## SECTION 3.0 OTHER PLANNING SPECIES

This section provides the Species Accounts and Planning Recommendations for four planning species that are not proposed for regulatory coverage as they appeared in the Draft Southern Planning Guidelines (May 2004):

- Merlin (*Section 3.1*)
- Intermediate Mariposa Lily (*Section 3.2*)
- Mud Nama (*Section 3.3*)
- Salt Spring Checkerbloom (*Section 3.4*)

This section also presents the discussion from the Draft Southern Planning Guidelines for planning area-wide species considerations regarding the golden eagle, mountain lion and mule deer.

*Figures E-1* through *E-4* for the four planning species are provided at the end of this section.

### 3.1 MERLIN

Merlin (*Falco columbarius*)
USFWS: None
CDFG: CSC

### REGIONAL STATUS

The merlin's summer breeding range includes the interior or western North America from Alaska, through most of Canada, eastward to Newfoundland southward to Washington and Maine. It winters in southern California, northern Mexico and southern Texas. Within California merlins are an uncommon winter migrant from September to May. They occur in most of the western half of the state below about 1,500 m (3,900 ft) (Zeiner *et al.* 1990). It is a rare winter migrant in the Mojave Desert and a few records are from the Channel Islands (Zeiner *et al.* 1990). Merlin numbers have declined markedly in California in recent decades.

The CNDDB does not contain any occurrence records for the merlin. In San Diego County, Unitt (1984) characterizes the merlin as a rare winter visitor that is usually seen around agricultural areas, grasslands or mudflats, where they prey on shorebirds. In San Diego they are mostly seen along the coastal slope and only once, for example, in the Anza Borrego Desert at Agua Caliente Springs.

In western Riverside County, merlins also occur locally as very rare winter visitors in suitable habitat. It is more frequently observed within western Riverside County as a spring and fall migrant/transient, but even then it is infrequently observed and there are few records for the area. The merlin has been observed in western Riverside County in and around the Mystic Lake-San Jacinto Wildlife Area, the Jurupa Hills, Prado Basin-Santa Ana River, the Lakeview Mountains, Diamond Valley Reservoir, Wilson Valley, and Skunk Hollow (Dudek 2002).

In Orange County records for the species also are sparse, with observations at Dana Point, Bolsa Chica, San Juan Capistrano, Irvine, Peter's Canyon, Silverado Canyon and Yorba Regional Park (Hamilton and Willick 1996). Bloom and Bontrager have observed the merlin on RMV land on several occasions, as described below.

Merlins use a wide variety of habitats for breeding and foraging. Range-wide, merlins breed in open country (e.g., open coniferous woodland, prairie) and winter in open woodlands, grasslands, cultivated fields, marshes, estuaries and sea coasts (AOU 1998). Within southern California, birds are often found in these same habitats and are rarely found in heavily wooded areas or over open deserts (Garrett and Dunn 1981). Merlins frequent coastlines, open grasslands, savannas, woodlands, lakes, wetlands, edges, and early successional stages where they forage while flying at low levels primarily for avian prey species (Zeiner *et al.* 1990). Most studies report a specialization on one or two locally abundant species of small birds. A given principal prey species in an area usually is one of the most abundant species in the area; often forages away from cover making it more vulnerable to predation; and weighs in the range of 20 to 40 g (Sodhi and Oliphant 1993). Dense tree stands may be used for cover and frequently are close to bodies of water. They may nest in small groves of deciduous trees adjacent to open areas for foraging. They frequently occur in areas with undulating topography (Sodhi *et al.* 1993).

The merlin breeds in Alaska and Canada and is not a breeding resident in California. It may use abandoned stick nests of crows or magpies, usually in conifers but also in deciduous trees. Occasionally it nests in cavities, on cliffs, in deserted buildings, on the ground, or in old nests of other birds (Craighead and Craighead 1956; Brown and Amadon 1968). The clutch of four to five eggs is laid from late May into June. It incubates 28-32 days, and chicks fledge at about 24 days (Trimble 1972).

The decline of merlins in California may partially be the result of the conversion of suitable open foraging habitats, and also possibly due to environmental contaminants that have affected their prey base (Remsen 1978). Most nesting merlin populations are no longer affected by pesticide contamination and appear to be reproducing well. However, the loss of suitable habitat within important nesting site areas also may be the major factor affecting merlin numbers (Cade 1982).

**Subregional Status**

Although mapped merlin locations are not in the NCCP database, they are known to occur in Chiquita Canyon and Cañada Gobernadora. Bontrager reported three sightings in RMV in February-March 1990 (Bontrager 1990). Two merlins were observed during SOCTIIP surveys in 1995 north of Ortega Highway (MBA 1996); one in Chiquita Canyon south of Oso Parkway and the other on the ridge between Chiquita Canyon and Cañada Gobernadora. Bloom indicated that merlins are particularly apt to occur in lower Chiquita Canyon within approximately 275 m (900 ft) of the creek (*Figure E-1*). Merlins also may be expected to forage in grasslands in Cristianitos Canyon, along Radio Tower Road, and in upper Gabino Canyon. Because this species is rare and not a resident breeding species, *major* and *important populations* are not identified. However, based on Bloom's assessment (Bloom, pers. comm. 1998), Chiquita Canyon is considered a *key foraging location* for the merlin in the subregion.

**Protection Recommendations**

- Protect grassland foraging habitat to the extent feasible in the Chiquita Canyon, Cristianitos Canyon and upper Gabino Canyon sub-basins.
- Protect the major north-south connection to Central San Juan Creek by providing a habitat linkage between Chiquita Creek and the eastern edge of Ladera Open Space in order to maintain habitat integrity between the creek and the ridge.
- Protect grasslands south of San Juan Creek and Ortega Highway along Radio Tower Road to the RMV boundary with Prima Deshecha Landfill.

**Management Recommendations**

- Pursuant to the Grazing Management Plan, implement grazing management techniques to help protect foraging habitat for the merlin, promote perennial grasses including native grasses, allow for continued cattle grazing sufficient to support cattle ranching operations, and, where appropriate reduce fuel loads for fire.
- Pursuant to the Fire Management Plan, implement prescribed burning techniques to promote native perennial grasses.

**Restoration Recommendations**

- Implement a CSS/VGL restoration program to enhance foraging habitat value. Restoration areas that would benefit the merlin include Chiquita Ridge, Sulphur Canyon, Chiquadora Ridge, upper Cristianitos and upper Gabino Canyon.

## 3.2 INTERMEDIATE MARIPOSA LILY

Intermediate Mariposa Lily (*Calochortus weedii* var. *intermedius*)
Federal: None
State: None
CNPS: List 1B.2

**Regional Status**

The intermediate mariposa lily is a perennial geophyte in the lily family (Liliaceae) that occurs in coastal sage scrub, chaparral and grassland/scrub ecotones. Stems heights are variable, reaching to 0.8 to 2.0 m (M. Elvin, pers. obs.). The plant typically produces from 3 to 4 campanulate flowers ranging from 2.5 to 3 cm long. The petals are broadly cuneate-obovate and light yellow tinged (sometimes with purple) and usually fringed with yellow hairs. The intermediate mariposa lily is distinguished from *C. w. weedii* by petal shape and color with bright yellow petals on *C. w. weedii,* and from C*. w. vestus* by the abruptly pointed anthers on C*. w. vestus*.

The intermediate mariposa lily is known from Orange, Riverside and Los Angeles counties and at least one putative occurrence in Ventura County.

In Riverside County, occurrences are known from the Winchester quadrangle, in the hills west of Crown Valley and northwest of Rawson Canyon; the Vail Lake Quadrangle approximately one-half mile southwest of Vail Lake dam; the Corona South near the mouth of Hagadoor Canyon.

Orange County supports the majority of the extant populations with significant populations found in the Central/Coastal Subregion. Up to 83,000 individuals are reported from the Central/Coastal Subregion, including approximately 46,535 from within the NCCP Reserve and 6,209 in the North Ranch Policy Plan Area that is also dedicated open space. The Southern Subregion supports about 12,800 individuals, or about 12 percent of the known individuals in the County.

**Subregional Status**

Intermediate mariposa lily generally occurs in four main areas on RMV (*Figure E-2*): Chiquita Canyon/Chiquadora Ridge, Gobernadora east of the creek/northern Central San Juan Creek sub-basin, Cristianitos Canyon/southern Trampas Canyon sub-basin, and La Paz Canyon. A few scattered locations also occur in the Foothill-Trabuco Specific Plan area on the Saddleback Meadows site. Except for the La Paz Canyon and Saddleback Meadows locations, this species tends to occur in association with many-stemmed dudleya in the planning area. A total of about

130 locations are known from the planning area with about 12,800 counted individuals. Of the 130 locations, approximately 111 (85 percent) are on RMV land.

Within the subregion this species is most often found growing under or through shrubs in open coastal sage scrub associated with Cieneba sandstone outcrops or Cieneba sandy loams within the Santiago geologic formations. In other limited areas, this species is associated with cobbly loams or clay loams that support coastal sage scrub or chamise chaparral.

The following describes the *major* and *important populations* and *key locations* of the intermediate mariposa lily in the planning area:

- La Paz Canyon supports two locations of about 322 and 485 individuals, respectively (No. 1 on *Figure E-2*). These locations may be considered *important populations* because they contribute to the geographic diversity of the species in the subregion.
- Lower Gabino/Blind canyons support two locations of about 12 and 305 individuals, respectively (No. 2 on *Figure E-2*). These locations are on the southern boundary with Cristianitos Canyon. These locations may be considered *important populations* because they contribute to the geographic diversity of the species in the subregion.
- Cristianitos Canyon within the Donna O'Neill Land Conservancy supports five locations of unknown size (data base has population size of 1) (No. 3 on *Figure E-2*). In addition, about 15 locations occur west and south of the Cristianitos sub-basin contiguous with these five locations in Talega Development Open Space, with the largest population at 17 individuals. These combined locations may be considered an *important population* because they contribute to the geographic diversity of the species in the subregion.
- The southern edge of the Trampas Canyon sub-basin supports eight locations, with one population numbering 640 individuals, but the others numbering less than 50 individuals (No. 4 on *Figure E-2*). These locations may be considered an *important population* because they contribute to the geographic diversity of the species in the subregion.
- Lower Chiquita Ridge west of the creek supports three locations numbering about 21, 47, and 625 individuals (No. 5 on *Figure E-2*). Although these locations do not support large populations, together they may be considered to an *important population* in a *key location* because Chiquita Ridge is a key landscape feature and habitat linkage in the subregion.
- Lower Chiquita Canyon east of the creek and south of the treatment plant supports about 18 locations, with most uncounted, but one relatively large population of 660 individuals (No. 6 on *Figure E-2*). These scattered locations, along with the location numbering 660 individuals, may be considered an *important population.* Whether this population is also in a *key location* depends of the protection status of the Chiquita Ridge and Chiquadora Ridge populations, as described in the next section.

- Middle Chiquita Canyon supports five scattered locations north of the Narrows and both east and west of the creek. The largest of the five locations is about 260 individuals. Two locations north of Oso Parkway occur in the Upper Chiquita Conservation Easement, with one location supporting only one individual and the other supporting ten individuals. Because of the few number of locations and the small number of individuals at each, these locations probably are not *important populations* or in *key locations.*

Chiquadora Ridge supports about 14 locations totaling about 2,000 individuals (No. 7 on *Figure E-2*). These locations constitute a *major population* in a *key location* because Chiquadora Ridge is a key landscape feature in the subregion and serves an important habitat connection function.

- Gobernadora sub-basin east of the creek and the northern portion of the Central San Juan Creek sub-basin supports more than 50 locations, with eight locations numbering more than 200 individuals and the two largest locations 775 and 1,300 individuals each (No. 8 on *Figure E-2*). This area supports a total of about 6,600 individuals, or about 51 percent of the individuals in the subregion and about 6 percent of the population in Orange County. The location supporting 1,300 individuals is the single largest population in the subregion. These locations comprise a *major population* in a *key location.*

**Protection Recommendations**

- Protect approximately six locations along Chiquita Ridge, along with the location south of the treatment plant that supports 660 individuals, totally protection for about 1,600 individuals. Although these locations are scattered, together they comprise an *important population* in a *key location.*
- Protect the 14 locations comprising the *major population* on Chiquadora Ridge, for total protection of about 2,000 individuals.
- Protect two locations in the eastern portion of the Gobernadora sub-basin of 315 and 135 individuals each.
- Protect all known locations of intermediate mariposa lily in the San Mateo Watershed, totaling about 18 locations and more than 2,300 individuals.
- Salvage and translocate intermediate mariposa lily to the extent feasible and appropriate, as described below under Restoration Recommendations.

**Management Recommendations**

As part of the Adaptive Management Program, the following management activities for intermediate mariposa lily will be conducted:

- Control non-native invasive species such as cardoon, ryegrass, and mustards.
- Manage grazing in a manner that optimizes the control of non-native grasses (*Lolium*, *Bromus, Avena*) while allowing for proliferation of the native grasses and forbs. The optimum grazing pattern has not been established and will be part of the Adaptive Management Program.
- Conduct prescribed burning where appropriate and as described in the Fire Management Program.
- Protect intermediate mariposa lily populations from human disturbance such as hiking, mountain bikes and equestrian activities.

**Restoration Recommendations**

- Translocate salvaged intermediate mariposa lily to areas where suitable soil conditions occur. Specific translocation areas have not been identified, but based on the existing distribution, potential general translocation areas include Chiquita Ridge, Chiquadora Ridge, upper Cristianitos Canyon, La Paz Canyon.

- Initiate a seed collection program in 2003 if sufficient rain falls to warrant the collection program. Receiver sites should be identified in the winter of 2003 and a pilot program should be implemented to determine the effectiveness of propagation from seed.

## 3.3 MUD NAMA

Mud Nama (*Nama stenocarpum* )
Federal: None
State: None
CNPS: List 2.2

### Regional Status

Mud nama is a prostrate to ascending annual with short soft silky hairs, short glandular hairs, and some stiff hairs that are swollen at the base. The leaves vary from 5-30 mm and are typically oblanceolate or spoon shaped with wavy margins and rolled edges. The flowers are white to cream and the corolla is funnel shaped and 4-6 mm long.

This species occurs in vernally wet areas including vernal pools, the drying margins of lakes and ponds, and other intermittently wet areas. Historically in California, this species was known from Los Angeles, Orange, San Diego, Riverside and Imperial counties, across the desert through the southwestern U.S. to Texas and into Mexico. This species is also known from San Clemente Island. This species is believed to be extirpated from Los Angeles and Imperial counties and there were no recent records from Riverside County and Orange County. However, this species was identified in a vernal pool at Fairview Park in Costa Mesa in 1996, and at the Chiquita Ridge vernal pool in 1997. Three other populations have been identified on RMV since that time, one along the edge of a stockpond near the O'Neill residence and the other two along the edge of stock ponds between Cristianitos and Trampas canyons. A large population consisting of thousands of plants was also recently discovered at Mystic Lake along the San Jacinto River and another Orange County population was identified at the Lambert Reservoir in Central Orange County.

### Subregional Status

As noted above, there are four occurrences known from the planning area (*Figure E-3*), including the 1.2-acre vernal pool on Chiquita Ridge (500 individuals), along the margins of a stock pond immediately west of a Ranch residence south of Ortega Highway (350 individuals), and from the margins of two stock ponds located between Cristianitos and Trampas canyons south of Ortega Highway (7,500 and 2,000 individuals, respectively). The Rancho Mission Viejo populations vary considerably in size from year to year based upon rainfall. In dry years they may not appear at all and in wet years they number in the tens or hundreds.[1] Because the mud nama is so rare, all populations on RMV are *important populations* in *key locations.*

[1] Bomkamp, Tony. 2002. Personal Observations of the three populations between 1997 and 2001.

**Protection Recommendations**

- Protect the three known populations of mud nama on RMV property and their hydrologic sources. The fourth population is located in Ladera Open Space on Chiquita Ridge.

**Management Recommendations**

Implement a management program for mud nama, including control of non-native invasive species, management of grazing as part of the Adaptive Management Program, and prevention of human disturbance.

**Restoration Recommendations**

Mud nama responds very favorably to restoration efforts, as exemplified in the Fairview Park vernal restoration project. Five years of monitoring indicate that it has become well established in restored portions of the vernal pool (Bomkamp, pers. comm. 2002).

Through implementation of the Adaptive Management Program significant management opportunities that could substantially increase both the number of occupied sites of mud nama along with the total number of individuals within the subregion are available. As noted above, mud nama occupies drying ponds, including vernal pools and like many such annuals is likely dispersed by water fowl which carry seeds over long distances. Such species typically respond well to translocation or introduction efforts.

Potential introduction sites include: **(1)** the vernal pools located along Radio Tower Road; **(2)** the two unoccupied vernal pools on Chiquita Ridge; **(3)** the margins of seasonal ponds in the GERA; and **(4)** the margins of seasonal ponds in the Tesoro High School Mitigation site in Chiquita Canyon. All of these sites exhibit high potential for success and, as noted above, would result in an increase in the number of occupied site and an increase in total number of individuals.

## 3.4 SALT SPRING CHECKERBLOOM

Salt Spring Checkerbloom (*Sidalcea neomexicana* )
Federal: None
State: None
CNPS: List 2

**Regional Status**

Salt Spring checkerbloom is known to occur within California, Arizona, Baja California, Nevada, New Mexico, Utah, Idaho, Wyoming, Sonora (Mexico), and "elsewhere" (the CNPS Inventory [2001] is not specific in this regard). Within California this species is known from Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura counties (CNDDB 2003). Within these areas, Salt Spring checkerbloom is found at elevations below 1,500 m (4,921 ft) (Hickman 1993).

The CNDDB has 15 occurrences for the Salt Spring checkerbloom, as summarized in the table below

### DISTRIBUTION OF SALT SPRING CHECKERBLOOM IN CALIFORNIA

| County | General Locations |
|---|---|
| Los Angeles | Bryant Ranch, Claremont, Santa Monica |
| Orange | Lower Chiquita and Gobernadora canyons in slope wetlands |
| Riverside | San Jacinto Valley |
| San Bernardino | Twentynine Palms; Rabbit Springs in Lucerne Valley, San Bernardino; Chino Creek south of Ontario |
| San Diego | North end of Lake Cuyamaca |
| Ventura | Southern Pacific Railroad between Santa Ana Blvd. and San Antonio Creek Bridge; upper Cuyama Valley; east end of Lockwood Valley; northeast slope of Mt. Pinos |

According to CNPS (2001), Salt Spring checkerbloom is known to occur within chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, playas, alkaline habitat and mesic habitats. The ecological data provided with the CNDDB records confirms these habitat associations. Some of the species Salt Spring checkerbloom has been associated with include yerba mansa (*Anemopsis californica*), large-flowered sand-spurrey (*Spergularia macrotheca*), (*Juncus* sp.), heliotrope (*Heliotropium* sp.), Great Basin sagebrush (*Artemisia tridentata*), and rubber rabbitbrush (*Chrysothamnus nauseosus*), the latter two species being

common in Mojavean desert scrub. Salt Spring checkerbloom is a perennial herb that blooms from March through June (CNPS 2001).

No literature was found on the life-history traits of Salt Spring checkerbloom.

**Subregional Status**

Salt Spring checkerbloom is found in two slope wetlands in lower Chiquita Canyon and one slope wetland in Gobernadora Canyon (*Figure E-4*). The Chiquita locations numbered 1,200 individuals for the northern location and 300 individuals for the southern location, respectively, during SOCTIIP surveys in 1995. The Gobernadora occurrence numbered only three individuals when it was first discovered in 2003. As described in the "Baseline Geomorphic and Hydrologic Conditions Report," these slope wetlands are perennially moist wetlands located along the toe of the slopes in lower Chiquita Canyon and are maintained by subsurface water movement in the sub-basin.

**Protection Recommendations**

- Protect the two locations of Salt Spring checkerbloom in the two slope wetlands in lower Chiquita Canyon.

**Management Recommendations**

- Maintain existing slope wetland hydrology supporting the two locations of salt spring checkerbloom.

## 3.5 GOLDEN EAGLE

### Planning Considerations – Existing Conditions and Resources

Golden eagles are an uncommon resident in the subregion. They are known to nest in the Cleveland National Forest, and although they are not known to nest on RMV, they occasionally forage in grasslands and agricultural areas throughout much of RMV, but especially in grasslands and agricultural areas in the Chiquita, Gobernadora, upper Gabino, Cristianitos and Talega sub-basins.

### Protection Recommendations

- Protect foraging habitat for the golden eagle to the extent feasible in the Chiquita, Gobernadora, upper Gabino, Cristianitos and Talega sub-basins.

## 3.6 MOUNTAIN LION

### Planning Considerations – Existing Conditions and Resources

Mountain lions range throughout much of the undeveloped portions of the planning area. The most extensive work on mountain lions in the study area has been conducted by Beier and Barrett (1993) using radiotelemetry to track lion movements. They included virtually the entire planning area as mountain lion habitat for the Santa Ana Mountains population. They also identified important lion use areas in the planning area, including Arroyo Trabuco, General Thomas F. Riley Regional Park and the Donna O'Neill Land Conservancy at Rancho Mission Viejo. The FTC surveys also recorded mountain lions at three camera stations: Northrop Grumman/Cristianitos, Blind and Gabino canyons, and Sulphur Canyon. While much of the planning area provides habitat for the mountain lion, Gabino, La Paz, and Blind canyons in the San Mateo Watershed and Verdugo Canyon in the San Juan Creek Watershed provide particularly important "live-in" and movement habitat connecting the southern portions of the planning area with the Cleveland National Forest. The western portion of the planning area, including Arroyo Trabuco, Sulphur Canyon, and Chiquita Ridge, provide important movement habitat, but are less suitable as "live-in" habitat because habitat blocks are not as large and adjacent urban development increases the risk of mountain lion mortality from vehicle collisions and depredation.

### Protection Recommendations

- Protect "live-in" habitat within the portion of the San Mateo Watershed in the planning area and Verdugo Canyon in the San Juan Creek Watershed adequate to meet the life history requirements of the mountain lion, comprising a large, unfragmented block of chaparral and coastal sage scrub directly connected to more than 100,000 acres in Caspers Wilderness Park, the Cleveland National Forest, and Camp Pendleton. (Beier and Barrett [1993] describe the Santa Ana Mountain Range as encompassing 800 $mi^2$ [512,000 acres) of "contiguous wildlands used by cougars." This habitat includes the Santa Margarita Mountains, the Santa Rosa Plateau, the Chino Hills and the San Joaquin Hills.) "Live-in" habitat provides adequate prey (primarily mule deer) and vertical and horizontal cover suitable as resting and bedding sites (e.g., woodlands and riparian areas, rocky areas). The reader should note that the "live-in" habitat within in the San Mateo Watershed portion of the planning area and Verdugo Canyon would only provide about 25-30 percent of an average mountain lion home range in the Santa Ana Mountains (Padley 1989, 1996), and that the home range of any lions using the planning area likely will include Caspers Wilderness Park, Audubon Starr Ranch Sanctuary, Cleveland National Forest, and Camp Pendleton.

- Maintain habitat connections throughout the planning area to provide movement opportunities for the mountain lion. As described above for individual sub-basins, as well as other areas in the planning area, important movement areas for mountain lion include Arroyo Trabuco, the Foothill-Trabuco Specific Plan Area, Chiquita Ridge, Sulphur Canyon, San Juan Creek, Trampas Canyon, Cristianitos Canyon, Verdugo Canyon, Gabino Canyon, La Paz Canyon and Talega Canyon.

**Management Recommendations**

In areas identified as "live-in" habitat or habitat connections, roads that are necessary to serve approved land and water uses located inside or outside the Habitat Reserve shall be designed and sited to accommodate mountain lion movement to the maximum extent feasible. Where roads are necessary, under the approved NCCP/HCP, they will be designed consistent with safety, roadway design criteria that are appropriate for the setting and desired roadway function. Roadway design shall include bridges and/or culverts large enough to accommodate mountain lion movement at key areas and, where appropriate and feasible, may include wildlife over crossings. As appropriate, fencing, grading and plant cover will be provided to serve wildlife crossings consistent with conservation principles and the adaptive management program. Where feasible and safe, lighting along roadways within the Habitat Reserve should be avoided. Where roadway lighting within the Habitat Reserve is necessary for public safety reasons, it should be low-sodium or similar low intensity lighting that is directed away or shielded from the Habitat Reserve.

## 3.7 MULE DEER

### Planning Considerations – Existing Conditions and Resources

Mule deer are common in the planning area in coastal sage scrub, chaparral, and woodland habitats. A radiotelemetry study of mule deer was conducted by Padley (1992) in what he termed the "Gabino" and "Chiquita" general areas. This study characterized habitats use and movement patterns and concluded that mule deer in the planning area are year-round residents (i.e., they do not migrate) and their home ranges are relatively small. Also, there are no critical resource areas (e.g., meadows or mineral licks). Areas frequently used by deer include most of the major drainages and canyons, including Chiquita Canyon, Blind Canyon, Verdugo Canyon, Gabino Canyon, La Paz Canyon, and Trampas Canyon. Deer also frequent Arroyo Trabuco, Gobernadora Canyon, Bell Canyon, and many other smaller drainages. In addition, mule deer are the main prey of mountain lions and their presence in the planning area is important for maintaining the mountain lion population.

### Protection Recommendations

- Protect “live-in” habitat within the portion of the San Mateo Watershed in the planning area adequate to meet the life history requirements of the mule deer, comprising a large, unfragmented block of chaparral and coastal sage scrub directly connected to Caspers Wilderness Park, the Cleveland National Forest, and Camp Pendleton.

- Protect “live-in” habitat within the San Juan Creek Watershed in the planning area adequate to meet the life history requirements of the mule deer, including Chiquita Ridge, Chiquadora Ridge, the ridgeline separating the Chiquita and Wagon Wheel sub-basins, and the ridgeline separating the Gobernadora and Bell Canyon sub-basins that directly connects to Caspers Wilderness Park and Audubon Starr Ranch Sanctuary.

- Maintain habitat connections throughout the planning area to provide movement opportunities for the mule deer. As described above for individual sub-basins, as well as other areas in the planning area, important movement areas for mule deer include Arroyo Trabuco, the Foothill-Trabuco Specific Plan Area, Chiquita Ridge, Sulphur Canyon, San Juan Creek, Trampas Canyon, Cristianitos Canyon, Verdugo Canyon, Gabino Canyon, La Paz Canyon and Talega Canyon.

### Management Recommendations

In areas identified as “live-in” habitat or habitat connections, roads that are necessary to serve approved land and water uses located inside or outside the Habitat Reserve shall be designed and

sited to accommodate mule deer movement to the maximum extent feasible. Where roads are necessary, under the approved NCCP/HCP, they will be designed consistent with safety, roadway design criteria that are appropriate for the setting and desired roadway function. Roadway design shall include bridges and/or culverts large enough to accommodate mule deer movement at key areas and, where appropriate and feasible, may include wildlife over crossings. (note: of the large mammal species, mule deer are the most sensitive to bridge and culvert design. Designs that accommodate mule deer are generally suitable for mountain lion, bobcat and coyote.) As appropriate, fencing, grading and plant cover will be provided to serve wildlife crossings consistent with conservation principles and the adaptive management program. Where feasible and safe, lighting along roadways within the Habitat Reserve should be avoided. Where roadway lighting within the Habitat Reserve is necessary for public safety reasons, it should be low-sodium or similar low intensity lighting that is directed away or shielded from the Habitat Reserve.