council, in its expertise, holds that its regulations correctly implement section 106, and that it would therefore be inimical to its mandate and contrary to the spirit and letter of section 100(a)(2)(E) of the NHPA, for the Council to allow inconsistent procedures to substitute the Council's section 106 regulations.

The Council should seek the views of affected SHPOs and notify them of final adoption when an Indian tribe enters into an agreement with the Council to substitute tribal regulations for Council regs. The Council notes that section 101(d)(5) of NHPA already requires such consultation with the affected SHPO, and that the Council would obviously notify such affected SHPO as to a final substitution.

Section 800.14(b)

These regulations require more steps, more paperwork, and therefore more time to process routine CDBG Programmatic Agreements. Under the new regulations, the Council must participate more actively in these highly routine and repetitive agreements; and the Council treats the activities covered by CDBG agreements as "adverse effects." We request Council reconsider its procedures for routine PAs. In response to this comment, the Council agreed to provide a new procedure for routine Programmatic Agreements. See § 800.14(b)(4).

It is not clear that Programmatic Agreements under § 800.14(b)(3) are developed by an agency official in consultation with the SHPO. Additional guidance is needed beyond simply referencing § 800.6. The Council notes that the SHPO and other consulting parties must be consulted, just as they would be consulted for a Memorandum of Agreement under § 800.6.

Section 800.14(c)

The Council should modify the proposed rule to accommodate and promote voluntary habitat conservation efforts under the ESA. It should establish as an "exempted category", exempting from section 106 review, all voluntary incidental take and enhancement of survival permits issued by either FWS or NMFS under section 10 of the ESA. Also, approval of and voluntary participation in a "take limitation" or exemption created under a special conservation rule adopted by either the FWS or NMFS under section 4(d) of the ESA should also be exempted from NHPA review. These and other specific alternatives and exemptions recommended by the commenting public should be decided after the appropriate § 800.14 process is followed, and not through the rulemaking itself. The Council encourages Federal agencies to submit proposed exemptions and other alternatives.

Under § 800.14(c)(5), the Agency Official should submit the views of SHPO/THPO to the Council along with the other required documentation. The Council should also notify SHPO/THPO of the Council decision. In § 800.14(c)(7), SHPO's and others should be able to request that the Council review an Agency's activities to determine if the exemption no longer meets the criteria. The Council decided to change this section to explicitly add SHPO/THPO comments to those that need to be submitted. The Council assures the commenting public that it

will notify SHPO/THPOs of final decisions regarding exemption decisions. Finally, the Council notes that anyone can request the Council to conduct a review of a program alternative without need of amendment to the rule.

Section 800.14(f)

Requiring comment from all Indian tribes is unnecessarily broad. Section 800.14(f)(1) should be amended so as to provide an appropriate government-to-government consultation with affected Indian tribes and consultation with Native Hawaiian organizations when a nationwide Programmatic Agreement is being developed, adding language to the effect that "when a proposed program alternative has nationwide applicability, the Agency Official shall identify an appropriate government-to-government consultation with Indian tribes and consultation with Native Hawaiian organizations." The Council agreed with the concept and rationale of the proposed change. It therefore added language to § 800.14(f) regarding tribal consultation for nationwide agreements, while honoring the underlying intent of meaningful consultation with Indian tribes and Native Hawaiian organizations.

Section 800.16(d)

Rule is unclear, and allows area of potential effect for a one acre wetland permit, to encompass entire development site (which could be over one hundred acres). The area of potential effects should be the one acre of wetland. Vagueness of rule leaves applicants vulnerable to high costs and long permit delays. The issue of area of potential effects and wetlands permits is one that needs to be worked out between the Council and the Corps of Engineers. The Council notes that section 106 requires Federal agencies to take into account the effects of undertakings on historic properties. An undertaking is defined by the statute to include a "project (or) activity * * * requiring a Federal permit, license or approval." The effects to be considered are those of the "project" that required the permit. Moreover, in most instances the effects of projects are felt by historic properties beyond the immediate footprint of a project. To illustrate, a historic property whose integrity would be affected by increased noise is affected even though it is not itself located on the site of the source of that noise. The Federal agency must take into account such effects. Having said this, the Council understands the need for guidance on the subject of establishing areas of potential effects regarding the

particular concerns reflected in this comment and others. The Council will be developing such guidance.

Definition of APE is too broad, adding expense for surveys (usually borne by applicants), and unlawfully encompassing private or State lands. See answer above. Also, section 106 requires Federal agencies to take into account effects on historic properties regardless of whether they are located in private or public lands.

Section 800.16(e)

To the extent the Council seeks to prescribe a role for SHPOs, this definition should include in the alternative the comments of the SHPO. The comment is incorrect. The term "comment," as used on the rule, means the formal comments by the Council. The SHPO is never entrusted with that responsibility. The SHPO role through the process comes from its assistance responsibilities in the section 106 process (see section 101(b) of the NHPA).

Section 800.16(I)

The definition of effect should be consistent with language used to define area of potential effect (§ 800.16(d)) and the criteria of adverse effect (§ 800.5(a)(1)). The Council agreed and, for consistency, changed the rule so that the "alterations" is used for both definitions.

Section 800.16(w)

Several comments requested the Council to revise the rule to distinguish between section 101(d)(2), NPS approved THPOs and non-101(d)(2) tribes. They strongly recommend that different terms be used for these two types of tribes in order to more clearly reflect their different authorities on tribal lands. The Council agreed and changed the rule accordingly. In summary, the Council (1) deleted the reference to non-101(d)(2) tribes from the definition of "THPOs" on this section of the rule, and (2) revised the language regarding these consulting parties under section of § 800.2(c).

Section 800.16(x)

A definition of "dependent Indian communities" for the purposes of this regulation is needed. Folks need a legal definition from the Council. The Council used the definition of Indian tribes provided by the statute. The Council will bring this issue to the attention of the Department of the Interior and work on clarification.

Section 800.16(y)

The term "undertaking" needs to be better defined within the regulation so as to clearly eliminate actions with no potential to affect historic properties. Section 800.3(a)(1) provides at the beginning of the process that Federal agencies have no further section 106 responsibilities if the undertaking is not a type of activity that has the potential to affect historic properties.

Various comments requested in different forms that the Council should clarify that Federal funding is a condition precedent to the application of the section 106 process. The Council notes that there is case law supporting that position as well as case law stating that funding is not a prerequisite. The Council has maintained the statutory definition of "undertaking," verbatim, in the regulations. The Agency Official is responsible, in accordance with § 800.3(a), for making the determination as to whether a proposed Federal action is an undertaking. As appropriate, an agency should examine the nature of its Federal involvement taking into consideration factors such as the degree of Federal agency control or discretion; the type of Federal involvement or link to the action; and whether or not the action could move forward without Federal involvement. An agency should seek the advice of the Council when uncertain about whether or not its action falls within the definition of an undertaking.

Do not want incidental take permits (ITPs) under the Endangered Species Act to be subject to section 106 review. As stated before, the Council notes that this and other specific alternatives and exemptions should be decided after the appropriate § 800.14 process is followed and not through rulemaking itself. The Council encourages Federal agencies to submit proposed exemptions and other alternatives.

Various comments argued in various forms that Surface Mining Control and Reclamation Act (SMCRA) permits issued by States, after Office of Surface Mining (OSM) delegation of the program, are not subject to the section 106 process. The Council believes that it is the responsibility of the Federal agency, rather than the State, to comply with section 106. The Council intends to continue working with OSM to develop and finalize a solution to this issue.

The proposed rule does not apply to the siting of wireless facilities, since the construction of communications towers does not constitute a Federal undertaking. As stated before, this and several other issues mentioned by the

telecommunications industry in this rulemaking process have been or are in the process of being addressed through ongoing discussions with the industry, the FCC and SHPOs. These discussions commenced before the present rulemaking process. Such ongoing discussions are referred hereinafter as "Telecommunications Working Group."

Appendix A

Various comments stated that Council participation in consultation should be mandatory when requested by a tribe, particularly because tribes are not mandatory signatories off tribal lands. The Council disagreed. The Council needs to retain discretion, just as it has in any other Section 106 reviews. Such discretion is necessary not only to allow the Council to manage its limited resources, but also to further encourage the goal of Agency and SHPO/THPO independence in the process. We have no evidence that this discretion is not being exercised appropriately.

The Council should change its rule to allow it to comment on the most important cases, involving the SHPOs/THPOs in an advisory capacity, not a managerial role. The Council believes the rule accomplishes this. Under the rule, the Council only gets involved in some of the cases meeting Appendix A criteria. The rule requires the Council to explain how such criteria is met before entering consultation, and provides SHPOs/THPOs with an advisory role.

General Consultation

THE COUNCIL'S "HANDBOOK ON TREATMENT OF ARCHAEOLOGICAL PROPERTIES" IS WOEFULLY OUT OF DATE AND SHOULD BE UPDATED AS SOON AS POSSIBLE. ALSO "PREPARING AGREEMENT DOCUMENTS" SHOULD BE REVISED TO REFLECT THE CHANGES IN THE NEW REGULATIONS. THE COUNCIL SHOULD ALSO EXPLORE ESTABLISHING PEER REVIEW SYSTEMS IN RESOLVING DISPUTES THAT INVOLVE THE IDENTIFICATION, EVALUATION AND/OR TREATMENT OF ARCHAEOLOGICAL SITES. The Council agrees that the mentioned documents should be updated. Regarding the establishment of peer review systems, such an option could be explored.

Overly burdensome consultation requirements. Commenter cites seven different points of notification or consultation even when there are no historic properties present, and a dozen or more if there should be historic properties, resulting in unnecessary delays for thousands of routine projects. The commenter estimates that implementation and documentation of the numerous consultation points

requires ¼ to ½ FTE on every National Forest in the Southwest. The rule provides for ways to tailor the process. The Council notes that a Programmatic Agreement under Section 800.14 should be suggested to the Forest Service. Such Programmatic Agreements have proved effective in the past in further streamlining and fitting the section 106 process to the particular needs of agency programs. The comment also raised an issue on the number of consultation points for situations where there are no historic properties affected. Consultation is necessary for an agency to learn whether historic properties are present or not, and then whether and how those present would be affected. Section 106, again, requires the effects of undertakings on historic properties be taken into account. For that to happen, there has to be a process for identifying the properties and assessing the effects on such properties. As stated before, Section 800.14 presents several options an agency can pursue to advance an alternative way of complying with Section 106 which better fits the realities of their particular programs.

Some SHPO's have attempted to implement the Council's proposed Part 800 rules by treating the regulations as a springboard for additional, mandatory compliance steps and unreasonable documentation requirements that only serve to delay the review process. Clarify that SHPO's must follow proposed part 800's regulatory deadlines. Please refer to earlier responses regarding the 30 day time limits, above.

Proposed rules discourage SHPOs/THPOs from consulting with private sector companies and individuals seeking consultation regarding their projects. Government to government consultation if invoked by Tribes may prevent historic preservation matters from receiving their full consideration. As stated before, the rule has been changed to facilitate Federal agency authorizations for applicants to initiate the section 106 process. Government-to-government relationships between the Federal Government and Tribes is based on Presidential Memoranda, Executive Order 13084, treaties, and statutes. Furthermore, the Council believes that consultation with Tribes assures full consideration regarding historic properties on tribal lands or of significance to tribes.

Numerous provisions of proposed rule attempt to confer upon SHPO consultation, agreement (i.e., concurrence) or virtual veto powers. Section 106 does not mention any role for the SHPOs, let alone a requirement that the SHPO concur in agency

determinations. SHPO's responsibilities, like the Council, are to assist and to advise. Proposed rule confers unauthorized powers on SHPOs and the Council, and result in additional administrative requirements and delays. The SHPO's role is limited in the rule to consulting and advising, based in their responsibilities pursuant to section 101(b)(3) of the NHPA. When a step calls for concurrence, SHPO concurrence can end the process from further evaluation. When the SHPO does not concur, a project is not vetoed; rather, the Federal agency is moved to the next, logical step in the process. Nothing in the rule gives anyone veto power over an undertaking. The Federal agency ultimately decides by itself what to do with the undertaking, once it has complied with its Section 106 responsibilities.

Council should confirm that SHPOs have no legal authority over private parties. Neither the Council nor this rule gives SHPOs the legal authority to require any action from private parties.

Nothing in the NHPA requires that every party that finds preservation to be interesting to be given a formal role in the section 106 process, with the ability to delay or derail Federal undertakings. The Council agrees, and believes that the rule reflects that regarding who are consulting parties and how the Federal agency can control who becomes an additional consulting party.

Proposed rules provide a mechanism for a Federal agency to proceed over the objections of SHPO/THPO or without an MOA, however, the Federal agency and its regulatees would have already paid a steep price for their efforts through project delays, duplicative legal reviews and other expenses associated with earlier consultation with SHPOs, THPOs, and ACHP. Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Council a reasonable opportunity to comment. Just as with NEPA and other laws, Federal agency compliance with such obligations necessarily requires effort and time. Through various methods, such as time limits and program alternatives (which give Federal agencies the tools to further streamline and adapt the process to their needs), the Council has provided for cutting down such compliance costs.

Federal agencies often have no cultural resources expertise and therefore rely on SHPO to make findings for them. Although Council staff has urged SHPO offices not to be forced into this position, it is just too

much work to get agencies to obtain the necessary expertise. This is an important program issue, but not a regulatory one. The Council and the National Park Service should work with agencies in this area.

Additional guidance may be needed to further clarify the roles of participating parties in the consultation process. The Council agrees that such guidance should be developed.

The length of the comment periods are well founded and prudent because they insure that the parties respond in a timely manner. The rule also clarifies and emphasizes opportunities for Tribes, Native American organizations, and the interested public to participate in consultation. The Council agrees.

General Negative

The regulations have strayed from the consultation and advisory process envisioned by Congress for "nationally significant historic sites." It is evidenced by Congress' enactment of section 101(a) of the NHPA that a site does not have to be of "national" significance in order to meet National Register criteria and be considered under section 106 review (sites of State or local significance can meet the criteria as well).

Section 106 process is unnecessary because it duplicates an existing local zoning review/approval process for radio towers (a process that considers the impact that proposed towers might have on nearby historic properties). Therefore, it imposes unnecessary costs on carriers, and those costs are invariably passed on to the consumers. Congress has determined that local governments—not the Federal Government—should resolve such issues as the location, height and design of communications facilities. While certain local zoning measures may address historic preservation concerns, Federal agency undertakings are still subject to section 106. The NHPA does not relieve them of this duty. As stated before, this and several other issues mentioned by the telecommunications industry in this rulemaking process have been or are in the process of being addressed through ongoing discussions with the industry, the FCC and SHPOs. One objective of this exercise is to better coordinate Federal and local review processes. These discussions commenced before the present rulemaking process.

Instead of imposing overly-detailed proscriptive regulations that are difficult to understand and enforce, the Council should work with agencies and others to develop incentive programs that encourage innovative and effective

protection and preservation procedures. These could encourage compliance much more efficiently than the present enforcement model. This can be done pursuant to the program alternatives under § 800.14 of the rule.

Council should suspend this rulemaking, and develop a new rule that contains: (1) Procedures that the Federal and State agencies can process and apply; (2) provisions that assign burdens and responsibilities that non-Federal entities can understand and reasonably support; and (3) an approach to preservation that equitably apportions responsibility and cost, and provides positive incentives for compliance. The Council believes the rule presents reasonable procedures that Federal agencies can process and apply. The vast majority of the thousands of section 106 reviews under the current and past rules have been conducted and concluded by Federal agencies without serious problems. The fact that disagreements sometimes arise regarding certain findings and determinations does not mean the process cannot be applied but, rather, reflects that it is being applied correctly. Disagreements and working out solutions is simply a part of a consultative process. The Council notes that, like section 106 itself, the rule only place requirements on Federal agencies. The incentive for Federal agency compliance, beyond meeting legal obligations set by the NHPA, is the furtherance of the historic preservation policies of the Federal Government, as expressed in the NHPA.

I do not think that the 1999 regulations have resulted in, or will in the foreseeable future result in, much streamlining of the process. The reduction in Council involvement has created a void. SHPOs do not carry sufficient respect to fill that authority void. I recommend that the regulations require the Council be notified as soon as either the Agency official or the SHPO expresses an opinion that an effect will be adverse; and that the Council be a signatory to all MOAs and PAs. The notification requirement is already in the rule (see § 800.6(a)(1)). The Council will not become a signatory to all MOAs, since a decision has been made to streamline the process by relying more on the Federal agency and SHPO/THPO for routine cases.

General Positive

General positive comments are summarized below, without a Council response beyond stating its agreement.

A comment asked that the Council refrain from further restricting public participation or "other consulting

party" involvement in any way. It also ask, that the Council not vest any further authority in the SHPO or reduce the involvement of SHPOs, THPOs, and other consulting parties in agency decision making.

Other comments stated that: (1) the elimination of the distinction between "no historic properties" and "no effect" was a move in the right direction; (2) the rule is working well and that positive responses by certain Federal agencies had been noted; (3) the rule is very specific and provides sound guidance for federal agencies and other parties; (4) the rule clearly establishes the roles and responsibilities of the parties; (5) the rule works well and provides an efficient framework for the administration of the Act; (6) project review has been streamlined by reducing the need for Council review; (7) the rule is operating well, has appropriately defined the role of Federal agencies as the responsible party for section 106 compliance, achieves the objective of streamlining the process, and incorporates changes enacted in the 1992 amendments; (8) Federal agencies are beginning to assume their appropriate role as the lead in the process, and the Council can focus on difficult cases and problem agencies; (9) the rules are an improvement over the 1986 regs; (10) the rule offers a constructive framework for consultation among SHPO, tribes and all interested parties.

Miscellaneous

Since implementing NHPA necessarily affects the agencies' regulatees, FCC recommends that the proposed rule include a "reasonable" time period for Federal agencies to develop their own implementing procedures. Federal agencies have always had the authority to develop implementing procedures pursuant to section 110(a)(2)(E). The Council has no role in setting deadlines for Federal agencies to develop these implementing procedures.

The deadlines for response from Council and SHPOs (15 days and 30 days) are reasonable—assuming adequate personnel to handle the workload. Because SHPO's are inadequately funded, they are understaffed to meet these time frames. Therefore, a 30 day review period for the Council and a 45-day review period for SHPOs is recommended. The Council disagrees. The current deadlines adequately balance the project need for expediency and the workloads of the Council and SHPO/THPOs.

General Tribal

In requesting that the role of THPO's and tribal representatives be clarified for those situations affecting properties of religious and cultural significance off tribal land, it is suggested that section 101(d)(2) limits THPO responsibilities and authority to tribal lands and does not require a Federal agency to consult with those tribes regarding properties of religious and cultural significance. The Council disagrees. Section 101(d)(6)(B) of the NHPA requires tribal consultation regarding historic properties of religious and cultural significance. Nothing in the statute makes a distinction that would limit such consultation to tribal lands.

It is inappropriate and illegal for Council to implement 1992 amendments regarding Indian Tribes through its proposed rule. Section 106 itself was not amended, and the Secretary of the Interior is the agency charged with promulgating regulations to implement the tribe-related amendments. The comment misreads the NHPA. The rule appropriately deals with tribal requirements as they directly relate to the section 106 process. The Council is authorized to promulgate rules to govern the implementation of section 106 "in its entirety." This authority necessarily covers all aspects that directly relate to the section 106 process. The 1992 amendments require Federal agencies to consult with tribes and Native Hawaiian Organizations in carrying out their Section 106 responsibilities. While the Department of the Interior provides assistance to tribes and fosters communication among tribes, SHPOs and agencies, it does not oversee the section 106 process nor have the requisite authority. It is noted that the Department of the Interior sits on the Council and voted in favor of adopting this rule.

Several THPOs have begun to request payment of fees for Section 106 consultation and have asserted THPO powers outside of tribal lands. Council could remove uncertainty and avoid delays by clarifying that THPOs are bound by the same rules as SHPOs and THPO authority extends only over tribal lands. This is a topic being addressed by the ongoing Telecommunications Working Group. Once the Council reaches a decision on this matter, it will be disseminated.

Concerned about several THPOs and tribal representatives requesting payment for the section 106 consultation required in the regulations and believes such actions are contrary to the regulations. This issue was raised by the wireless industry, and will be

addressed by the Telecommunications Working Group.

We would not support changes to grant expanded authority to tribes off tribal lands. We strongly support current provisions which enable tribes to participate, as appropriate. The Council agrees with this comment and did not expand the tribal role in this rule.

The proposed rule will impact us resulting in the consultation with Native Hawaiian organizations. The requirement for consultation with Native Hawaiian organizations will require expenditure of time and funds spent on EIS studies. The rule fails to specify which Hawaiian Native organizations (NHO) we would have to consult with, which may be many. The statute requires Federal agencies to conduct such consultation. The rule is not the appropriate venue for identifying specific NHOs. That is the responsibility of the Federal agency based on the potential to affect properties of significance to specific organizations.

E.O. 13084 has language that should be utilized in the section 106 process. EO 13084 addresses the development of Federal agency policies and regulations. The Council rule addresses individual projects and programs, and not these overall policies and rules developed by other agencies.

The regulations took a positive step regarding tribal input and participation. It works when the agency is truly in compliance with the regulations. Need to work on how tribes can be more involved; are legally involved in decision making without a specific agreement; and can be funded to conduct the work demanded by agencies and the regulations. The Council is developing guidance on tribal consultation.

The regulations conflict with the language and purpose of the Act by creating an artificial distinction between tribal properties depending on their location (on or off tribal lands). Tribes are provided lesser consultation rights where traditional cultural properties are located off tribal lands. The rule acknowledges tribal sovereignty on tribal lands, which necessarily distinguishes a tribe's role on and off tribal lands. The rule does not distinguish where properties are located, but only the scope of tribal involvement.

The regulations suggest that tribal governments and the interested public are at the same level of importance. This concept ignores the sovereign status of tribes and, as a result, Federal agencies are disrespecting some tribal

treaties. An important statement of the tribal government role is missing. With the public on the same level as tribes, the public can gain access to documents that may compromise the confidentiality provisions of section 106. The Council disagrees. Section 800.2(c)(3) of the rule provides information for Federal agencies regarding sovereignty and the government-to-government responsibility. The public is simply notified and involved as appropriate but, unlike tribes in their land or regarding historic properties of significance to them, is not an entitled consulting party.

Legal Authority

Several comments questioned the Council's legal authority to issue the rule. The main arguments were that: (1) The Council was given advisory functions by the statute, and that the proposed rule transformed the role of the Council from purely advisory to one with substantive regulatory authority over other Federal agencies and parties; (2) the Council could only issue regulations regarding how it issued its comments (from the "reasonable opportunity to comment" provided by section 106); and (3) there was no statutory basis for a rule that dictates how an agency takes into account the effects of its undertakings or the Council's comments.

The Council believes that the rule is properly characterized as one providing a process to be followed. Nowhere does the rule impose an outcome on a Federal agency as to how it will decide whether or not to approve an undertaking, or how. The rule merely provides a process that assures that the Federal agency takes into account the effects of the undertaking on historic properties. It does not impose in any way whatsoever how such consideration will affect the final decision of the Federal agency on the undertaking. The rule does not provide anyone with a veto power over an undertaking.

Furthermore, the Council believes it has the authority to promulgate the present rule. Section 211 of the NHPA states that: "The Council is authorized to promulgate such rules and regulations as it deems necessary to govern the implementation of section 106 of [the NHPA] in its entirety." The phrase "in its entirety" was added by the 1992 amendments to the NHPA. Directly talking to the meaning of the "in its entirety" amendment, the summary of the amendments stated that: "This makes clear that the ACHP has the authority to define not only how agencies will afford the Council a

reasonable opportunity to comment, but also how agencies should take effects on historic properties into account in their planning." Congressional Record, Senate, S 3575, March 19, 1991. This amendment was specifically introduced to address the authority issues raised earlier. Thus, it is clear that Congress has given the Council the authority to promulgate rules, such as the present one, setting forth how Federal agencies are to meet all their section 106 responsibilities to take into account the effects of their undertakings on historic properties, as well as to provide the Council with a reasonable opportunity to comment.

Moreover, the rule is solidly based on the requirements of the statute and, as Congress intended, provides a predictable framework which fleshes out those requirements. As stated before, section 106 specifically requires Federal agencies to take into account the effects of their undertakings on historic properties. 16 U.S.C. 470f. The first general step in the process under the rule requires Federal agencies to identify the historic properties that may be affected by the undertaking. 36 CFR 800.4. It is simply impossible for an agency to take into account the effects of its undertaking on historic properties if it does not even know what those historic properties are in the first place.

The second general step in the process is for the Federal agency to assess the effects of the undertaking on the historic property. 36 CFR 800.5. Again, an agency cannot take into account effects on historic properties if it does not first assess the nature of those effects. The Council has utilized its considered expertise on historic preservation to create the criteria of adverse effect that guides the end of this step.

The third general step in the process under the challenged rule is to consult to attempt resolving adverse effects to historic properties (through what is called a Memorandum of Agreement), if it has been determined the effects are actually adverse. 36 CFR 800.6. Such an approach is explicitly sanctioned by the statute under Section 110(l) of the National Historic Preservation Act. 16 U.S.C. 470h-2(l). Specifically, Section 110(l) of the statute states that:

With respect to any undertaking subject to section 106 which adversely affects any [historic property], and for which a Federal agency has not entered into an agreement pursuant to regulations issued by the Council, the head of such agency shall document any decision made pursuant to section 106. . . . Where a section 106 memorandum of agreement has been executed with respect to an undertaking,

such memorandum shall govern the undertaking and all its parts.

Id. (emphasis added). It bears mentioning that this section was amended by Congress after the section 106 rule that went into effect in 1999. The amendment further conformed the statute to that 1999 rule, which was used as the proposal in the present rulemaking. Specifically, section 5(a)(8) of HR 834, amended the language of section 110(l) by striking "with the Council" and inserting "pursuant to regulations issued by the Council."

In the last general step in the process, the Council issues comments to the Federal agencies that fail to resolve adverse effects. Such a step is obviously contemplated in the requirements of section 106 that the Council be given "a reasonable opportunity to comment." 16 U.S.C. 470f.

The rule does provide for consultation with various parties throughout the process. Such consultation requirements with State Historic Preservation Officers, Tribal Historic Preservation Officers and certain federally recognized Indian Tribes and Native Hawaiian Organizations are solidly anchored on statutory requirements that Federal agencies consult with such parties. See e.g. 16 U.S.C. 470a(b)(3)(I), 470a(d)(2), and 470a(d)(6)(B). The general public is also given a general role under the rule, although such role does not rise to the level of that of consulting parties. The Council believes this role for the public is reasonable and authorized. The Federal agency's consideration of how its undertaking affects historic properties is enhanced and better informed by the participation of the consulting parties and the general public, for whose enjoyment and enrichment the NHPA seeks to protect historic properties. It must be kept in mind that such public is the one that lives in the communities and areas where the historic properties are located, and therefore may have uniquely informed viewpoints as to such properties. As stated above, the rule specifically states that Federal agencies can use their own procedures for public involvement in lieu of those under subpart B of this rule, so long as they provide adequate opportunities consistent with the rule. Such procedural consistency is no more than what the NHPA requires under 16 U.S.C. 470h-2(a)(2)(E).

Appointments Clause

Some comments argued that the present rulemaking process violates the Appointments Clause of the Constitution. This argument is summarized as follows: (a) The section

106 rule that went into effect in 1999 (1999 rule) was developed and adopted in violation of the Appointments Clause due to the participation of the Chairman of the National Trust on Historic Preservation (the Trust) and the President of the National Conference of State Historic Preservation Officers (NCSHPO) (both of whom are members of the Council not appointed by the President) in the development and adoption of that 1999 rule; and (b) since the content of that 1999 rule was used as the proposed rule in the present rulemaking, the present rulemaking process is incurably tainted and unconstitutional.

The Council strongly disagrees with such arguments. As has been stated before, the Trust and NCSHPO have not participated in any way whatsoever in the deliberations, decisions, votes, or any other Council activities related to this rulemaking. On June 23, 2000, the Council membership, minus the representatives of the Trust and NCSHPO, took a new vote on the adoption of the 1999 rule. It voted 16-0 in favor of the 1999 rule. As has been stated above, that 1999 rule was the culmination of six years of work by the Council members, Council staff, public comments and public meetings.

Again without the participation of the representatives of the Trust and NCSHPO, the Council proceeded to vote unanimously in favor of proceeding with the present rulemaking process, using the text of the 1999 rule as the proposed rule. Many of these Council members (all Presidential appointees) had participated in the drafting and original, unanimous adoption of the 1999 rule on February of 1999. On June 23, 2000, they decided to use that 1999 rule as the proposed rule. On November 17, 2000, after taking into account public comment and changing the proposed rule as they deemed appropriate, these Presidentially appointed Council members (without the participation of the representatives of the Trust and NCSHPO) voted to adopt the final rule now being published.

Any prior involvement in the rule does not represent the exercise of significant authority pursuant to the laws of the United States contemplated by the Appointments Clause. The Presidential appointees considering the draft, proposed rule during the 2000 rulemaking process were at full liberty to vote against it, amend it, or adopt it. In the end, the final decision to move forward with such draft was in their power.

In the present rulemaking, any act that could arguably be deemed an

exercise of significant authority has been carried out solely by the Council's Presidential appointees.

Other Legal Issues

Certain comments indicated a belief that the proposed rule violates the Establishment Clause of the Constitution. The arguments stated that to the extent the proposed rule requires Federal agencies to conform their decisionmaking under section 106 based on the "religious and cultural significance" of properties (as determined by Tribes) it results in an excessive entanglement between the government and religion, impermissibly restricts the use of public lands on the basis of religion, and impermissibly establishes or favors religion, in violation of the Establishment Clause.

The Council strongly disagrees. The rule does not require Federal agencies to conform their decisionmaking based on the religious and cultural significance of properties. As stated before, the NHPA and the rule only clarify that properties of religious and cultural significance to Tribes "may be determined to be eligible for inclusion on the National Register." section 101(d)(6)(A) of the NHPA. Like any other property of any kind, in order for properties with such significance to be considered in the section 106 process, they must first meet the established, objective, secular criteria of the National Register of Historic Places. The determination as to whether a property meets that criteria is made by the Federal agency in concurrence with the SHPO/THPO or, in the case of disagreement, by the Keeper of the National Register. Furthermore, once a historic property has been so identified, all that Federal agencies are required to do is to take into account the effects of their undertaking on such property. Nothing whatsoever in the rule imposes an obligation on the Federal agency to change, reject or approve an undertaking based on the religious and cultural significance of a property.

The rule and section 101(d)(6) of the NHPA only require consultation with Indian Tribes regarding those historic properties of significance to them. The Federal agency must consult with such Tribes, but is nowhere required to abide by the opinions expressed by the Tribes in such consultations. Furthermore, such consultation provisions are fully justified and reasonable. They do not provide Tribes with a "special treatment," but rather a rational treatment. Just as it would be common sense for a person to consult, for example, with the Navy in order to seek a better understanding of the history of

Pearl Harbor, it is more than rational to go to Tribes to seek a better understanding of historic properties to which they attach a religious and cultural significance. Due to their history and experience with such properties, such Tribes are in a specially advantageous position to provide valuable information about them. At the very least, the Council believes that these Tribal consultation provisions of the rule and of section 101(d)(6) of the NHPA are tied rationally to the fulfillment of the Federal Government's unique obligations towards Tribes. See *Morton v. Mancari*, 417 U.S. 535 (1974).

IV. Description of Meaning and Intent of Specific Sections

The following information clarifies the meaning and intent behind particular sections of the final rule.

Subpart A—Purposes and Participants

Section 800.1(b). This section makes clear that references in the section 106 regulations are not intended to give any additional authority to implementing guidelines, policies or procedures issued by any other Federal agency. Where such provisions are cited, they are simply to assist users in finding related guidance, which is non-binding, or requirements of related laws, which may be mandatory depending on the particular law itself.

Section 800.1(c). The purpose of this section is to emphasize the flexibility an Agency Official has in carrying out the steps of the section 106 process, while acknowledging that early initiation of the process is essential and that actions taken to meet the procedural requirements must not restrict the effective consideration of alternatives related to historic preservation issues in later stages of the process.

Section 800.2(a). The term "Agency Official" is intended to include those Federal officials who have the effective decision making authority for an undertaking. This means the ability to agree to such actions as may be necessary to comply with section 106 and to ensure that any commitments made as a result of the section 106 process are indeed carried out. This authority and the legal responsibilities under section 106 may be assumed by non-Federal officials only when there is clear authority for such an arrangement under Federal law, such as under certain programs administered by the Department of Housing and Urban Development. This subsection indicates that the Federal Agency must ensure that the Agency Official "takes . . . financial responsibility for section 106 compliance . . ." This phrase is not to

be construed as prohibiting Federal agencies from passing certain section 106 compliance costs to applicants. Such a construction of the regulation would contravene section 110(g) of the NHPA and 16 U.S.C. 469c-2. The intent behind the reference to "financial responsibility" in the regulation is, as stated above, to ensure that the Agency Official has the effective decision making authority for an undertaking.

Section 800.2(a)(1). This reference to the Secretary's professional standards is intended to remind Federal agencies that this independent but related provision of the Act may affect their compliance with section 106.

Section 800.2(a)(2). This provision allows, but does not require, Federal agencies to designate a lead agency for section 106 compliance purposes. The lead agency carries out the duties of the Agency Official for all aspects of the undertaking. The other Federal agencies may assist the lead agency as they mutually agree. When compliance is completed, the other Federal agencies may use the outcome to document their own compliance with section 106 and must implement any provisions that apply to them. This provision does not prohibit an agency to independently pursue compliance with section 106 for its obligations under section 106, although this should be carefully coordinated with the lead agency. A lead agency can sign the Memorandum of Agreement for other agencies, so long as that is part of the agreement among the agencies for creating the lead agency arrangement. It should also be clear in the Memorandum of Agreement.

Section 800.2(a)(4). This section sets forth the general concepts of consultation. It identifies the duty of Federal agencies to consult with other parties at various steps in the section 106 process and acknowledges that consultation varies depending on a variety of factors. It also encourages agencies to coordinate section 106 consultation with that required under other Federal laws and to use existing agency processes to promote efficiency.

Section 800.2(b). The Council will generally not review the determinations and decisions reached in accordance with these regulations by the Agency Official and appropriate consulting parties and not participate in the review of most section 106 cases. However, because the statutory obligation of the Federal agency is to afford the Council a reasonable opportunity to comment on its undertaking's effects upon historic properties, the Council will oversee the section 106 process and formally become a party in individual consultations when it determines there

are sufficient grounds to do so. These are set forth in Appendix A. The Council also will provide participants in the section 106 process with its advice and guidance in order to facilitate completion of the section 106 review.

Section 800.2(c). This section sets a standard for involving various consulting parties. The objective is to provide parties with an effective opportunity to participate in the section 106 process, relative to the interest they have to the historic preservation issues at hand.

Section 800.2(c)(1). This section recognizes the central role of the SHPO in working with the Agency Official on section 106 compliance in most cases. It also delineates the manner in which the SHPO may get involved in the section 106 process when a THPO has assumed SHPO functions on tribal lands.

Section 800.2(c)(2). The role of THPO was created in the 1992 amendments to the Act. This section tracks the statutory provision relating to THPO assumption of the SHPO's section 106 role on tribal lands. In such circumstances, the THPO substitutes for the SHPO and the SHPO participates in the section 106 process only as specified in 800.2(c)(1) or as a member of the public. This section also specifies that in those instances where an undertaking occurs on or affects properties on tribal lands and a tribe has not officially assumed the SHPO's section 106 responsibilities on those lands, the Agency Official still consults with the SHPO, but also consults with a representative designated by the Indian tribe. Such designation is made in accordance with tribal law and procedures. However, if the tribe has not designated such a representative, the Agency Official would consult with the tribe's chief elected official, such as the tribal chairman.

Section 800.2(c)(3). This section embodies the statutory requirement for Federal agencies to consult with Indian tribes and Native Hawaiian organizations throughout the section 106 process when they attach religious and cultural significance to historic properties that may be affected by an undertaking. It is intended to promote continuing and effective consultation with those parties throughout the section 106 process. Such consultation is intended to be conducted in a manner that is fully cognizant of the legal rights of Indian tribes and that is sensitive to their cultural traditions and practices.

Section 800.2(c)(3)(i). This subsection has two main purposes. First, it emphasizes the importance of involving Indian tribes and Native Hawaiian organizations early and fully at all stages of the section 106 process.

Second, Federal agencies should solicit tribal views in a manner that is sensitive to the governmental structures of the tribes, recognizing that confidentiality and communication issues may require Federal agencies to allow more time for the exchange of information. Also, this section states that the Agency Official must make a "reasonable and good faith effort" to identify interested tribes and Native Hawaiian organizations. This means that the Agency Official may have to look beyond reservations and tribal lands in the project's vicinity to seek information on tribes that had been historically located in the area, but are no longer there.

Section 800.2(c)(3)(iii). This subsection emphasizes the need to consult with Indian tribes on a government-to-government basis. The Agency Official must consult with the appropriate tribal representative, who must be selected or designated by the tribe to speak on behalf of the tribe. Matters of protocol are important to Indian tribes. Indian tribes and Native Hawaiian organization may be reluctant to share information about properties to which they attach religious and cultural significance. Federal agencies should recognize this and be willing to identify historic properties without compromising concerns about confidentiality. The Agency Official should also be sensitive to the internal workings of a tribe and allow the time necessary for the tribal decision making process to operate.

Section 800.2(c)(3)(iv). This subsection reminds Federal agencies of the statutory duty to consult with Indian tribes and Native Hawaiian organizations whether or not the undertaking or its effects occur on tribal land. Agencies should be particularly sensitive in identifying areas of traditional association with tribes or a Native Hawaiian organizations, where historic properties to which they attach religious and cultural significance may be found.

Section 800.2(c)(3)(v). Some Federal agencies have or may want to develop special working relationships with Indian tribes or Native Hawaiian organization to provide specific arrangements for how they will adhere to the steps in the section 106 process and enhance the participation of tribes and Native Hawaiian organizations. Such agreements are not mandatory; they may be negotiated at the discretion of Federal agencies. The agreements cannot diminish the rights set forth in the regulations for other parties, such as the SHPO, without that party's express consent.

Section 800.2(c)(3)(vi). The signature of tribes is required where a Memorandum of Agreement concerns tribal lands. However, if a tribe has not formally assumed the SHPO's responsibilities under section 101(d)(2) the tribe may waive its signature rights at its discretion. This will allow tribes the flexibility of allowing agreements to go forward regarding tribal land, but without condoning the agreement with their signature.

Section 800.2(c)(4). Affected local governments must be given consulting party status if they so request. Under § 800.3(f)(1), Agency Officials are required to invite such local governments to be consulting parties. This subsection provides for that status and also reminds Federal agencies that some local governments may act as the Agency Official when they have assumed section 106 legal responsibilities, such as under certain programs administered by the Department of Housing and Urban Development.

Section 800.2(c)(5). Applicants for Federal assistance or for a Federal permit, license or other approval are entitled to be consulting parties. Under § 800.3(f)(1), Agency Officials are required to invite them to be consulting parties. Also, Federal agencies have the legal responsibility to comply with section 106 of the NHPA. In fulfilling their responsibilities, Federal agencies sometimes choose to rely on applicants for permits, approvals or assistance to begin the 106 process. The intent was to allow applicants to contact SHPOs and other consulting parties, but agencies must be mindful of their government-to-government consultation responsibilities when dealing with Indian tribes. If a Federal agency implements its 106 responsibilities in this way, the Federal agency remains legally responsible for the determinations. Applicants that may assume responsibilities under a Memorandum of Agreement must be consulting parties in the process leading to the agreement.

Section 800.2(c)(6). This section allows for the possibility that other individuals or entities may have a demonstrated special interest in an undertaking and that Federal agencies and SHPO/THPOs should consider the involvement of such individuals or entities as consulting parties. This might include property owners directly affected by the undertaking, non-profit organizations with a direct interest in the issues or affected businesses. Under § 800.3(f)(3), upon written request and in consultation with the SHPO/THPO and any Indian tribe upon whose tribal

lands an undertaking occurs or affects historic properties, an Agency Official may allow certain individuals under § 800.2(c)(6) to become consulting parties.

Section 800.2(d)(1). Public involvement is a critical aspect of the 106 process. This section is intended to set forth a standard that Federal agencies must adhere to as they go through the section 106 process. The type of public involvement will depend upon various factors, including but not limited to, the nature of the undertaking, the potential impact, the historic property, and the likely interest of the public. Confidentiality concerns include those specified in section 304 of the Act and legitimate concerns about proprietary information, business plans and privacy of property owners.

Section 800.2(d)(2). This subsection is intended to set the notice standard. Notice, with sufficient information to allow meaningful comments, must be provided to the public so that the public can express its views during the various stages and decision making points of the process.

Section 800.2(d)(3). It is intended that Federal agencies have flexibility in how they involve the public, including the use of NEPA and other agency planning processes, as long as opportunities for such public involvement are adequate and consistent with subpart A of the regulations.

Subpart B—The section 106 Process

Section 800.3. This new section is intended to encourage Federal agencies to integrate the section 106 process into agency planning at its earliest stages.

Section 800.3(a). The determination of whether or not an undertaking exists is the Agency Official's determination. The Council may render advice on the existence of an undertaking, but ultimately this remains a Federal agency decision.

Section 800.3(a)(1). This section explains that if there is an undertaking, but it is not a type of activity that has the potential to affect a historic property, then the agency is finished with its section 106 obligations. There is no consultation requirement for this decision.

Section 800.3(a)(2). This is a reminder to Federal agencies that adherence to the standard 106 process in Subpart B is inappropriate where the undertaking is governed by a program alternative established pursuant to § 800.14.

Section 800.3(b). This section does not impose a mandatory requirement on Federal agencies. It emphasizes the benefit of coordinating compliance with related statutes so as to enhance

efficiency and avoid duplication of efforts, but the decision is up to the Agency Official. Agencies are encouraged to use the information gathered for these other processes to meet section 106 needs, but the information must meet the standards in these regulations.

Section 800.3(c). This sets forth the responsibility to properly identify the appropriate SHPO or THPO that must be consulted. If the undertaking is on or affects historic properties on tribal lands, then the agency must determine what tribe is involved and whether the tribe has assumed the SHPO's responsibilities for section 106 under section 101(d)(2) of the Act. A list of such tribes is available from the National Park Service.

Section 800.3(c)(1). This section reiterates that the tribe may assume the role of the SHPO on tribal land and tracks the language of the Act in specifying how certain owners of property on tribal lands can request SHPO involvement in a section 106 case in addition to the THPO.

Section 800.3(c)(2). This section is the State counterpart to Federal lead agencies and has the same effect. It allows a group of SHPOs to agree to delegate their authority under these regulations for a specific undertaking to one SHPO.

Section 800.3(c)(3). This section reinforces the notion that the conduct of consultation may vary depending on the agency's planning process, the nature of the undertaking and the nature of its effects.

Section 800.3(c)(4). This section makes it clear that failure of an SHPO/THPO to respond within the time frames set by the regulation permit the agency to assume concurrence with the finding or to consult about the finding or determination with the Council in the SHPO/THPO's absence. It also makes clear that subsequent involvement by the SHPO/THPO is not precluded, but the SHPO/THPO cannot reopen a finding or determination that it failed to respond to earlier.

Section 800.3(d). This section specifies that, on tribal lands, the Agency Official consults with both the Indian tribe and the SHPO when the tribe has not formally assumed the responsibilities of the SHPO under section 101(d)(2) of the Act. It also allows the section 106 process to be completed even when the SHPO has decided not to participate in the process, and for the SHPO and an Indian tribe to develop tailored agreements for SHPO participation in reviewing undertakings on the tribe's lands.

Section 800.3(e). This section requires the Agency Official to decide early how and when to involve the public in the section 106 process. It does not require a formal "plan," although that might be appropriate depending upon the scale of the undertaking and the magnitude of its effects on historic properties.

Section 800.3(f). This is a particularly important section, as it requires the Agency Official at an early stage of the section 106 process to consult with the SHPO/THPO to identify those organizations and individuals that will have the right to be consulting parties under the terms of the regulations. These include local governments, Indian tribes and Native Hawaiian organizations and applicants for Federal assistance or permits, especially those who may assume a responsibility under a Memorandum of Agreement (see § 800.6(c)(2)(ii)). Others may request to be consulting parties, but that decision is up to the Agency Official.

Section 800.3(g). This section makes it clear that an Agency Official can combine individual steps in the section 106 process with the consent of the SHPO/THPO. Doing so must protect the opportunity of the public and consulting parties to participate fully in the section 106 process as envisioned in § 800.2.

Section 800.4(a). This section sets forth the consultative requirements involved in the scoping efforts at the beginning stages of the identification process. The Agency Official must consult with the SHPO/THPO in fulfilling the steps in subsections (1) through (4). This section emphasizes the need to consult with the SHPO/THPO at all steps in the scoping process. It also highlights the need to seek information from Indian tribes and Native Hawaiian organizations with regard to properties to which they attach religious and cultural significance, while being sensitive to confidentiality concerns. Where Federal agencies are engaged in an action that is on or may affect ancestral, aboriginal or ceded lands, Federal agencies must consult with Indian tribes and Native Hawaiian organizations with regard to historic properties of traditional religious and cultural significance on such lands.

Section 800.4(b). This section sets out the steps an Agency Official must follow to identify historic properties. It is close to the section 106 process under the 1986 regulations, with increased flexibility of timing and greater involvement of Indian tribes and Native Hawaiian organizations in accordance with the 1992 amendments to the Act.

Section 800.4(b)(1). This section on level of effort required during the

identification processes has been added to allow for flexibility. It sets the standard of a reasonable and good faith effort on behalf of the agency to identify properties and provides that the level of effort in the identification process depends on numerous factors including, among others listed, the nature of the undertaking and its corresponding potential effects on historic properties.

Section 800.4(b)(2). This new section is also intended to provide Federal agencies with flexibility when several alternatives are under consideration and the nature of the undertaking and its potential scope and effect has therefore not yet been completely defined. The section also allows for deferral of final identification and evaluation if provided for in an agreement with the SHPO/THPO or other circumstances. Under this phased alternative, Agency Officials are required to follow up with full identification and evaluation once project alternatives have been refined or access has been gained to previously restricted areas. Any further deferral of final identification would complicate the process and jeopardize an adequate assessment of effects and resolution of adverse effects.

Section 800.4(c). This section sets out the process for determining the National Register eligibility of properties not previously evaluated for historic significance.

Section 800.4(c)(2). This section provides that if an Indian tribe or Native Hawaiian organization disagrees with a determination of eligibility involving a property to which it attaches religious and cultural significance, then the tribe can ask the Council to request that the Agency Official obtain a determination of eligibility. The Council retains the discretion as to whether or not it should make the request of the Agency Official. This section was intended to provide a way to ensure appropriate determinations regarding properties, located off tribal lands, to which tribes attach religious and cultural significance.

Section 800.4(d)(1). This section describes the closure point in the section 106 process where no historic properties are found or no effects on historic properties are found. Consulting parties must be specifically notified of the determination, but members of the public need not receive direct notification; the Federal agency must place its documentation in a public file prior to approving the undertaking, and provide access to the information when requested by the public. Once the consulting parties are notified, the SHPO/THPO has 30 days to object to the determination. The Council may also

object on its own initiative within the time period. Lack of such objection within the 30 day period means that the agency need not take further steps in the Section 106 process.

Section 800.4(d)(2). This section requires that the Federal agency proceed to the adverse effect determination step where it finds that historic properties may be affected or the SHPO/THPO or Council objects to a no historic properties affected finding. The agency must notify all consulting parties.

Section 800.5(a). This section provides for Indian tribe and Native Hawaiian organization consultation where historic properties to which they attach religious and cultural significance are involved. This section also requires the Agency Official to consider the views of consulting parties and the public that have already been provided to the Federal agency.

Section 800.5(a)(1). This section codifies the practice of the Council in considering both direct and indirect effects in making an adverse effect determination. This section allows for consideration of effects on the qualifying characteristics of a historic property that may not have been part of the property's original eligibility evaluation. The last sentence in this section is intended to amplify the indirect effects concept, similar to the NEPA regulations, which calls for consideration of such effects when they are reasonably foreseeable effects.

Section 800.5(a)(2)(ii). The list of examples of adverse effects has been modified by eliminating the exceptions to the adverse effect criteria. However, if a property is restored, rehabilitated, repaired, maintained, stabilized, remediated or otherwise changed in accordance with the Secretary's standards, then it will not be considered an adverse effect.

Section 800.5(a)(2)(iii). This subsection, along with § 800.5(a)(2)(i), would encompass recovery of archeological data as an adverse effect, even if conducted in accordance with the Secretary's standards. This acknowledges the reality that destruction of a site and recovery of its information and artifacts is adverse. It is intended that in eliminating data recovery as an exception to the adverse effect criteria, Federal agencies will be more inclined to pursue other forms of mitigation, including avoidance and preservation in place, to protect archeological sites.

Section 800.5(a)(2)(iv). This section tracks the National Register criteria regarding the relation of alterations to a property's use or setting to the significance of the property.

Section 800.5(a)(2)(v). This section tracks the language of the National Register criteria as it pertains to the property's integrity.

Section 800.5(a)(2)(vi). This section acknowledges that where properties of religious and cultural significance to Indian tribes or Native Hawaiian organizations are involved, neglect and deterioration may be recognized as qualities of those properties and thus may not necessarily constitute an adverse effect.

Section 800.5(a)(2)(vii). If a property is transferred leased or sold out of Federal ownership with proper preservation restrictions, then it will not be considered an adverse effect. Transfer between Federal agencies is not an adverse effect per se; the purpose of the transfer should be evaluated for potential adverse effects, so that they can be considered before the transfer takes place.

Section 800.5(a)(3). This section is intended to allow flexibility in Federal agency decision making processes and to recognize that phasing of adverse effect determinations, like identification and evaluation, is appropriate in certain planning and approval circumstances, such as the development of linear projects where major corridors are first assessed and then specific route alignment decisions are made subsequently.

Section 800.5(b). This section allows SHPO/THPO's the ability to suggest changes in a project or suggest conditions so that adverse effects can be avoided and thus result in a no adverse effect determination. It is also written to emphasize that a finding of no adverse effect is only a proposal when the Agency Official submits it to the SHPO/THPO for review. This provision also acknowledges that the practice of "conditional No Adverse Effect determinations" is acceptable.

Section 800.5(c). The Council will not review "no adverse effect" determinations on a routine basis. The Council will intervene and review no adverse effect determinations if it deems it appropriate based on the criteria listed in Appendix A or if the SHPO/THPO or another consulting party and the Federal agency disagree on the finding and the agency cannot resolve the disagreement. The SHPO/THPO and any consulting party wishing to disagree to the finding must do so within the 30-day review period. If Indian tribes or Native Hawaiian organizations disagree with the finding, they can request the Council's review directly, but this must be done within the 30 day review period. If a SHPO/THPO fails to respond to an Agency Official finding within the

30 day review period, then the Agency Official can consider that to be SHPO/THPO agreement with the finding. When a finding is submitted to the Council, it will have 15 days for review; if it fails to respond within the 15 days, then the Agency Official may assume Council concurrence with the finding. When it reviews no adverse effect determinations, the Council will limit its review to whether or not the criteria have been correctly applied.

Section 800.5(d). Agencies must retain records of their findings of no adverse effect and make them available to the public. This means that the public should be given access to the information, subject to FOIA and other statutory limits on disclosure such as section 304 of the NHPA, when they so request. Failure of the agency to carry out the undertaking in accordance with the finding requires the Agency Official to reopen the section 106 process and determine whether the altered course of action constitutes an adverse effect. A finding of adverse effect requires further consultation on ways to resolve it.

Section 800.6(a)(1). When adverse effects are found, the consultation must continue among the Federal agency, SHPO/THPO and consulting parties to attempt to resolve them. The Agency Official must notify the Council when adverse effects are found and should invite the Council to participate in the consultation when the circumstances in § 800.6(a)(1)(i)(A)–(C) exist. A consulting party may also request the Council to join the consultation. The Council will decide on its participation within 15 days of receipt of a request, basing its decision on the criteria set forth in Appendix A. Whenever the Council decides to join the consultation, it must notify the Agency Official and the consulting parties. It must also advise the head of the Federal agency of its decision to participate. This is intended to keep the policy level of the Federal agency apprized of those cases that the Council has determined present issues significant enough to warrant its involvement.

Section 800.6(a)(2). This section allows for the entry of new consulting parties if the agency and the SHPO/THPO (and the Council, if participating) agree. If they do not agree, it is desirable for them to seek the Council's opinion on the involvement of the consulting party. Any party, including applicants, licensees or permittees, that may have responsibilities under a Memorandum of Agreement must be invited to participate as consulting parties in reaching the agreement.

Section 800.6(a)(3). This section specifies the Agency Official's

obligation to provide project documentation to all consulting parties at the beginning of the consultation to resolve adverse effects. Particular note should be made of the reference to the confidentiality provisions.

Section 800.6(a)(4). The Federal agency must provide an opportunity for members of the public to express their views on an undertaking. The provision embodies the principles of flexibility, relating the agency effort to various aspects of the undertaking and its effects upon historic properties. The Federal agency must provide them with notice such that the public has enough time and information to meaningfully comment. If all relevant information was provided at earlier stages in the process in such a way that a wide audience was reached, and no new information is available at this stage in the process that would assist in the resolution of adverse effects, then a new public notice may not be warranted. However, this presumes that the public had the opportunity to make its views known on ways to resolve the adverse effects.

Section 800.6(a)(5). Although it is in the interest of the public to have as much information as possible in order to provide meaningful comments, this section acknowledges that information may be withheld in accordance with section 304 of the NHPA.

Section 800.6(b). If the Council is not a part of the consultation, then a copy of the Memorandum of Agreement must be sent to the Council so that the Council can include it in its files to have an understanding of a Federal agency's implementation of section 106. This does not provide the Council an opportunity to reopen the specific case, but may form the basis for other actions or advice related to an agency's overall performance in the section 106 process.

Section 800.6(b)(1). When resolving adverse effects without the Council, the Agency Official consults with the SHPO/THPO and other consulting parties to develop a Memorandum of Agreement. If this is achieved, the agreement is executed between the Agency Official and the SHPO/THPO and filed with required documentation with the Council. This filing is the formal conclusion of the section 106 process and must occur before the undertaking is approved. Standard treatments adopted by the Council may set expedited ways for competing memoranda of agreement in certain circumstances.

Section 800.6(b)(2). When the Council is involved, the consultation proceeds in the same manner, but the agreement of the Agency Official, the SHPO/THPO

and the Council is required for a Memorandum of Agreement.

Section 800.6(c). This section details the provisions relating to Memoranda of Agreement. This document evidences an agency's compliance with section 106 and the agency is obligated to follow its terms. Failure to do so requires the Agency Official to reopen the section 106 process and bring it to suitable closure as prescribed in the regulations.

Section 800.6(c)(1). This section sets forth the rights of signatories to an agreement and identifies who is required to sign the agreement under specific circumstances. The term "signatory" has a special meaning as described in this section, which is the ability to terminate or agree to amend the Memorandum of Agreement. The term does not include others who sign the agreement as concurring parties.

Section 800.6(c)(2). Certain parties may be invited to be signatories in addition to those specified in § 800.6(c)(1). They include individuals and organizations that should, but do not have to, sign agreements. It is particularly desirable to have parties who assume obligations under the agreement become formal signatories. However, once invited signatories sign MOAs, they have the same rights to terminate or amend the MOA as the other signatories.

Section 800.6(c)(3). Other parties may be invited to concur in agreements. They do not have the rights to amend or terminate an MOA. Their signature simply shows that they are familiar with the terms of the agreement and do not object to it.

Sections 800.6(c)(4)–(9). These sections set forth specific features of a Memorandum of Agreement and the way it can be terminated or amended.

Section 800.7. This section specifies what happens when the consulting parties cannot reach agreement. Usually when consultation is terminated, the Council renders advisory comments to the head of the agency, which must be considered when the final agency decision on the undertaking is made.

Section 800.7(a)(1). This section requires that the head of the agency or an Assistant Secretary or officer with major department-wide or agency-wide responsibilities must request Council comments when the Agency Official terminates consultation. Section 110(l) of the NHPA requires heads of agencies to document their decision when an agreement has not been reached under section 106. If the agency head is responsible for documenting the decision, it is appropriate that the same

individual request the Council's comments.

Section 800.7(a)(2). This section allows the Council and the Agency Official to conclude the section 106 process with a Memorandum of Agreement between them if the SHPO terminates consultation.

Section 800.7(a)(3). If a THPO terminates consultation, there can be no agreement with regard to undertakings that are on or affect properties on tribal lands and the Council will issue formal comments. This provision respects the tribe's unique sovereign status with regard to its lands.

Section 800.7(a)(4). This section governs cases where the Council terminates consultation. In that case, the Council has the duty to notify all consulting parties prior to commenting. The role given to the Federal Preservation Officer is intended to fulfill the NHPA's goal of having a central official in each agency to coordinate and facilitate the agency's involvement in the national historic preservation program.

Section 800.7(b). This section allows the Council to provide advisory comments even though it has signed a Memorandum of Agreement. It is intended to give the Council the flexibility to provide comments even where it has agreed to sign an MOA. Such comments might elaborate upon particular matters or provide suggestions to Federal agencies for future undertakings.

Section 800.7(c). This section gives the Council 45 days to provide its comments to the head of the agency for a response by the agency head. When submitting its comments, the Council will also provide the comments to the Federal Preservation Officer, among others, for information purposes.

Section 800.7(c)(4). This section specifies what it means to "document the agency head's decision" as required by section 110(l) when the Council issues its comment to the agency head.

Section 800.8. This major section guides how Federal agencies can coordinate the section 106 process with NEPA compliance. It is intended to allow compliance with section 106 to be incorporated into the NEPA documentation process while preserving the legal requirements of each statute.

Section 800.8(a)(1). This section encourages agencies to coordinate NEPA and section 106 compliance early in the planning process. It emphasizes that impacts on historic properties should be considered when an agency makes evaluations of its NEPA obligations, but makes clear that an adverse effect

finding does not automatically trigger preparation of an EIS.

Section 800.8(a)(2). This section encourages consulting parties in the section 106 process to be prepared to consult with the Agency Official early in the NEPA process.

Section 800.8(a)(3). This section encourages agencies to include historic preservation issues in the development of various NEPA assessments and documents. This is essential for effective coordination between the two processes. It is intended to discourage agencies from postponing consideration of historic properties under NEPA until later initiation of the section 106 process.

Section 800.8(b). This section notes that a project, activity or program that falls within a NEPA categorical exclusion may still require section 106 review. An exclusion from NEPA does not necessarily mean that section 106 does not apply.

Section 800.8(c). This section offers Federal agencies an opportunity for major procedural streamlining when NEPA and section 106 both apply to a project. It allows the agency, when specific standards are met, to substitute preparation of an EA or an EIS for the specific steps of the section 106 process set out in these regulations.

Section 800.8(c)(1). This section lists the standards that must be adhered to when developing NEPA documents that are intended to incorporate 106 compliance. They are intended to ensure that the objectives of the section 106 process are being met even though the specific steps of the process are not being followed.

Section 800.8(c)(2). This section provides for Council and consulting party review of the agency's environmental document within NEPA's public comment review time frame. Consulting parties and the Council may object prior to or within this time frame to adequacy of the document.

Section 800.8(c)(3). If there is an objection to the NEPA document, the Council has 30 days to state whether or not it agrees with the objection. If the Council agrees with the objection, the Agency Official must complete the section 106 process through development of a Memorandum of Agreement or obtaining formal Council comment (§ 800.6–7). If it does not, then the Agency Official can complete its review under § 800.8.

Section 800.8(c)(4). This subsection explains how Agency Officials using NEPA coordination must finalize their section 106 compliance for those cases where an adverse effect is found. The

Agency must document the proposed mitigation measures. A binding commitment with the proposed measures must be adopted. In the case of a FONSI, the binding commitment must be in the form of an MOA, drafted in accordance with § 800.6(c). Although the regulations do not send Agency Officials back to § 800.6(b) regarding consultation towards an MOA, Agency Officials are reminded of the standards they must still follow under § 800.8(c)(1), and specifically the mitigation measures' consultation under § 800.8(c)(1)(v). In the case of an EIS, although a Memorandum of Agreement under § 800.6(c) is not required, an appropriate binding commitment must still be adopted. Finally, the subsection also clarifies the Agency Official's obligation to ensure that its approval of the undertaking is conditioned accordingly.

Section 800.8(c)(5). This section requires Federal agencies to supplement their NEPA documents or abide by §§ 800.3 through 800.6 in the event of a change in the proposed undertaking that alters the undertaking's impact on historic properties.

Section 800.9. This section delineates the methods the Council will use to oversee the operation of the section 106 process. The Council draws upon its general advisory powers and specific provisions of the NHPA to conduct these actions.

Section 800.9(a). This section emphasizes the right of the Council to provide advice at any time in the process on matters related to the section 106 process.

Section 800.9(b). A foreclosure means that an agency has gone forward with an undertaking to such an extent that the Council can not provide meaningful comments. A finding of foreclosure by the Council means that the Council has determined that the Federal agency has not fulfilled its section 106 responsibilities with regard to the undertaking. Such a finding does not trigger any specific action, but represents the opinion of the Council as the agency charged by statute with issuing the regulations that implement section 106.

Section 800.9(c). This section reiterates the requirements of section 110(k) of the Act added in 1992. It also provides a process by which the Council will comment if the Federal agency decides that circumstances may justify granting the assistance. If after considering the comments, the Federal agency does decide to grant the assistance, then the Federal agency must comply with section 106 for any historic properties that still may be affected.

This does not require duplication of consultation that may have already taken place with the Council in the course of addressing 110(k), but is intended to ensure that the agency has meaningful consultation with the Council as to mitigating adverse effects if the agency decides to proceed with approving the undertaking.

Section 800.9(d). As the Council reduces its involvement in routine cases, it will be focusing its efforts more and more on agency programs and overall compliance with the section 106 process. The NHPA authorizes the Council to obtain information from Federal agencies and make recommendations on improving operation of the section 106 process. If the Council finds that an agency or a SHPO/THPO has not carried out its section 106 responsibilities properly, it may enter the section 106 process on an individual case basis to make improvement. The Council may also review agency operations and performance and make specific recommendations for improvement under section 202(a)(6) of the Act.

Section 800.10. This section provides a process for how Federal agencies must afford the Council a reasonable opportunity to comment on historic landmarks. It is largely unchanged from the process under previous regulations.

Section 800.11. This section sets forth the requirements for documentation at various steps in the section 106 process. It makes documentation requirements clearer and promotes agency use of documentation prepared for other planning requirements.

Section 800.11(a). The section allows for the phasing of documentation requirements when an agency is conducting phased identification and evaluation. The Council can advise on the resolution of disputes over adherence to documentation standards. However, the ultimate responsibility for compiling adequate documentation rests with the agency. During the consideration of any disputes over documentation, the process is not formally suspended. However, agencies should resolve significant disputes before going forward too far in the section 106 process in order to avoid subsequent delays.

Section 800.11(b). This section allows for the use of documents prepared for NEPA or other agency planning processes to fulfill this provision as long as those documents meet the standards in this section.

Section 800.11(c). This section is intended to protect the rights of private property owners with regard to proprietary information, and Indian

tribes and Native Hawaiian organizations with regard to properties to which they attach religious and cultural significance. This section emphasizes that the regulations are subject to any other Federal statutes which protect certain kinds of information from full public disclosure. The role of the Secretary and the process of consultation with the Council are based on the statutory requirements of section 304 of the Act.

Section 800.11(d)–(f). These sections specify the documentation standards for various findings or actions in the section 106 process. They are incrementally more detailed as the historic preservation issues become more substantial or complex. Each is intended to provide basic information so that a third-party reviewer can understand the basis for an agency's finding or proposed decision.

Section 800.12. This section deals with emergency situations and generally follows the approach of previous regulations.

Section 800.12(a). This section encourages Federal agencies to develop procedures describing how the Federal agency will take into account historic properties during certain emergency operations, including imminent threats to life or property. The nature of the consultation required in developing such procedures will vary, depending upon the extent of actions covered by the procedures. The procedures must be approved by the Council if they are to substitute for Subpart B.

Section 800.12(b). If there are no agency procedures for taking historic properties into account during emergencies, then the Federal agency may either follow a previously-developed Programmatic Agreement or notify the Council, SHPO/THPO and, where appropriate, an Indian tribe or Native Hawaiian organization concerned with potentially affected resources. If possible, the Federal agency should provide these parties 7 days to comment.

Section 800.12(c). This section permits a local government that has assumed section 106 responsibilities to use the provisions of § 800.12(a) and (b). However, if the Council or an SHPO/THPO objects, the local government must follow the normal section 106 process.

Section 800.12(d). A Federal agency may use the provisions in § 800.12 only for 30 days after an emergency or disaster has been declared, unless an extension is sought.

Section 800.13. This section deals with resources discovered after section 106 review has been completed.

Section 800.13(a). This section emphasizes the utility of developing Programmatic Agreements to deal with discoveries of historic properties which may occur during implementation of an undertaking. If there is no Programmatic Agreement to deal with discoveries, and the Agency Official determines that other historic properties are likely to be discovered, then a plan for how discoveries will be addressed must be included in a no adverse effect finding or a Memorandum of Agreement.

Section 800.13(b)(1). This section states the procedures that must be followed when construction has not yet occurred or an undertaking has not yet been approved. Because a Federal agency has more flexibility at this stage, adherence to the consultative process as set forth in § 800.6 is appropriate.

Section 800.13(b)(2). This section provides that where an archeological site has been discovered and where the Agency Official, SHPO/THPO and any appropriate Indian tribe or Native Hawaiian organization agree that it is of value solely for the data that it contains, the Agency Official can comply with the Archeological and Historic Preservation Act instead of the procedures in this subpart.

Section 800.13(b)(3). This section sets forth the procedures that must be followed when the undertaking has been approved and construction has commenced. Development of actions to resolve adverse effects and notification to the SHPO/THPO and the Council within 48 hours of the discovery are required. Comments from those parties are encouraged and the agency must report the actions it ended up taking to deal with the discovery.

Section 800.13(c). This section allows an agency to make an expedited field judgment regarding eligibility of properties discovered during construction.

Subpart C—Program Alternatives

Section 800.14. This section lays out a variety of alternative methods for Federal agencies to meet their section 106 obligations. They allow agencies to tailor the section 106 process to their needs.

Section 800.14(a). Alternate procedures are a major streamlining measure that allows tailoring of the section 106 process to Agency programs and decisionmaking processes. The procedures would substitute in whole or in part for the Council's section 106 regulations. As procedures, they would include formal Agency regulations, but would also include departmental or Agency procedures that do not go through the formal rulemaking process.

Procedures must be developed in consultation with various parties as set forth in the regulations. The public must have an opportunity to comment on Alternate procedures. If the Council determines that they are consistent with its regulations, the alternate procedures may substitute for the Council's regulations. In reviewing alternate procedures for consistency, the Council will not require detailed adherence to every specific step of the process found under the Council's regulations. The Council, however, will look for procedures that afford historic properties consideration equivalent to that afforded by the Council's regulations and that meet the requirements of section 110(a)(2)(E) of the Act. If an Indian tribe has substituted its procedures for the Council's regulations pursuant to section 101(d)(5) of the NHPA, then the Federal agency must follow the agreement with the Council and the tribe's substitute regulations for undertakings on tribal lands.

Section 800.14(b). This section retains the concept of Programmatic Agreements. The circumstances under which a Programmatic Agreement is appropriate are specified. The section places Programmatic Agreements into two general categories: those covering agency programs and those covering complex or multiple undertakings. The section on Agency programs makes clear that the President of NCSHPO must sign a nationwide agreement when NCSHPO has participated in the consultation. If a Programmatic Agreement concerns a particular region, then the signature of the affected SHPOs/THPOs is required. An individual SHPO/THPO can terminate its participation in a regional Programmatic Agreement, but the agreement will remain in effect for the other states in the region. Only NCSHPO can terminate a nationwide Programmatic Agreement on behalf of the individual SHPOs. Language is included to recognize tribal sovereignty while providing flexibility to Federal agencies and tribes when developing Programmatic Agreements. While it does not prohibit the other parties from executing a Programmatic Agreement, the language does limit the effect of the agreement to non-tribal lands unless the tribe executes it. However, the language also authorizes multiple Indian tribes to designate a representative tribe or tribal organization to participate in consultation and sign a Programmatic Agreement on their behalf. Requirements for public involvement and notice are included. The section on complex or multiple undertakings ties

back to § 800.6 for the process of creating such programmatic agreements.

Section 800.14(c). Exemptions are intended to remove from section 106 compliance those undertakings that have foreseeable effects on historic properties which are likely to be minimal. Section 214 of the NHPA gives the Council the authority to allow for such exemptions. This section sets forth the criteria, drawn from the statute, for exemptions and a process for obtaining (and terminating) an exemption.

Section 800.14(d). Standard treatments provide a streamlined process by which the Council can establish certain acceptable practices for dealing with a category of undertakings, effects, historic properties, or treatment options. A standard treatment may modify the application of the normal section 106 process under certain circumstances or simplify the steps or requirements of the regulations. This section sets forth the process for establishing a standard treatment and terminating it.

Section 800.14(e). Program comments are intended to give the Council the flexibility to issue comments on a Federal program or class of undertakings rather than comment on such undertakings on a case-by-case basis. This section sets forth the process for issuing such comments and withdrawing them. The Federal agency is obligated to consider, but not necessarily follow, the Council's comments. If it does not, the Council may withdraw the comment, in which case the agency continues to comply with section 106 on a case-by-case basis.

Section 800.14(f). The requirement for consultation program alternatives with Indian tribes and Native Hawaiian organizations is provided for in this section. It is an overlay on each of the Federal program alternatives set forth in § 800.14(a)–(e). It provides for government-to-government consultation with Indian tribes.

Section 800.15. Tribal, State and Local Program Alternatives. This section is presently reserved for future use. The Council will proceed with the review of tribal applications for substitution of tribal regulations for the Council's section 106 regulations on tribal lands, pursuant to section 101(d)(5) of the Act, on the basis of informal procedures. With regard to State agreements, the Council will keep in effect any currently valid State agreements until revised procedures for State agreements take effect or until the agreement is otherwise terminated.

Section 800.16. Definitions. This section includes new definitions to respond to identified needs for

clarification and to reflect statutory amendments.

The term "Agency" is defined for ease of reference. It tracks the statutory definition in the NHPA.

The definition of "approval of the expenditure of funds" clarifies the intent of this statutory language as it appears in section 106 of the NHPA. This definition addresses the timing of section 106 compliance. A Federal agency must take into account the effects of its actions and provide the Council a reasonable opportunity to comment before the Agency decides to authorize funds, not just before the release of those funds. The intent of this provision is to emphasize the necessity for compliance with section 106 early in the decision making process.

The definition of "area of potential effects" acknowledges that the determination of the area potential effects often depends on the nature and scale of the undertaking and the associated effects.

The definition of "comment" makes it clear that the term refers to the formal comments of the Council members.

The definition of "consultation" describes the nature and goals of this critical aspect of the section 106 review process.

The term "day" was defined to clarify the running of time periods.

The term "effect" is defined because, even though the "no effect" step is not in the rule, the concept of an undertaking's effect is still a part of the "historic properties affected" determination.

"Foreclosure" is a term that has always been a part of the section 106 process. The term describes the finding that is made by the Council when an Agency action precludes the Council from its reasonable opportunity to comment on an undertaking.

The term "head of the Agency" is defined in light of the 1992 amendments in section 110(l) that require that the head of an Agency document a decision where a Memorandum of Agreement has not been reached for an undertaking.

"Indian tribe" is defined exactly as in section 301(4) of the NHPA.

"Native Hawaiian organization" is defined exactly as in section 301(17) of the NHPA.

"Tribal Historic Preservation Officer" is the tribal official who has formally assumed the SHPO's responsibilities under section 101(d)(2) of the NHPA.

"Tribal lands" is defined exactly as in section 301(14) of the NHPA.

"Undertaking" is defined exactly as in section 301(7) of the statute. The Agency Official is responsible, in

accordance with § 800.3(a), for making the determination as to whether a proposed Federal action is an undertaking. As appropriate, an agency should examine the nature of its Federal involvement taking into consideration factors such as the degree of Federal agency control or discretion; the type of Federal involvement or link to the action; and whether or not the action could move forward without Federal involvement. An agency should seek the advice of the Council when uncertain about whether or not its action falls within the definition of an undertaking. The 1986 regulatory definition of undertaking included new and continuing projects, activities, or programs and any of their elements not previously considered under section 106. It is intended that the new definition includes such aspects of a project, activity, or program as undertakings.

Appendix A. Criteria for Council Involvement in Reviewing Individual section 106 Cases

This appendix sets forth the criteria that will guide Council decisions to enter certain section 106 cases. As § 800.2(b)(1) states, the Council will document that the criteria have been met and notify the parties to the section 106 process as required. Council involvement in section 106 cases is not automatic once a criterion has been met. The Council retains discretion as to whether or not to enter such a case. Likewise, it is not essential that all criteria be met. The point of the criteria is to ensure that the Council has made a thoughtful decision to enter the section 106 process and to give agencies, SHPOs/THPOs and other section 106 participants a clear understanding of the kind of cases that warrant Council involvement.

V. Impact Analysis

The Regulatory Flexibility Act

The Council certifies that the final rule will not have a significant economic impact on a substantial number of small entities. Although comments on the proposed rule questioned the validity of such certification, the rule in its proposed and final versions imposes mandatory responsibilities on only Federal agencies. As set forth in section 106 of the NHPA, the duties to take into account the effect of an undertaking on historic resources and to afford the Council a reasonable opportunity to comment on that undertaking are Federal agency duties. Indirect effects on small entities, if any, created in the

course of a Federal agency's compliance with section 106 of the NHPA, must be considered and evaluated by that Federal agency.

The Paperwork Reduction Act

The final regulations do not impose reporting or recordkeeping requirements or the collection of information as defined in the Paperwork Reduction Act.

The National Environmental Policy Act

In accordance with 36 CFR part 805, the Council initiated the NEPA compliance process for the Council's regulations implementing section 106 of the NHPA prior to publication of the proposed rule in the **Federal Register** on September 13, 1996. On July 11, 2000, through a notice of availability on the **Federal Register** (65 FR 42850), the Council sought public comment on its Environmental Assessment and preliminary Finding of No Significant Impact. The Council has considered such comments, and has confirmed its finding of no significant impact on the human environment. A notice of availability of the Environmental Assessment and Finding of No Significant Impact has been published in the **Federal Register**.

Executive Orders 12866 and 12875

The Council is exempt from compliance with Executive Order 12866 pursuant to implementing guidance issued by the Office of Management and Budget's Office of Information and Regulatory Affairs in a memorandum dated October 12, 1993. The Council also is exempt from the documentation requirements of Executive Order 12875 pursuant to implementing guidance issued by the same OMB office in a memorandum dated January 11, 1994. The rule does not mandate State, local, or tribal governments to participate in the section 106 process. Instead, State, local, and tribal governments may decline to participate. State Historic Preservation Officers do advise and assist Federal agencies, as appropriate, as part of their duties under section 101(b)(3)(E) of the NHPA, as a condition of their Federal grant assistance. In addition, in accordance with Executive Order 12875, the rule includes several flexible approaches to consideration of historic properties in Federal agency decision making, such as those under § 800.14 of the rule. The rule promotes flexibility and cost effective compliance by providing for alternate procedures, categorical exemptions, standard treatments, program comments, and programmatic agreements.

The Unfunded Mandates Reform Act of 1995

The final rule implementing section 106 of the NHPA does not impose annual costs of \$100 million or more, will not significantly or uniquely affect small governments, and is not a significant Federal intergovernmental mandate. The Council thus has no obligations under sections 202, 203, 204 and 205 of the Unfunded Mandates Reform Act.

Executive Order 12898

The final rule implementing section 106 of the NHPA does not cause adverse human health or environmental effects, but, instead, seeks to avoid adverse effects on historic properties throughout the United States. The participation and consultation process established by this rule seeks to ensure public participation—including by minority and low-income populations and communities—by those whose cultural heritage, or whose interest in historic properties, may be affected by proposed Federal undertakings. The section 106 process is a means of access for minority and low-income populations to participate in Federal decisions or actions that may affect such resources as historically significant neighborhoods, buildings, and traditional cultural properties. The Council considers environmental justice issues in reviewing analysis of alternatives and mitigation options particularly when section 106 compliance is coordinated with NEPA compliance. Guidance and training is being developed to assist public understanding and use of this rule.

Memorandum Concerning Government-to-Government Relations With Native American Tribal Governments

The Council has fully complied with this Memorandum. A Native American/ Native Hawaiian representative has served on the Council. As better detailed in the preamble to the rule adopted in 1999, the Council has consulted at length with Tribes in developing the substance of what became the proposed rule in this rulemaking. The rule enhances the opportunity for Native American involvement in the section 106 process and clarifies the obligation of Federal agencies to consult with Native Americans. The rule also enhances the Government-to-Government intentions of the memorandum.

Submission to Congress and the Comptroller General

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small

Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. The Council will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. This rule is not a "major rule" as defined by 5 U.S.C. 804(2). This rule will be effective January 11, 2001.

List of Subjects in 36 CFR Part 800

Administrative practice and procedure, Historic preservation, Indians, Intergovernmental relations.

For the reasons discussed in the preamble, the Advisory Council on Historic Preservation amends 36 CFR chapter VIII by revising part 800 to read as follows:

PART 800—PROTECTION OF HISTORIC PROPERTIES

Subpart A—Purposes and Participants

- Sec.
800.1 Purposes.
800.2 Participants in the Section 106 process.

Subpart B—The Section 106 Process

- 800.3 Initiation of the section 106 process.
800.4 Identification of historic properties.
800.5 Assessment of adverse effects.
800.6 Resolution of adverse effects.
800.7 Failure to resolve adverse effects.
800.8 Coordination with the National Environmental Policy Act.
800.9 Council review of Section 106 compliance.
800.10 Special requirements for protecting National Historic Landmarks.
800.11 Documentation standards.
800.12 Emergency situations.
800.13 Post-review discoveries.

Subpart C—Program Alternatives

- 800.14 Federal agency program alternatives.
800.15 Tribal, State, and local program alternatives. [Reserved]
800.16 Definitions.
Appendix A to Part 800—Criteria for Council involvement in reviewing individual section 106 cases

Authority: 16 U.S.C. 470s.

Subpart A—Purposes and Participants

§ 800.1 Purposes.

(a) *Purposes of the section 106 process.* Section 106 of the National Historic Preservation Act requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Council a

reasonable opportunity to comment on such undertakings. The procedures in this part define how Federal agencies meet these statutory responsibilities. The section 106 process seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, commencing at the early stages of project planning. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties.

(b) *Relation to other provisions of the act.* Section 106 is related to other provisions of the act designed to further the national policy of historic preservation. References to those provisions are included in this part to identify circumstances where they may affect actions taken to meet section 106 requirements. Such provisions may have their own implementing regulations or guidelines and are not intended to be implemented by the procedures in this part except insofar as they relate to the section 106 process. Guidelines, policies, and procedures issued by other agencies, including the Secretary, have been cited in this part for ease of access and are not incorporated by reference.

(c) *Timing.* The agency official must complete the section 106 process "prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license." This does not prohibit agency official from conducting or authorizing nondestructive project planning activities before completing compliance with section 106, provided that such actions do not restrict the subsequent consideration of alternatives to avoid, minimize or mitigate the undertaking's adverse effects on historic properties. The agency official shall ensure that the section 106 process is initiated early in the undertaking's planning, so that a broad range of alternatives may be considered during the planning process for the undertaking.

§ 800.2 Participants in the Section 106 process.

(a) *Agency official.* It is the statutory obligation of the Federal agency to fulfill the requirements of section 106 and to ensure that an agency official with jurisdiction over an undertaking takes legal and financial responsibility for section 106 compliance in accordance with subpart B of this part. The agency official has approval

authority for the undertaking and can commit the Federal agency to take appropriate action for a specific undertaking as a result of section 106 compliance. For the purposes of subpart C of this part, the agency official has the authority to commit the Federal agency to any obligation it may assume in the implementation of a program alternative. The agency official may be a State, local, or tribal government official who has been delegated legal responsibility for compliance with section 106 in accordance with Federal law.

(1) *Professional standards.* Section 112(a)(1)(A) of the act requires each Federal agency responsible for the protection of historic resources, including archeological resources, to ensure that all actions taken by employees or contractors of the agency shall meet professional standards under regulations developed by the Secretary.

(2) *Lead Federal agency.* If more than one Federal agency is involved in an undertaking, some or all the agencies may designate a lead Federal agency, which shall identify the appropriate official to serve as the agency official who shall act on their behalf, fulfilling their collective responsibilities under section 106. Those Federal agencies that do not designate a lead Federal agency remain individually responsible for their compliance with this part.

(3) *Use of contractors.* Consistent with applicable conflict of interest laws, the agency official may use the services of applicants, consultants, or designees to prepare information, analyses and recommendations under this part. The agency official remains legally responsible for all required findings and determinations. If a document or study is prepared by a non-Federal party, the agency official is responsible for ensuring that its content meets applicable standards and guidelines.

(4) *Consultation.* The agency official shall involve the consulting parties described in paragraph (c) of this section in findings and determinations made during the section 106 process. The agency official should plan consultations appropriate to the scale of the undertaking and the scope of Federal involvement and coordinated with other requirements of other statutes, as applicable, such as the National Environmental Policy Act, the Native American Graves Protection and Repatriation Act, the American Indian Religious Freedom Act, the Archeological Resources Protection Act, and agency-specific legislation. The Council encourages the agency official to use to the extent possible existing agency procedures and mechanisms to

fulfill the consultation requirements of this part.

(b) *Council.* The Council issues regulations to implement section 106, provides guidance and advice on the application of the procedures in this part, and generally oversees the operation of the section 106 process. The Council also consults with and comments to agency officials on individual undertakings and programs that affect historic properties.

(1) *Council entry into the section 106 process.* When the Council determines that its involvement is necessary to ensure that the purposes of section 106 and the act are met, the Council may enter the section 106 process. Criteria guiding Council decisions to enter the section 106 process are found in appendix A to this part. The Council will document that the criteria have been met and notify the parties to the section 106 process as required by this part.

(2) *Council assistance.* Participants in the section 106 process may seek advice, guidance and assistance from the Council on the application of this part to specific undertakings, including the resolution of disagreements, whether or not the Council is formally involved in the review of the undertaking. If questions arise regarding the conduct of the section 106 process, participants are encouraged to obtain the Council's advice on completing the process.

(c) *Consulting parties.* The following parties have consultative roles in the section 106 process.

(1) *State historic preservation officer.*

(i) The State historic preservation officer (SHPO) reflects the interests of the State and its citizens in the preservation of their cultural heritage. In accordance with section 101(b)(3) of the act, the SHPO advises and assists Federal agencies in carrying out their section 106 responsibilities and cooperates with such agencies, local governments and organizations and individuals to ensure that historic properties are taking into consideration at all levels of planning and development.

(ii) If an Indian tribe has assumed the functions of the SHPO in the section 106 process for undertakings on tribal lands, the SHPO shall participate as a consulting party if the undertaking takes place on tribal lands but affects historic properties off tribal lands, if requested in accordance with § 800.3(c)(1), or if the Indian tribe agrees to include the SHPO pursuant to § 800.3(f)(3).

(2) *Indian tribes and Native Hawaiian organizations.*

(i) *Consultation on tribal lands.*

(A) *Tribal historic preservation officer.* For a tribe that has assumed the responsibilities of the SHPO for section 106 on tribal lands under section 101(d)(2) of the act, the tribal historic preservation officer (THPO) appointed or designated in accordance with the act is the official representative for the purposes of section 106. The agency official shall consult with the THPO in lieu of the SHPO regarding undertakings occurring on or affecting historic properties on tribal lands.

(B) *Tribes that have not assumed SHPO functions.* When an Indian tribe has not assumed the responsibilities of the SHPO for section 106 on tribal lands under section 101(d)(2) of the act, the agency official shall consult with a representative designated by such Indian tribe in addition to the SHPO regarding undertakings occurring on or affecting historic properties on its tribal lands. Such Indian tribes have the same rights of consultation and concurrence that the THPOs are given throughout subpart B of this part, except that such consultations shall be in addition to and on the same basis as consultation with the SHPO.

(ii) *Consultation on historic properties of significance to Indian tribes and Native Hawaiian organizations.* Section 101(d)(6)(B) of the act requires the agency official to consult with any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to historic properties that may be affected by an undertaking. This requirement applies regardless of the location of the historic property. Such Indian tribe or Native Hawaiian organization shall be a consulting party.

(A) The agency official shall ensure that consultation in the section 106 process provides the Indian tribe or Native Hawaiian organization a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects. It is the responsibility of the agency official to make a reasonable and good faith effort to identify Indian tribes and Native Hawaiian organizations that shall be consulted in the section 106 process. Consultation should commence early in the planning process, in order to identify and discuss relevant preservation issues and resolve concerns about the confidentiality of information on historic properties.

(B) The Federal Government has a unique legal relationship with Indian tribes set forth in the Constitution of the United States, treaties, statutes, and court decisions. Consultation with Indian tribes should be conducted in a sensitive manner respectful of tribal sovereignty. Nothing in this part alters, amends, repeals, interprets, or modifies tribal sovereignty, any treaty rights, or other rights of an Indian tribe, or preempts, modifies, or limits the exercise of any such rights.

(C) Consultation with an Indian tribe must recognize the government-to-government relationship between the Federal Government and Indian tribes. The agency official shall consult with representatives designated or identified by the tribal government or the governing body of a Native Hawaiian organization. Consultation with Indian tribes and Native Hawaiian organizations should be conducted in a manner sensitive to the concerns and needs of the Indian tribe or Native Hawaiian organization.

(D) When Indian tribes and Native Hawaiian organizations attach religious and cultural significance to historic properties off tribal lands, section 101(d)(6)(B) of the act requires Federal agencies to consult with such Indian tribes and Native Hawaiian organizations in the section 106 process. Federal agencies should be aware that frequently historic properties of religious and cultural significance are located on ancestral, aboriginal, or ceded lands of Indian tribes and Native Hawaiian organizations and should consider that when complying with the procedures in this part.

(E) An Indian tribe or a Native Hawaiian organization may enter into an agreement with an agency official that specifies how they will carry out responsibilities under this part, including concerns over the confidentiality of information. An agreement may cover all aspects of tribal participation in the section 106 process, provided that no modification may be made in the roles of other parties to the section 106 process without their consent. An agreement may grant the Indian tribe or Native Hawaiian organization additional rights to participate or concur in agency decisions in the section 106 process beyond those specified in subpart B of this part. The agency official shall provide a copy of any such agreement to the Council and the appropriate SHPOs.

(F) An Indian tribe that has not assumed the responsibilities of the SHPO for section 106 on tribal lands under section 101(d)(2) of the act may

notify the agency official in writing that it is waiving its rights under § 800.6(c)(1) to execute a memorandum of agreement.

(3) *Representatives of local governments.* A representative of a local government with jurisdiction over the area in which the effects of an undertaking may occur is entitled to participate as a consulting party. Under other provisions of Federal law, the local government may be authorized to act as the agency official for purposes of section 106.

(4) *Applicants for Federal assistance, permits, licenses, and other approvals.* An applicant for Federal assistance or for a Federal permit, license, or other approval is entitled to participate as a consulting party as defined in this part. The agency official may authorize an applicant or group of applicants to initiate consultation with the SHPO/THPO and others, but remains legally responsible for all findings and determinations charged to the agency official. The agency official shall notify the SHPO/THPO when an applicant or group of applicants is so authorized. A Federal agency may authorize all applicants in a specific program pursuant to this section by providing notice to all SHPO/THPOs. Federal agencies that provide authorizations to applicants remain responsible for their government-to-government relationships with Indian tribes.

(5) *Additional consulting parties.* Certain individuals and organizations with a demonstrated interest in the undertaking may participate as consulting parties due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties.

(d) *The public.*

(1) *Nature of involvement.* The views of the public are essential to informed Federal decisionmaking in the section 106 process. The agency official shall seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties, the likely interest of the public in the effects on historic properties, confidentiality concerns of private individuals and businesses, and the relationship of the Federal involvement to the undertaking.

(2) *Providing notice and information.* The agency official must, except where appropriate to protect confidentiality concerns of affected parties, provide the public with information about an undertaking and its effects on historic properties and seek public comment and input. Members of the public may

also provide views on their own initiative for the agency official to consider in decisionmaking.

(3) *Use of agency procedures.* The agency official may use the agency's procedures for public involvement under the National Environmental Policy Act or other program requirements in lieu of public involvement requirements in subpart B of this part, if they provide adequate opportunities for public involvement consistent with this subpart.

Subpart B—The section 106 Process

§ 800.3 Initiation of the section 106 process.

(a) *Establish undertaking.* The agency official shall determine whether the proposed Federal action is an undertaking as defined in § 800.16(y) and, if so, whether it is a type of activity that has the potential to cause effects on historic properties.

(1) *No potential to cause effects.* If the undertaking is a type of activity that does not have the potential to cause effects on historic properties, assuming such historic properties were present, the agency official has no further obligations under section 106 or this part.

(2) *Program alternatives.* If the review of the undertaking is governed by a Federal agency program alternative established under § 800.14 or a programmatic agreement in existence before January 11, 2001, the agency official shall follow the program alternative.

(b) *Coordinate with other reviews.* The agency official should coordinate the steps of the section 106 process, as appropriate, with the overall planning schedule for the undertaking and with any reviews required under other authorities such as the National Environmental Policy Act, the Native American Graves Protection and Repatriation Act, the American Indian Religious Freedom Act, the Archeological Resources Protection Act, and agency-specific legislation, such as section 4(f) of the Department of Transportation Act. Where consistent with the procedures in this subpart, the agency official may use information developed for other reviews under Federal, State, or tribal law to meet the requirements of section 106.

(c) *Identify the appropriate SHPO and/or THPO.* As part of its initial planning, the agency official shall determine the appropriate SHPO or SHPOs to be involved in the section 106 process. The agency official shall also determine whether the undertaking may occur on or affect historic properties on

any tribal lands and, if so, whether a THPO has assumed the duties of the SHPO. The agency official shall then initiate consultation with the appropriate officer or officers.

(1) *Tribal assumption of SHPO responsibilities.* Where an Indian tribe has assumed the section 106 responsibilities of the SHPO on tribal lands pursuant to section 101(d)(2) of the act, consultation for undertakings occurring on tribal land or for effects on tribal land is with the THPO for the Indian tribe in lieu of the SHPO. Section 101(d)(2)(D)(iii) of the act authorizes owners of properties on tribal lands which are neither owned by a member of the tribe nor held in trust by the Secretary for the benefit of the tribe to request the SHPO to participate in the section 106 process in addition to the THPO.

(2) *Undertakings involving more than one State.* If more than one State is involved in an undertaking, the involved SHPOs may agree to designate a lead SHPO to act on their behalf in the section 106 process, including taking actions that would conclude the section 106 process under this subpart.

(3) *Conducting consultation.* The agency official should consult with the SHPO/THPO in a manner appropriate to the agency planning process for the undertaking and to the nature of the undertaking and its effects on historic properties.

(4) *Failure of the SHPO/THPO to respond.* If the SHPO/THPO fails to respond within 30 days of receipt of a request for review of a finding or determination, the agency official may either proceed to the next step in the process based on the finding or determination or consult with the Council in lieu of the SHPO/THPO. If the SHPO/THPO re-enters the Section 106 process, the agency official shall continue the consultation without being required to reconsider previous findings or determinations.

(d) *Consultation on tribal lands.* Where the Indian tribe has not assumed the responsibilities of the SHPO on tribal lands, consultation with the Indian tribe regarding undertakings occurring on such tribe's lands or effects on such tribal lands shall be in addition to and on the same basis as consultation with the SHPO. If the SHPO has withdrawn from the process, the agency official may complete the section 106 process with the Indian tribe and the Council, as appropriate. An Indian tribe may enter into an agreement with a SHPO or SHPOs specifying the SHPO's participation in the section 106 process for undertakings occurring on or

affecting historic properties on tribal lands.

(e) *Plan to involve the public.* In consultation with the SHPO/THPO, the agency official shall plan for involving the public in the section 106 process. The agency official shall identify the appropriate points for seeking public input and for notifying the public of proposed actions, consistent with § 800.2(d).

(f) *Identify other consulting parties.* In consultation with the SHPO/THPO, the agency official shall identify any other parties entitled to be consulting parties and invite them to participate as such in the section 106 process. The agency official may invite others to participate as consulting parties as the section 106 process moves forward.

(1) *Involving local governments and applicants.* The agency official shall invite any local governments or applicants that are entitled to be consulting parties under § 800.2(c).

(2) *Involving Indian tribes and Native Hawaiian organizations.* The agency official shall make a reasonable and good faith effort to identify any Indian tribes or Native Hawaiian organizations that might attach religious and cultural significance to historic properties in the area of potential effects and invite them to be consulting parties. Such Indian tribe or Native Hawaiian organization that requests in writing to be a consulting party shall be one.

(3) *Requests to be consulting parties.* The agency official shall consider all written requests of individuals and organizations to participate as consulting parties and, in consultation with the SHPO/THPO and any Indian tribe upon whose tribal lands an undertaking occurs or affects historic properties, determine which should be consulting parties.

(g) *Expediting consultation.* A consultation by the agency official with the SHPO/THPO and other consulting parties may address multiple steps in §§ 800.3 through 800.6 where the agency official and the SHPO/THPO agree it is appropriate as long as the consulting parties and the public have an adequate opportunity to express their views as provided in § 800.2(d).

§ 800.4 Identification of historic properties.

(a) *Determine scope of identification efforts.* In consultation with the SHPO/THPO, the agency official shall:

(1) Determine and document the area of potential effects, as defined in § 800.16(d);

(2) Review existing information on historic properties within the area of potential effects, including any data

concerning possible historic properties not yet identified;

(3) Seek information, as appropriate, from consulting parties, and other individuals and organizations likely to have knowledge of, or concerns with, historic properties in the area, and identify issues relating to the undertaking's potential effects on historic properties; and

(4) Gather information from any Indian tribe or Native Hawaiian organization identified pursuant to § 800.3(f) to assist in identifying properties, including those located off tribal lands, which may be of religious and cultural significance to them and may be eligible for the National Register, recognizing that an Indian tribe or Native Hawaiian organization may be reluctant to divulge specific information regarding the location, nature, and activities associated with such sites. The agency official should address concerns raised about confidentiality pursuant to § 800.11(c).

(b) *Identify historic properties.* Based on the information gathered under paragraph (a) of this section, and in consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that might attach religious and cultural significance to properties within the area of potential effects, the agency official shall take the steps necessary to identify historic properties within the area of potential effects.

(1) *Level of effort.* The agency official shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. The agency official shall take into account past planning, research and studies, the magnitude and nature of the undertaking and the degree of Federal involvement, the nature and extent of potential effects on historic properties, and the likely nature and location of historic properties within the area of potential effects. The Secretary's standards and guidelines for identification provide guidance on this subject. The agency official should also consider other applicable professional, State, tribal, and local laws, standards, and guidelines. The agency official shall take into account any confidentiality concerns raised by Indian tribes or Native Hawaiian organizations during the identification process.

(2) *Phased identification and evaluation.* Where alternatives under consideration consist of corridors or large land areas, or where access to properties is restricted, the agency official may use a phased process to

conduct identification and evaluation efforts. The agency official may also defer final identification and evaluation of historic properties if it is specifically provided for in a memorandum of agreement executed pursuant to § 800.6, a programmatic agreement executed pursuant to § 800.14(b), or the documents used by an agency official to comply with the National Environmental Policy Act pursuant to § 800.8. The process should establish the likely presence of historic properties within the area of potential effects for each alternative or inaccessible area through background research, consultation and an appropriate level of field investigation, taking into account the number of alternatives under consideration, the magnitude of the undertaking and its likely effects, and the views of the SHPO/THPO and any other consulting parties. As specific aspects or locations of an alternative are refined or access is gained, the agency official shall proceed with the identification and evaluation of historic properties in accordance with paragraphs (b)(1) and (c) of this section.

(c) *Evaluate historic significance.*

(1) *Apply National Register criteria.* In consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to identified properties and guided by the Secretary's standards and guidelines for evaluation, the agency official shall apply the National Register criteria (36 CFR part 63) to properties identified within the area of potential effects that have not been previously evaluated for National Register eligibility. The passage of time, changing perceptions of significance, or incomplete prior evaluations may require the agency official to reevaluate properties previously determined eligible or ineligible. The agency official shall acknowledge that Indian tribes and Native Hawaiian organizations possess special expertise in assessing the eligibility of historic properties that may possess religious and cultural significance to them.

(2) *Determine whether a property is eligible.* If the agency official determines any of the National Register criteria are met and the SHPO/THPO agrees, the property shall be considered eligible for the National Register for section 106 purposes. If the agency official determines the criteria are not met and the SHPO/THPO agrees, the property shall be considered not eligible. If the agency official and the SHPO/THPO do not agree, or if the Council or the Secretary so request, the agency official shall obtain a determination of eligibility from the Secretary pursuant

to 36 CFR part 63. If an Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to a property off tribal lands does not agree, it may ask the Council to request the agency official to obtain a determination of eligibility.

(d) *Results of identification and evaluation.*

(1) *No historic properties affected.* If the agency official finds that either there are no historic properties present or there are historic properties present but the undertaking will have no effect upon them as defined in § 800.16(i), the agency official shall provide documentation of this finding, as set forth in § 800.11(d), to the SHPO/THPO. The agency official shall notify all consulting parties, including Indian tribes and Native Hawaiian organizations, and make the documentation available for public inspection prior to approving the undertaking. If the SHPO/THPO, or the Council if it has entered the section 106 process, does not object within 30 days of receipt of an adequately documented finding, the agency official's responsibilities under section 106 are fulfilled.

(2) *Historic properties affected.* If the agency official finds that there are historic properties which may be affected by the undertaking or the SHPO/THPO or the Council objects to the agency official's finding under paragraph (d)(1) of this section, the agency official shall notify all consulting parties, including Indian tribes or Native Hawaiian organizations, invite their views on the effects and assess adverse effects, if any, in accordance with § 800.5.

§ 800.5 Assessment of adverse effects.

(a) *Apply criteria of adverse effect.* In consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to identified historic properties, the agency official shall apply the criteria of adverse effect to historic properties within the area of potential effects. The agency official shall consider any views concerning such effects which have been provided by consulting parties and the public.

(1) *Criteria of adverse effect.* An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all

qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

(2) *Examples of adverse effects.*

Adverse effects on historic properties include, but are not limited to:

- (i) Physical destruction of or damage to all or part of the property;
- (ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR part 68) and applicable guidelines;
- (iii) Removal of the property from its historic location;
- (iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- (v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
- (vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- (vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

(3) *Phased application of criteria.*

Where alternatives under consideration consist of corridors or large land areas, or where access to properties is restricted, the agency official may use a phased process in applying the criteria of adverse effect consistent with phased identification and evaluation efforts conducted pursuant to § 800.4(b)(2).

(b) *Finding of no adverse effect.* The agency official, in consultation with the SHPO/THPO, may propose a finding of no adverse effect when the undertaking's effects do not meet the criteria of paragraph (a)(1) of this section or the undertaking is modified or conditions are imposed, such as the subsequent review of plans for rehabilitation by the SHPO/THPO to ensure consistency with the Secretary's standards for the treatment of historic properties (36 CFR part 68) and

applicable guidelines, to avoid adverse effects.

(c) *Consulting party review.* If the agency official proposes a finding of no adverse effect, the agency official shall notify all consulting parties of the finding and provide them with the documentation specified in § 800.11(e). The SHPO/THPO shall have 30 days from receipt to review the finding.

(1) *Agreement with finding.* Unless the Council is reviewing the finding pursuant to § 800.5(c)(3), the agency official may proceed if the SHPO/THPO agrees with the finding. The agency official shall carry out the undertaking in accordance with § 800.5(d)(1). Failure of the SHPO/THPO to respond within 30 days from receipt of the finding shall be considered agreement of the SHPO/THPO with the finding.

(2) *Disagreement with finding.*

(i) If the SHPO/THPO or any consulting party disagrees within the 30-day review period, it shall specify the reasons for disagreeing with the finding. The agency official shall either consult with the party to resolve the disagreement, or request the Council to review the finding pursuant to paragraph (c)(3) of this section.

(ii) The agency official should seek the concurrence of any Indian tribe or Native Hawaiian organization that has made known to the agency official that it attaches religious and cultural significance to a historic property subject to the finding. If such Indian tribe or Native Hawaiian organization disagrees with the finding, it may within the 30-day review period specify the reasons for disagreeing with the finding and request the Council to review the finding pursuant to paragraph (c)(3) of this section.

(iii) If the Council on its own initiative so requests within the 30-day review period, the agency official shall submit the finding, along with the documentation specified in § 800.11(e), for review pursuant to paragraph (c)(3) of this section. A Council decision to make such a request shall be guided by the criteria in appendix A to this part.

(3) *Council review of findings.* When a finding is submitted to the Council pursuant to paragraph (c)(2) of this section, the agency official shall include the documentation specified in § 800.11(e). The Council shall review the finding and notify the agency official of its determination as to whether the adverse effect criteria have been correctly applied within 15 days of receiving the documented finding from the agency official. The Council shall specify the basis for its determination. The agency official shall proceed in accordance with the Council's

determination. If the Council does not respond within 15 days of receipt of the finding, the agency official may assume concurrence with the agency official's findings and proceed accordingly.

(d) *Results of assessment.*

(1) *No adverse effect.* The agency official shall maintain a record of the finding and provide information on the finding to the public on request, consistent with the confidentiality provisions of § 800.11(c). Implementation of the undertaking in accordance with the finding as documented fulfills the agency official's responsibilities under section 106 and this part. If the agency official will not conduct the undertaking as proposed in the finding, the agency official shall reopen consultation under paragraph (a) of this section.

(2) *Adverse effect.* If an adverse effect is found, the agency official shall consult further to resolve the adverse effect pursuant to § 800.6.

§ 800.6 Resolution of adverse effects.

(a) *Continue consultation.* The agency official shall consult with the SHPO/THPO and other consulting parties, including Indian tribes and Native Hawaiian organizations, to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties.

(1) *Notify the Council and determine Council participation.* The agency official shall notify the Council of the adverse effect finding by providing the documentation specified in § 800.11(e).

(i) The notice shall invite the Council to participate in the consultation when:

(A) The agency official wants the Council to participate;

(B) The undertaking has an adverse effect upon a National Historic Landmark; or

(C) A programmatic agreement under § 800.14(b) will be prepared;

(ii) The SHPO/THPO, an Indian tribe or Native Hawaiian organization, or any other consulting party may at any time independently request the Council to participate in the consultation.

(iii) The Council shall advise the agency official and all consulting parties whether it will participate within 15 days of receipt of notice or other request. Prior to entering the process, the Council shall provide written notice to the agency official and the consulting parties that its decision to participate meets the criteria set forth in appendix A to this part. The Council shall also advise the head of the agency of its decision to enter the process. Consultation with Council participation

is conducted in accordance with paragraph (b)(2) of this section.

(iv) If the Council does not join the consultation, the agency official shall proceed with consultation in accordance with paragraph (b)(1) of this section.

(2) *Involve consulting parties.* In addition to the consulting parties identified under § 800.3(f), the agency official, the SHPO/THPO and the Council, if participating, may agree to invite other individuals or organizations to become consulting parties. The agency official shall invite any individual or organization that will assume a specific role or responsibility in a memorandum of agreement to participate as a consulting party.

(3) *Provide documentation.* The agency official shall provide to all consulting parties the documentation specified in § 800.11(e), subject to the confidentiality provisions of § 800.11(c), and such other documentation as may be developed during the consultation to resolve adverse effects.

(4) *Involve the public.* The agency official shall make information available to the public, including the documentation specified in § 800.11(e), subject to the confidentiality provisions of § 800.11(c). The agency official shall provide an opportunity for members of the public to express their views on resolving adverse effects of the undertaking. The agency official should use appropriate mechanisms, taking into account the magnitude of the undertaking and the nature of its effects upon historic properties, the likely effects on historic properties, and the relationship of the Federal involvement to the undertaking to ensure that the public's views are considered in the consultation. The agency official should also consider the extent of notice and information concerning historic preservation issues afforded the public at earlier steps in the section 106 process to determine the appropriate level of public involvement when resolving adverse effects so that the standards of § 800.2(d) are met.

(5) *Restrictions on disclosure of information.* Section 304 of the act and other authorities may limit the disclosure of information under paragraphs (a)(3) and (a)(4) of this section. If an Indian tribe or Native Hawaiian organization objects to the disclosure of information or if the agency official believes that there are other reasons to withhold information, the agency official shall comply with § 800.11(c) regarding the disclosure of such information.

(b) *Resolve adverse effects.*

(1) *Resolution without the Council.*

(i) The agency official shall consult with the SHPO/THPO and other consulting parties to seek ways to avoid, minimize or mitigate the adverse effects.

(ii) The agency official may use standard treatments established by the Council under § 800.14(d) as a basis for a memorandum of agreement.

(iii) If the Council decides to join the consultation, the agency official shall follow paragraph (b)(2) of this section.

(iv) If the agency official and the SHPO/THPO agree on how the adverse effects will be resolved, they shall execute a memorandum of agreement. The agency official must submit a copy of the executed memorandum of agreement, along with the documentation specified in § 800.11(f), to the Council prior to approving the undertaking in order to meet the requirements of section 106 and this subpart.

(v) If the agency official, and the SHPO/THPO fail to agree on the terms of a memorandum of agreement, the agency official shall request the Council to join the consultation and provide the Council with the documentation set forth in § 800.11(g). If the Council decides to join the consultation, the agency official shall proceed in accordance with paragraph (b)(2) of this section. If the Council decides not to join the consultation, the Council will notify the agency and proceed to comment in accordance with § 800.7(c).

(2) *Resolution with Council participation.* If the Council decides to participate in the consultation, the agency official shall consult with the SHPO/THPO, the Council, and other consulting parties, including Indian tribes and Native Hawaiian organizations under § 800.2(c)(3), to seek ways to avoid, minimize or mitigate the adverse effects. If the agency official, the SHPO/THPO, and the Council agree on how the adverse effects will be resolved, they shall execute a memorandum of agreement.

(c) *Memorandum of agreement.* A memorandum of agreement executed and implemented pursuant to this section evidences the agency official's compliance with section 106 and this part and shall govern the undertaking and all of its parts. The agency official shall ensure that the undertaking is carried out in accordance with the memorandum of agreement.

(1) *Signatories.* The signatories have sole authority to execute, amend or terminate the agreement in accordance with this subpart.

(i) The agency official and the SHPO/THPO are the signatories to a memorandum of agreement executed

pursuant to paragraph (b)(1) of this section.

(ii) The agency official, the SHPO/THPO, and the Council are the signatories to a memorandum of agreement executed pursuant to paragraph (b)(2) of this section.

(iii) The agency official and the Council are signatories to a memorandum of agreement executed pursuant to § 800.7(a)(2).

(2) *Invited signatories.*

(i) The agency official may invite additional parties to be signatories to a memorandum of agreement. Any such party that signs the memorandum of agreement shall have the same rights with regard to seeking amendment or termination of the memorandum of agreement as other signatories.

(ii) The agency official may invite an Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to historic properties located off tribal lands to be a signatory to a memorandum of agreement concerning such properties.

(iii) The agency official should invite any party that assumes a responsibility under a memorandum of agreement to be a signatory.

(iv) The refusal of any party invited to become a signatory to a memorandum of agreement pursuant to paragraph (c)(2) of this section does not invalidate the memorandum of agreement.

(3) *Concurrence by others.* The agency official may invite all consulting parties to concur in the memorandum of agreement. The signatories may agree to invite others to concur. The refusal of any party invited to concur in the memorandum of agreement does not invalidate the memorandum of agreement.

(4) *Reports on implementation.* Where the signatories agree it is appropriate, a memorandum of agreement shall include a provision for monitoring and reporting on its implementation.

(5) *Duration.* A memorandum of agreement shall include provisions for termination and for reconsideration of terms if the undertaking has not been implemented within a specified time.

(6) *Discoveries.* Where the signatories agree it is appropriate, a memorandum of agreement shall include provisions to deal with the subsequent discovery or identification of additional historic properties affected by the undertaking.

(7) *Amendments.* The signatories to a memorandum of agreement may amend it. If the Council was not a signatory to the original agreement and the signatories execute an amended agreement, the agency official shall file it with the Council.

(8) *Termination.* If any signatory determines that the terms of a memorandum of agreement cannot be or are not being carried out, the signatories shall consult to seek amendment of the agreement. If the agreement is not amended, any signatory may terminate it. The agency official shall either execute a memorandum of agreement with signatories under paragraph (c)(1) of this section or request the comments of the Council under § 800.7(a).

(9) *Copies.* The agency official shall provide each consulting party with a copy of any memorandum of agreement executed pursuant to this subpart.

§ 800.7 Failure to resolve adverse effects.

(a) *Termination of consultation.* After consulting to resolve adverse effects pursuant to § 800.6(b)(2), the agency official, the SHPO/THPO, or the Council may determine that further consultation will not be productive and terminate consultation. Any party that terminates consultation shall notify the other consulting parties and provide them the reasons for terminating in writing.

(1) If the agency official terminates consultation, the head of the agency or an Assistant Secretary or other officer with major department-wide or agency-wide responsibilities shall request that the Council comment pursuant to paragraph (c) of this section and shall notify all consulting parties of the request.

(2) If the SHPO terminates consultation, the agency official and the Council may execute a memorandum of agreement without the SHPO's involvement.

(3) If a THPO terminates consultation regarding an undertaking occurring on or affecting historic properties on its tribal lands, the Council shall comment pursuant to paragraph (c) of this section.

(4) If the Council terminates consultation, the Council shall notify the agency official, the agency's Federal preservation officer and all consulting parties of the termination and comment under paragraph (c) of this section. The Council may consult with the agency's Federal preservation officer prior to terminating consultation to seek to resolve issues concerning the undertaking and its effects on historic properties.

(b) *Comments without termination.* The Council may determine that it is appropriate to provide additional advisory comments upon an undertaking for which a memorandum of agreement will be executed. The Council shall provide them to the agency official when it executes the memorandum of agreement.

(c) *Comments by the Council.*

(1) *Preparation.* The Council shall provide an opportunity for the agency official, all consulting parties, and the public to provide their views within the time frame for developing its comments. Upon request of the Council, the agency official shall provide additional existing information concerning the undertaking and assist the Council in arranging an onsite inspection and an opportunity for public participation.

(2) *Timing.* The Council shall transmit its comments within 45 days of receipt of a request under paragraph (a)(1) or (a)(3) of this section or § 800.8(c)(3), or termination by the Council under § 800.6(b)(1)(v) or paragraph (a)(4) of this section, unless otherwise agreed to by the agency official.

(3) *Transmittal.* The Council shall provide its comments to the head of the agency requesting comment with copies to the agency official, the agency's Federal preservation officer, all consulting parties, and others as appropriate.

(4) *Response to Council comment.* The head of the agency shall take into account the Council's comments in reaching a final decision on the undertaking. Section 110(l) of the act directs that the head of the agency shall document this decision and may not delegate his or her responsibilities pursuant to section 106. Documenting the agency head's decision shall include:

(i) Preparing a summary of the decision that contains the rationale for the decision and evidence of consideration of the Council's comments and providing it to the Council prior to approval of the undertaking;

(ii) Providing a copy of the summary to all consulting parties; and

(iii) Notifying the public and making the record available for public inspection.

§ 800.8 Coordination With the National Environmental Policy Act.

(a) *General principles.*

(1) *Early coordination.* Federal agencies are encouraged to coordinate compliance with section 106 and the procedures in this part with any steps taken to meet the requirements of the National Environmental Policy Act (NEPA). Agencies should consider their section 106 responsibilities as early as possible in the NEPA process, and plan their public participation, analysis, and review in such a way that they can meet the purposes and requirements of both statutes in a timely and efficient manner. The determination of whether an undertaking is a "major Federal action significantly affecting the quality

of the human environment," and therefore requires preparation of an environmental impact statement (EIS) under NEPA, should include consideration of the undertaking's likely effects on historic properties. A finding of adverse effect on a historic property does not necessarily require an EIS under NEPA.

(2) *Consulting party roles.* SHPO/THPOs, Indian tribes, and Native Hawaiian organizations, other consulting parties, and organizations and individuals who may be concerned with the possible effects of an agency action on historic properties should be prepared to consult with agencies early in the NEPA process, when the purpose of and need for the proposed action as well as the widest possible range of alternatives are under consideration.

(3) *Inclusion of historic preservation issues.* Agency officials should ensure that preparation of an environmental assessment (EA) and finding of no significant impact (FONSI) or an EIS and record of decision (ROD) includes appropriate scoping, identification of historic properties, assessment of effects upon them, and consultation leading to resolution of any adverse effects.

(b) *Actions categorically excluded under NEPA.* If a project, activity or program is categorically excluded from NEPA review under an agency's NEPA procedures, the agency official shall determine if it still qualifies as an undertaking requiring review under section 106 pursuant to § 800.3(a). If so, the agency official shall proceed with section 106 review in accordance with the procedures in this subpart.

(c) *Use of the NEPA process for section 106 purposes.* An agency official may use the process and documentation required for the preparation of an EA/FONSI or an EIS/ROD to comply with section 106 in lieu of the procedures set forth in §§ 800.3 through 800.6 if the agency official has notified in advance the SHPO/THPO and the Council that it intends to do so and the following standards are met.

(1) *Standards for developing environmental documents to comply with Section 106.* During preparation of the EA or draft EIS (DEIS) the agency official shall:

(i) Identify consulting parties either pursuant to § 800.3(f) or through the NEPA scoping process with results consistent with § 800.3(f);

(ii) Identify historic properties and assess the effects of the undertaking on such properties in a manner consistent with the standards and criteria of §§ 800.4 through 800.5, provided that the scope and timing of these steps may be phased to reflect the agency official's

consideration of project alternatives in the NEPA process and the effort is commensurate with the assessment of other environmental factors;

(iii) Consult regarding the effects of the undertaking on historic properties with the SHPO/THPO, Indian tribes, and Native Hawaiian organizations that might attach religious and cultural significance to affected historic properties, other consulting parties, and the Council, where appropriate, during NEPA scoping, environmental analysis, and the preparation of NEPA documents;

(iv) Involve the public in accordance with the agency's published NEPA procedures; and (v) Develop in consultation with identified consulting parties alternatives and proposed measures that might avoid, minimize or mitigate any adverse effects of the undertaking on historic properties and describe them in the EA or DEIS.

(2) *Review of environmental documents.*

(i) The agency official shall submit the EA, DEIS, or EIS to the SHPO/THPO, Indian tribes, and Native Hawaiian organizations that might attach religious and cultural significance to affected historic properties, and other consulting parties prior to or when making the document available for public comment. If the document being prepared is a DEIS or EIS, the agency official shall also submit it to the Council.

(ii) Prior to or within the time allowed for public comment on the document, a SHPO/THPO, an Indian tribe or Native Hawaiian organization, another consulting party or the Council may object to the agency official that preparation of the EA, DEIS, or EIS has not met the standards set forth in paragraph (c)(1) of this section or that the substantive resolution of the effects on historic properties proposed in an EA, DEIS, or EIS is inadequate. If the agency official receives such an objection, the agency official shall refer the matter to the Council.

(3) *Resolution of objections.* Within 30 days of the agency official's referral of an objection under paragraph (c)(2)(ii) of this section, the Council shall notify the agency official either that it agrees with the objection, in which case the agency official shall enter into consultation in accordance with § 800.6(b)(2) or seek Council comments in accordance with § 800.7(a), or that it disagrees with the objection, in which case the agency official shall continue its compliance with this section. Failure of the Council to respond within the 30 day period shall be considered disagreement with the objection.

(4) *Approval of the undertaking.* If the agency official has found, during the preparation of an EA or EIS that the effects of an undertaking on historic properties are adverse, the agency official shall develop measures in the EA, DEIS, or EIS to avoid, minimize, or mitigate such effects in accordance with paragraph (c)(1)(v) of this section. The agency official's responsibilities under section 106 and the procedures in this subpart shall then be satisfied when either:

(i) A binding commitment to such proposed measures is incorporated in:

(A) The ROD, if such measures were proposed in a DEIS or EIS; or

(B) An MOA drafted in compliance with § 800.6(c); or

(ii) The Council has commented under § 800.7 and received the agency's response to such comments.

(5) *Modification of the undertaking.* If the undertaking is modified after approval of the FONSI or the ROD in a manner that changes the undertaking or alters its effects on historic properties, or if the agency official fails to ensure that the measures to avoid, minimize or mitigate adverse effects (as specified in either the FONSI or the ROD, or in the binding commitment adopted pursuant to paragraph (c)(4) of this section) are carried out, the agency official shall notify the Council and all consulting parties that supplemental environmental documents will be prepared in compliance with NEPA or that the procedures in §§ 800.3 through 800.6 will be followed as necessary.

§ 800.9 Council review of section 106 compliance.

(a) *Assessment of agency official compliance for individual undertakings.* The Council may provide to the agency official its advisory opinion regarding the substance of any finding, determination or decision or regarding the adequacy of the agency official's compliance with the procedures under this part. The Council may provide such advice at any time at the request of any individual, agency or organization or on its own initiative. The agency official shall consider the views of the Council in reaching a decision on the matter in question.

(b) *Agency foreclosure of the Council's opportunity to comment.* Where an agency official has failed to complete the requirements of section 106 in accordance with the procedures in this part prior to the approval of an undertaking, the Council's opportunity to comment may be foreclosed. The Council may review a case to determine whether a foreclosure has occurred. The Council shall notify the agency official

and the agency's Federal preservation officer and allow 30 days for the agency official to provide information as to whether foreclosure has occurred. If the Council determines foreclosure has occurred, the Council shall transmit the determination to the agency official and the head of the agency. The Council shall also make the determination available to the public and any parties known to be interested in the undertaking and its effects upon historic properties.

(c) *Intentional adverse effects by applicants.*

(1) *Agency responsibility.* Section 110(k) of the act prohibits a Federal agency from granting a loan, loan guarantee, permit, license or other assistance to an applicant who, with intent to avoid the requirements of section 106, has intentionally significantly adversely affected a historic property to which the grant would relate, or having legal power to prevent it, has allowed such significant adverse effect to occur, unless the agency, after consultation with the Council, determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. Guidance issued by the Secretary pursuant to section 110 of the act governs its implementation.

(2) *Consultation with the Council.* When an agency official determines, based on the actions of an applicant, that section 110(k) is applicable and that circumstances may justify granting the assistance, the agency official shall notify the Council and provide documentation specifying the circumstances under which the adverse effects to the historic property occurred and the degree of damage to the integrity of the property. This documentation shall include any views obtained from the applicant, SHPO/THPO, an Indian tribe if the undertaking occurs on or affects historic properties on tribal lands, and other parties known to be interested in the undertaking.

(i) Within thirty days of receiving the agency official's notification, unless otherwise agreed to by the agency official, the Council shall provide the agency official with its opinion as to whether circumstances justify granting assistance to the applicant and any possible mitigation of the adverse effects.

(ii) The agency official shall consider the Council's opinion in making a decision on whether to grant assistance to the applicant, and shall notify the Council, the SHPO/THPO, and other parties known to be interested in the undertaking prior to granting the assistance.

(3) *Compliance with Section 106.* If an agency official, after consulting with the Council, determines to grant the assistance, the agency official shall comply with §§ 800.3 through 800.6 to take into account the effects of the undertaking on any historic properties.

(d) *Evaluation of Section 106 operations.* The Council may evaluate the operation of the section 106 process by periodic reviews of how participants have fulfilled their legal responsibilities and how effectively the outcomes reached advance the purposes of the act.

(1) *Information from participants.* Section 203 of the act authorizes the Council to obtain information from Federal agencies necessary to conduct evaluation of the section 106 process. The agency official shall make documentation of agency policies, operating procedures and actions taken to comply with section 106 available to the Council upon request. The Council may request available information and documentation from other participants in the section 106 process.

(2) *Improving the operation of section 106.* Based upon any evaluation of the section 106 process, the Council may make recommendations to participants, the heads of Federal agencies, and the Secretary of actions to improve the efficiency and effectiveness of the process. Where the Council determines that an agency official or a SHPO/THPO has failed to properly carry out the responsibilities assigned under the process in this part, the Council may participate in individual case reviews conducted under such process in addition to the SHPO/THPO for such period that it determines is necessary to improve performance or correct deficiencies. If the Council finds a pattern of failure by a Federal agency in carrying out its responsibilities under section 106, the Council may review the policies and programs of the agency related to historic preservation pursuant to section 202(a)(6) of the act and recommend methods to improve the effectiveness, coordination, and consistency of those policies and programs with section 106.

§ 800.10 Special requirements for protecting National Historic Landmarks.

(a) *Statutory requirement.* Section 110(f) of the act requires that the agency official, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to any National Historic Landmark that may be directly and adversely affected by an undertaking. When commenting on such undertakings, the Council shall use the process set forth in §§ 800.6 through 800.7 and give

special consideration to protecting National Historic Landmarks as specified in this section.

(b) *Resolution of adverse effects.* The agency official shall request the Council to participate in any consultation to resolve adverse effects on National Historic Landmarks conducted under § 800.6.

(c) *Involvement of the Secretary.* The agency official shall notify the Secretary of any consultation involving a National Historic Landmark and invite the Secretary to participate in the consultation where there may be an adverse effect. The Council may request a report from the Secretary under section 213 of the act to assist in the consultation.

(d) *Report of outcome.* When the Council participates in consultation under this section, it shall report the outcome of the section 106 process, providing its written comments or any memoranda of agreement to which it is a signatory, to the Secretary and the head of the agency responsible for the undertaking.

§ 800.11 Documentation standards.

(a) *Adequacy of documentation.* The agency official shall ensure that a determination, finding, or agreement under the procedures in this subpart is supported by sufficient documentation to enable any reviewing parties to understand its basis. The agency official shall provide such documentation to the extent permitted by law and within available funds. When an agency official is conducting phased identification or evaluation under this subpart, the documentation standards regarding description of historic properties may be applied flexibly. If the Council, or the SHPO/THPO when the Council is not involved, determines the applicable documentation standards are not met, the Council or the SHPO/THPO, as appropriate, shall notify the agency official and specify the information needed to meet the standard. At the request of the agency official or any of the consulting parties, the Council shall review any disputes over whether documentation standards are met and provide its views to the agency official and the consulting parties.

(b) *Format.* The agency official may use documentation prepared to comply with other laws to fulfill the requirements of the procedures in this subpart, if that documentation meets the standards of this section.

(c) *Confidentiality.*

(1) *Authority to withhold information.* Section 304 of the act provides that the head of a Federal agency or other public official receiving grant assistance

pursuant to the act, after consultation with the Secretary, shall withhold from public disclosure information about the location, character, or ownership of a historic property when disclosure may cause a significant invasion of privacy; risk harm to the historic property; or impede the use of a traditional religious site by practitioners. When the head of a Federal agency or other public official has determined that information should be withheld from the public pursuant to these criteria, the Secretary, in consultation with such Federal agency head or official, shall determine who may have access to the information for the purposes of carrying out the act.

(2) *Consultation with the Council.* When the information in question has been developed in the course of an agency's compliance with this part, the Secretary shall consult with the Council in reaching determinations on the withholding and release of information. The Federal agency shall provide the Council with available information, including views of the SHPO/THPO, Indian tribes and Native Hawaiian organizations, related to the confidentiality concern. The Council shall advise the Secretary and the Federal agency within 30 days of receipt of adequate documentation.

(3) *Other authorities affecting confidentiality.* Other Federal laws and program requirements may limit public access to information concerning an undertaking and its effects on historic properties. Where applicable, those authorities shall govern public access to information developed in the section 106 process and may authorize the agency official to protect the privacy of non-governmental applicants.

(d) *Finding of no historic properties affected.* Documentation shall include:

(1) A description of the undertaking, specifying the Federal involvement, and its area of potential effects, including photographs, maps, drawings, as necessary;

(2) A description of the steps taken to identify historic properties, including, as appropriate, efforts to seek information pursuant to § 800.4(b); and

(3) The basis for determining that no historic properties are present or affected.

(e) *Finding of no adverse effect or adverse effect.* Documentation shall include:

(1) A description of the undertaking, specifying the Federal involvement, and its area of potential effects, including photographs, maps, and drawings, as necessary;

(2) A description of the steps taken to identify historic properties;

(3) A description of the affected historic properties, including information on the characteristics that qualify them for the National Register;

(4) A description of the undertaking's effects on historic properties;

(5) An explanation of why the criteria of adverse effect were found applicable or inapplicable, including any conditions or future actions to avoid, minimize or mitigate adverse effects; and

(6) Copies or summaries of any views provided by consulting parties and the public.

(f) *Memorandum of agreement.* When a memorandum of agreement is filed with the Council, the documentation shall include, any substantive revisions or additions to the documentation provided the Council pursuant to § 800.6(a)(1), an evaluation of any measures considered to avoid or minimize the undertaking's adverse effects and a summary of the views of consulting parties and the public.

(g) *Requests for comment without a memorandum of agreement.*

Documentation shall include:

(1) A description and evaluation of any alternatives or mitigation measures that the agency official proposes to resolve the undertaking's adverse effects;

(2) A description of any reasonable alternatives or mitigation measures that were considered but not chosen, and the reasons for their rejection;

(3) Copies or summaries of any views submitted to the agency official concerning the adverse effects of the undertaking on historic properties and alternatives to reduce or avoid those effects; and

(4) Any substantive revisions or additions to the documentation provided the Council pursuant to § 800.6(a)(1).

§ 800.12 Emergency situations.

(a) *Agency procedures.* The agency official, in consultation with the appropriate SHPOs/THPOs, affected Indian tribes and Native Hawaiian organizations, and the Council, is encouraged to develop procedures for taking historic properties into account during operations which respond to a disaster or emergency declared by the President, a tribal government, or the Governor of a State or which respond to other immediate threats to life or property. If approved by the Council, the procedures shall govern the agency's historic preservation responsibilities during any disaster or emergency in lieu of §§ 800.3 through 800.6.

(b) *Alternatives to agency procedures.* In the event an agency official proposes

an emergency undertaking as an essential and immediate response to a disaster or emergency declared by the President, a tribal government, or the Governor of a State or another immediate threat to life or property, and the agency has not developed procedures pursuant to paragraph (a) of this section, the agency official may comply with section 106 by:

(1) Following a programmatic agreement developed pursuant to § 800.14(b) that contains specific provisions for dealing with historic properties in emergency situations; or

(2) Notifying the Council, the appropriate SHPO/THPO and any Indian tribe or Native Hawaiian organization that may attach religious and cultural significance to historic properties likely to be affected prior to the undertaking and affording them an opportunity to comment within seven days of notification. If the agency official determines that circumstances do not permit seven days for comment, the agency official shall notify the Council, the SHPO/THPO and the Indian tribe or Native Hawaiian organization and invite any comments within the time available.

(c) *Local governments responsible for section 106 compliance.* When a local government official serves as the agency official for section 106 compliance, paragraphs (a) and (b) of this section also apply to an imminent threat to public health or safety as a result of a natural disaster or emergency declared by a local government's chief executive officer or legislative body, provided that if the Council or SHPO/THPO objects to the proposed action within seven days, the agency official shall comply with §§ 800.3 through 800.6.

(d) *Applicability.* This section applies only to undertakings that will be implemented within 30 days after the disaster or emergency has been formally declared by the appropriate authority. An agency may request an extension of the period of applicability from the Council prior to the expiration of the 30 days. Immediate rescue and salvage operations conducted to preserve life or property are exempt from the provisions of section 106 and this part.

§ 800.13 Post-review discoveries.

(a) *Planning for subsequent discoveries.*

(1) *Using a programmatic agreement.* An agency official may develop a programmatic agreement pursuant to § 800.14(b) to govern the actions to be taken when historic properties are discovered during the implementation of an undertaking.

(2) *Using agreement documents.*

When the agency official's identification efforts in accordance with § 800.4 indicate that historic properties are likely to be discovered during implementation of an undertaking and no programmatic agreement has been developed pursuant to paragraph (a)(1) of this section, the agency official shall include in any finding of no adverse effect or memorandum of agreement a process to resolve any adverse effects upon such properties. Actions in conformance with the process satisfy the agency official's responsibilities under section 106 and this part.

(b) *Discoveries without prior planning.* If historic properties are discovered or unanticipated effects on historic properties found after the agency official has completed the section 106 process without establishing a process under paragraph (a) of this section, the agency official shall make reasonable efforts to avoid, minimize or mitigate adverse effects to such properties and:

(1) If the agency official has not approved the undertaking or if construction on an approved undertaking has not commenced, consult to resolve adverse effects pursuant to § 800.6; or

(2) If the agency official, the SHPO/THPO and any Indian tribe or Native Hawaiian organization that might attach religious and cultural significance to the affected property agree that such property is of value solely for its scientific, prehistoric, historic or archeological data, the agency official may comply with the Archeological and Historic Preservation Act instead of the procedures in this part and provide the Council, the SHPO/THPO, and the Indian tribe or Native Hawaiian organization with a report on the actions within a reasonable time after they are completed; or

(3) If the agency official has approved the undertaking and construction has commenced, determine actions that the agency official can take to resolve adverse effects, and notify the SHPO/THPO, any Indian tribe or Native Hawaiian organization that might attach religious and cultural significance to the affected property, and the Council within 48 hours of the discovery. The notification shall describe the agency official's assessment of National Register eligibility of the property and proposed actions to resolve the adverse effects. The SHPO/THPO, the Indian tribe or Native Hawaiian organization and the Council shall respond within 48 hours of the notification. The agency official shall take into account their recommendations regarding National

Register eligibility and proposed actions, and then carry out appropriate actions. The agency official shall provide the SHPO/THPO, the Indian tribe or Native Hawaiian organization and the Council a report of the actions when they are completed.

(c) *Eligibility of properties.* The agency official, in consultation with the SHPO/THPO, may assume a newly-discovered property to be eligible for the National Register for purposes of section 106. The agency official shall specify the National Register criteria used to assume the property's eligibility so that information can be used in the resolution of adverse effects.

(d) *Discoveries on tribal lands.* If historic properties are discovered on tribal lands, or there are unanticipated effects on historic properties found on tribal lands, after the agency official has completed the section 106 process without establishing a process under paragraph (a) of this section and construction has commenced, the agency official shall comply with applicable tribal regulations and procedures and obtain the concurrence of the Indian tribe on the proposed action.

Subpart C—Program Alternatives

§ 800.14 Federal agency program alternatives.

(a) *Alternate procedures.* An agency official may develop procedures to implement section 106 and substitute them for all or part of subpart B of this part if they are consistent with the Council's regulations pursuant to section 110(a)(2)(E) of the act.

(1) *Development of procedures.* The agency official shall consult with the Council, the National Conference of State Historic Preservation Officers, or individual SHPO/THPOs, as appropriate, and Indian tribes and Native Hawaiian organizations, as specified in paragraph (f) of this section, in the development of alternate procedures, publish notice of the availability of proposed alternate procedures in the **Federal Register** and take other appropriate steps to seek public input during the development of alternate procedures.

(2) *Council review.* The agency official shall submit the proposed alternate procedures to the Council for a 60-day review period. If the Council finds the procedures to be consistent with this part, it shall notify the agency official and the agency official may adopt them as final alternate procedures.

(3) *Notice.* The agency official shall notify the parties with which it has consulted and publish notice of final

alternate procedures in the **Federal Register**.

(4) *Legal effect.* Alternate procedures adopted pursuant to this subpart substitute for the Council's regulations for the purposes of the agency's compliance with section 106, except that where an Indian tribe has entered into an agreement with the Council to substitute tribal historic preservation regulations for the Council's regulations under section 101(d)(5) of the act, the agency shall follow those regulations in lieu of the agency's procedures regarding undertakings on tribal lands. Prior to the Council entering into such agreements, the Council will provide Federal agencies notice and opportunity to comment on the proposed substitute tribal regulations.

(b) *Programmatic agreements.* The Council and the agency official may negotiate a programmatic agreement to govern the implementation of a particular program or the resolution of adverse effects from certain complex project situations or multiple undertakings.

(1) *Use of programmatic agreements.* A programmatic agreement may be used:

(i) When effects on historic properties are similar and repetitive or are multi-State or regional in scope;

(ii) When effects on historic properties cannot be fully determined prior to approval of an undertaking;

(iii) When nonfederal parties are delegated major decisionmaking responsibilities;

(iv) Where routine management activities are undertaken at Federal installations, facilities, or other land-management units; or

(v) Where other circumstances warrant a departure from the normal section 106 process.

(2) *Developing programmatic agreements for agency programs.*

(i) The consultation shall involve, as appropriate, SHPO/THPOs, the National Conference of State Historic Preservation Officers (NCSHPO), Indian tribes and Native Hawaiian organizations, other Federal agencies, and members of the public. If the programmatic agreement has the potential to affect historic properties on tribal lands or historic properties of religious and cultural significance to an Indian tribe or Native Hawaiian organization, the agency official shall also follow paragraph (f) of this section.

(ii) *Public participation.* The agency official shall arrange for public participation appropriate to the subject matter and the scope of the program and in accordance with subpart A of this part. The agency official shall consider

the nature of the program and its likely effects on historic properties and take steps to involve the individuals, organizations and entities likely to be interested.

(iii) *Effect.* The programmatic agreement shall take effect when executed by the Council, the agency official and the appropriate SHPOs/THPOs when the programmatic agreement concerns a specific region or the president of NCSHPO when NCSHPO has participated in the consultation. A programmatic agreement shall take effect on tribal lands only when the THPO, Indian tribe, or a designated representative of the tribe is a signatory to the agreement. Compliance with the procedures established by an approved programmatic agreement satisfies the agency's section 106 responsibilities for all individual undertakings of the program covered by the agreement until it expires or is terminated by the agency, the president of NCSHPO when a signatory, or the Council. Termination by an individual SHPO/THPO shall only terminate the application of a regional programmatic agreement within the jurisdiction of the SHPO/THPO. If a THPO assumes the responsibilities of a SHPO pursuant to section 101(d)(2) of the act and the SHPO is signatory to programmatic agreement, the THPO assumes the role of a signatory, including the right to terminate a regional programmatic agreement on lands under the jurisdiction of the tribe.

(iv) *Notice.* The agency official shall notify the parties with which it has consulted that a programmatic agreement has been executed under paragraph (b) of this section, provide appropriate public notice before it takes effect, and make any internal agency procedures implementing the agreement readily available to the Council, SHPO/THPOs, and the public.

(v) If the Council determines that the terms of a programmatic agreement are not being carried out, or if such an agreement is terminated, the agency official shall comply with subpart B of this part with regard to individual undertakings of the program covered by the agreement.

(3) *Developing programmatic agreements for complex or multiple undertakings.* Consultation to develop a programmatic agreement for dealing with the potential adverse effects of complex projects or multiple undertakings shall follow § 800.6. If consultation pertains to an activity involving multiple undertakings and the parties fail to reach agreement, then the agency official shall comply with the

provisions of subpart B of this part for each individual undertaking.

(4) *Prototype programmatic agreements.* The Council may designate an agreement document as a prototype programmatic agreement that may be used for the same type of program or undertaking in more than one case or area. When an agency official uses such a prototype programmatic agreement, the agency official may develop and execute the agreement with the appropriate SHPO/THPO and the agreement shall become final without need for Council participation in consultation or Council signature.

(c) *Exempted categories.*

(1) *Criteria for establishing.* An agency official may propose a program or category of agency undertakings that may be exempted from review under the provisions of subpart B of this part, if the program or category meets the following criteria:

(i) The actions within the program or category would otherwise qualify as "undertakings" as defined in § 800.16;

(ii) The potential effects of the undertakings within the program or category upon historic properties are foreseeable and likely to be minimal or not adverse; and

(iii) Exemption of the program or category is consistent with the purposes of the act.

(2) *Public participation.* The agency official shall arrange for public participation appropriate to the subject matter and the scope of the exemption and in accordance with the standards in subpart A of this part. The agency official shall consider the nature of the exemption and its likely effects on historic properties and take steps to involve individuals, organizations and entities likely to be interested.

(3) *Consultation with SHPOs/THPOs.* The agency official shall notify and consider the views of the SHPOs/THPOs on the exemption.

(4) *Consultation with Indian tribes and Native Hawaiian organizations.* If the exempted program or category of undertakings has the potential to affect historic properties on tribal lands or historic properties of religious and cultural significance to an Indian tribe or Native Hawaiian organization, the Council shall follow the requirements for the agency official set forth in paragraph (f) of this section.

(5) *Council review of proposed exemptions.* The Council shall review a request for an exemption that is supported by documentation describing the program or category for which the exemption is sought, demonstrating that the criteria of paragraph (c)(1) of this section have been met, describing the

methods used to seek the views of the public, and summarizing any views submitted by the SHPO/THPOs, the public, and any others consulted. Unless it requests further information, the Council shall approve or reject the proposed exemption within 30 days of receipt, and thereafter notify the agency official and SHPO/THPOs of the decision. The decision shall be based on the consistency of the exemption with the purposes of the act, taking into consideration the magnitude of the exempted undertaking or program and the likelihood of impairment of historic properties in accordance with section 214 of the act.

(6) *Legal consequences.* Any undertaking that falls within an approved exempted program or category shall require no further review pursuant to subpart B of this part, unless the agency official or the Council determines that there are circumstances under which the normally excluded undertaking should be reviewed under subpart B of this part.

(7) *Termination.* The Council may terminate an exemption at the request of the agency official or when the Council determines that the exemption no longer meets the criteria of paragraph (c)(1) of this section. The Council shall notify the agency official 30 days before termination becomes effective.

(8) *Notice.* The agency official shall publish notice of any approved exemption in the **Federal Register**.

(d) *Standard treatments.*

(1) *Establishment.* The Council, on its own initiative or at the request of another party, may establish standard methods for the treatment of a category of historic properties, a category of undertakings, or a category of effects on historic properties to assist Federal agencies in satisfying the requirements of subpart B of this part. The Council shall publish notice of standard treatments in the **Federal Register**.

(2) *Public participation.* The Council shall arrange for public participation appropriate to the subject matter and the scope of the standard treatment and consistent with subpart A of this part. The Council shall consider the nature of the standard treatment and its likely effects on historic properties and the individuals, organizations and entities likely to be interested. Where an agency official has proposed a standard treatment, the Council may request the agency official to arrange for public involvement.

(3) *Consultation with SHPOs/THPOs.* The Council shall notify and consider the views of SHPOs/THPOs on the proposed standard treatment.

(4) *Consultation with Indian tribes and Native Hawaiian organizations.* If the proposed standard treatment has the potential to affect historic properties on tribal lands or historic properties of religious and cultural significance to an Indian tribe or Native Hawaiian organization, the Council shall follow the requirements for the agency official set forth in paragraph (f) of this section.

(5) *Termination.* The Council may terminate a standard treatment by publication of a notice in the **Federal Register** 30 days before the termination takes effect.

(e) *Program comments.* An agency official may request the Council to comment on a category of undertakings in lieu of conducting individual reviews under §§ 800.4 through 800.6. The Council may provide program comments at its own initiative.

(1) *Agency request.* The agency official shall identify the category of undertakings, specify the likely effects on historic properties, specify the steps the agency official will take to ensure that the effects are taken into account, identify the time period for which the comment is requested and summarize any views submitted by the public.

(2) *Public participation.* The agency official shall arrange for public participation appropriate to the subject matter and the scope of the category and in accordance with the standards in subpart A of this part. The agency official shall consider the nature of the undertakings and their likely effects on historic properties and the individuals, organizations and entities likely to be interested.

(3) *Consultation with SHPOs/THPOs.* The Council shall notify and consider the views of SHPOs/THPOs on the proposed program comment.

(4) *Consultation with Indian tribes and Native Hawaiian organizations.* If the program comment has the potential to affect historic properties on tribal lands or historic properties of religious and cultural significance to an Indian tribe or Native Hawaiian organization, the Council shall follow the requirements for the agency official set forth in paragraph (f) of this section.

(5) *Council action.* Unless the Council requests additional documentation, notifies the agency official that it will decline to comment, or obtains the consent of the agency official to extend the period for providing comment, the Council shall comment to the agency official within 45 days of the request.

(i) If the Council comments, the agency official shall take into account the comments of the Council in carrying out the undertakings within the category and publish notice in the **Federal**

Register of the Council's comments and steps the agency will take to ensure that effects to historic properties are taken into account.

(ii) If the Council declines to comment, the agency official shall continue to comply with the requirements of §§ 800.3 through 800.6 for the individual undertakings.

(6) *Withdrawal of comment.* If the Council determines that the consideration of historic properties is not being carried out in a manner consistent with the program comment, the Council may withdraw the comment and the agency official shall comply with the requirements of §§ 800.3 through 800.6 for the individual undertakings.

(f) *Consultation with Indian tribes and Native Hawaiian organizations when developing program alternatives.* Whenever an agency official proposes a program alternative pursuant to paragraphs (a) through (e) of this section, the agency official shall ensure that development of the program alternative includes appropriate government-to-government consultation with affected Indian tribes and consultation with affected Native Hawaiian organizations.

(1) *Identifying affected Indian tribes and Native Hawaiian organizations.* If any undertaking covered by a proposed program alternative has the potential to affect historic properties on tribal lands, the agency official shall identify and consult with the Indian tribes having jurisdiction over such lands. If a proposed program alternative has the potential to affect historic properties of religious and cultural significance to an Indian tribe or a Native Hawaiian organization which are located off tribal lands, the agency official shall identify those Indian tribes and Native Hawaiian organizations that might attach religious and cultural significance to such properties and consult with them. When a proposed program alternative has nationwide applicability, the agency official shall identify an appropriate government to government consultation with Indian tribes and consult with Native Hawaiian organizations in accordance with existing Executive orders, Presidential memoranda, and applicable provisions of law.

(2) *Results of consultation.* The agency official shall provide summaries of the views, along with copies of any written comments, provided by affected Indian tribes and Native Hawaiian organizations to the Council as part of the documentation for the proposed program alternative. The agency official and the Council shall take those views

into account in reaching a final decision on the proposed program alternative.

§ 800.15 Tribal, State, and local program alternatives. [Reserved]

§ 800.16 Definitions.

(a) *Act* means the National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470–470w-6.

(b) *Agency* means agency as defined in 5 U.S.C. 551.

(c) *Approval of the expenditure of funds* means any final agency decision authorizing or permitting the expenditure of Federal funds or financial assistance on an undertaking, including any agency decision that may be subject to an administrative appeal.

(d) *Area of potential effects* means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

(e) *Comment* means the findings and recommendations of the Council formally provided in writing to the head of a Federal agency under section 106.

(f) *Consultation* means the process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising in the section 106 process. The Secretary's "Standards and Guidelines for Federal Agency Preservation Programs pursuant to the National Historic Preservation Act" provide further guidance on consultation.

(g) *Council* means the Advisory Council on Historic Preservation or a Council member or employee designated to act for the Council.

(h) *Day* or *days* means calendar days.

(i) *Effect* means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register.

(j) *Foreclosure* means an action taken by an agency official that effectively precludes the Council from providing comments which the agency official can meaningfully consider prior to the approval of the undertaking.

(k) *Head of the agency* means the chief official of the Federal agency responsible for all aspects of the agency's actions. If a State, local, or tribal government has assumed or has been delegated responsibility for section 106 compliance, the head of that unit of government shall be considered the head of the agency.

(l)(1) *Historic property* means any prehistoric or historic district, site,

building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

(2) The term *eligible for inclusion in the National Register* includes both properties formally determined as such in accordance with regulations of the Secretary of the Interior and all other properties that meet the National Register criteria.

(m) *Indian tribe* means an Indian tribe, band, nation, or other organized group or community, including a native village, regional corporation, or village corporation, as those terms are defined in section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. 1602), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

(n) *Local government* means a city, county, parish, township, municipality, borough, or other general purpose political subdivision of a State.

(o) *Memorandum of agreement* means the document that records the terms and conditions agreed upon to resolve the adverse effects of an undertaking upon historic properties.

(p) *National Historic Landmark* means a historic property that the Secretary of the Interior has designated a National Historic Landmark.

(q) *National Register* means the National Register of Historic Places maintained by the Secretary of the Interior.

(r) *National Register criteria* means the criteria established by the Secretary of the Interior for use in evaluating the eligibility of properties for the National Register (36 CFR part 60).

(s)(1) *Native Hawaiian organization* means any organization which serves and represents the interests of Native Hawaiians; has as a primary and stated purpose the provision of services to Native Hawaiians; and has demonstrated expertise in aspects of historic preservation that are significant to Native Hawaiians.

(2) *Native Hawaiian* means any individual who is a descendant of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the State of Hawaii.

(t) *Programmatic agreement* means a document that records the terms and

conditions agreed upon to resolve the potential adverse effects of a Federal agency program, complex undertaking or other situations in accordance with § 800.14(b).

(u) *Secretary* means the Secretary of the Interior acting through the Director of the National Park Service except where otherwise specified.

(v) *State Historic Preservation Officer (SHPO)* means the official appointed or designated pursuant to section 101(b)(1) of the act to administer the State historic preservation program or a representative designated to act for the State historic preservation officer.

(w) *Tribal Historic Preservation Officer (THPO)* means the tribal official appointed by the tribe's chief governing authority or designated by a tribal ordinance or preservation program who has assumed the responsibilities of the SHPO for purposes of section 106 compliance on tribal lands in accordance with section 101(d)(2) of the act.

(x) *Tribal lands* means all lands within the exterior boundaries of any Indian reservation and all dependent Indian communities.

(y) *Undertaking* means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance;

those requiring a Federal permit, license or approval; and those subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency.

Appendix A to Part 800—Criteria for Council Involvement in Reviewing Individual section 106 Cases

(a) *Introduction.* This appendix sets forth the criteria that will be used by the Council to determine whether to enter an individual section 106 review that it normally would not be involved in.

(b) *General policy.* The Council may choose to exercise its authorities under the section 106 regulations to participate in an individual project pursuant to the following criteria. However, the Council will not always elect to participate even though one or more of the criteria may be met.

(c) *Specific criteria.* The Council is likely to enter the section 106 process at the steps specified in the regulations in this part when an undertaking:

(1) *Has substantial impacts on important historic properties.* This may include adverse effects on properties that possess a national level of significance or on properties that are of unusual or noteworthy importance or are a rare property type; or adverse effects to large numbers of historic properties, such as impacts to multiple properties within a historic district.

(2) *Presents important questions of policy or interpretation.* This may include questions about how the Council's regulations are being applied or interpreted, including possible foreclosure or anticipatory demolition situations; situations where the outcome will

set a precedent affecting Council policies or program goals; or the development of programmatic agreements that alter the way the section 106 process is applied to a group or type of undertakings.

(3) *Has the potential for presenting procedural problems.* This may include cases with substantial public controversy that is related to historic preservation issues; with disputes among or about consulting parties which the Council's involvement could help resolve; that are involved or likely to be involved in litigation on the basis of section 106; or carried out by a Federal agency, in a State or locality, or on tribal lands where the Council has previously identified problems with section 106 compliance pursuant to § 800.9(d)(2).

(4) *Presents issues of concern to Indian tribes or Native Hawaiian organizations.* This may include cases where there have been concerns raised about the identification of, evaluation of or assessment of effects on historic properties to which an Indian tribe or Native Hawaiian organization attaches religious and cultural significance; where an Indian tribe or Native Hawaiian organization has requested Council involvement to assist in the resolution of adverse effects; or where there are questions relating to policy, interpretation or precedent under section 106 or its relation to other authorities, such as the Native American Graves Protection and Repatriation Act.

Dated: December 4th, 2000.

John M. Fowler,

Executive Director.

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