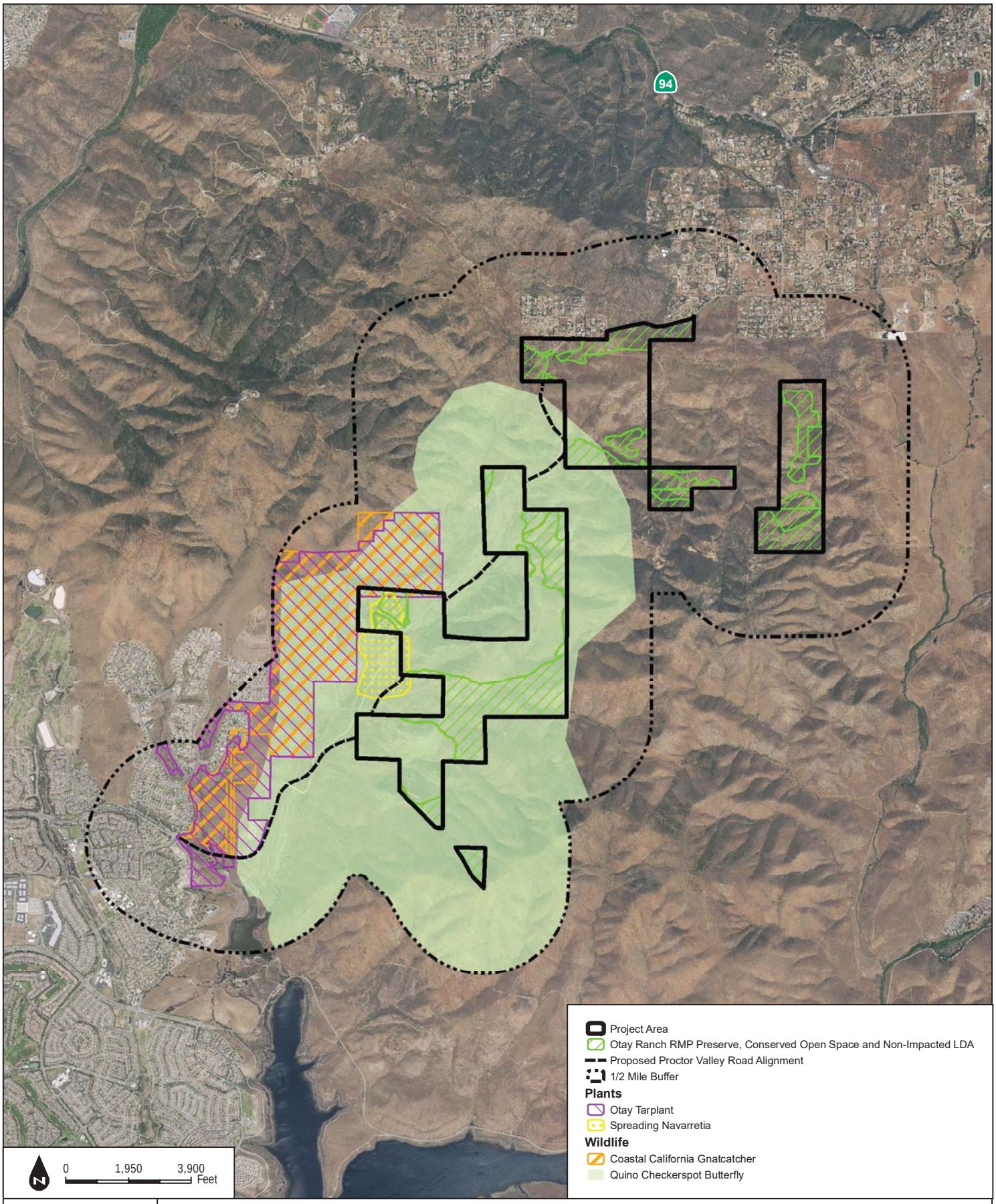

SOURCE: NAIP 2016; Hunsaker 2017; USFWS 2016

FIGURE 2-2

Critical Habitat

DUDEK

Otay Ranch Village 14 and Planning Areas 16/19 - Preserve Status Report

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Munz's Sage (*Salvia munzii*), List B

Munz's sage is a CRPR 2B.2 and County List B species. This perennial evergreen shrub typically blooms from February to April. It occurs in chaparral and coastal scrub habitat types, at elevations of 394–3,494 feet amsl (CNPS 2016). Munz's sage is a common species in some of the coastal sage scrub and chamise chaparral communities within the Project Area. Although not all *Salvia* individuals could be identified to species due to the timing of the rare plant surveys, approximately 6,3656,464 individuals were confirmed as Munz's sage. The majority of Munz's sage, totaling 4,052 individuals, occurs throughout the Otay Ranch RMP Preserve in Planning Area 16 (3,265 individuals) and Village 14 (787 individuals), with other populations in Conserved Open Space, and non-graded LDA (Figures 2-1 and 2-1A through 2-1U).

There is 3.7 acres of Munz's sage dominated coastal sage scrub within the Conserved Open Space (0.5 acres) and non-graded LDA (3.2 acres).

San Diego Sagewort (*Artemisia palmeri*), List D

San Diego sagewort, a CRPR 4.2 and County List D species, occurs in a variety of vegetation communities including chaparral, coastal scrub, riparian forest, scrub and woodland, at elevations ranging from 50 to 3,000 feet amsl. This deciduous shrub blooms from May to September. One occurrence of this species, totaling four individuals, was observed within the Otay Ranch RMP Preserve in Planning Area 16, and there are eight individuals within the non-graded LDA.

Southwestern Spiny Rush (*Juncus acutus* ssp. *leopoldii*), List D

Southwestern spiny rush is a CRPR 4.2 and County List D species found within mesic coastal dunes, meadows and alkali seeps, and coastal saltwater marshes and swamps. The typical blooming period for this rhizomatous herb is between May and June, and it occurs at elevations less than 3,000 feet amsl. Approximately 480 individuals of southwestern spiny rush were observed within the Otay Ranch RMP Preserve in Planning Areas 16, and 12 individuals within the Conserved Open Space in Planning Area 16 generally within cismontane alkali marsh, other riparian vegetation, and ephemeral channels.

Golden-Rayed Pentachaeta (*Pentachaeta aurea* ssp. *aurea*), List D

Golden-rayed pentachaeta is a CRPR 4.2 and County List D species found at elevations of 260 to 6,070 feet amsl within a variety of vegetation communities, including chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland, as well as valley and foothill grassland. This annual herb typically blooms between March and July.

Approximately 6,248 individuals were recorded within the non-graded LDA and 10 individuals occurring the Otay Ranch RMP Preserve in Village 14.

Ashy Spike-Moss (*Selaginella cinerascens*), List D

Ashy spike-moss is a CRPR 4.1 and County List D species. This perennial rhizomatous herb occurs in chaparral and coastal scrub at elevations of 66 to 2,100 feet amsl. Ashy spike-moss was observed within throughout portions of the Project Area but due to its low ranking, only locations (not population numbers) for this species were recorded. The extent of occurrences were mapped; however, due to the difficulty of discerning individuals, populations were not counted. Occurrences of ashy spike-moss in Village 14 total 0.15 acres within the Otay Ranch RMP Preserve and 0.05 acres of the Conserved Open Space. A total of 2.73 acres were mapped within Planning Area 16, including in the Otay Ranch RMP Preserve (1.15 acres), Conserved Open Space (0.36 acres), and non-graded LDA (1.22 acres).

San Diego County Viguiera (*Bahiopsis laciniata*), List D

San Diego County viguiera is a CRPR 4.2 and County List D species. This shrub is found at elevations ranging from 200 to 2,460 feet amsl in chaparral and coastal scrub. This species typically blooms from February to June. San Diego County viguiera occurs as a common shrub in some of the coastal sage scrub within the Project Area as well as throughout other vegetation communities. Due to its low ranking and common observations within the Project Area, only locations and approximate populations within the Village 14 Development Area were recorded. A total of approximately 11,743~~11,869~~ individuals were recorded mostly within the Planning Area 16 Otay Ranch RMP Preserve (7,225 individuals) with additional populations recorded in Conserved Open Space (434 individuals) and non-graded LDA (3,484~~3,610~~ individuals). Approximately 600 individuals were recorded in the Village 14 Otay Ranch RMP Preserve.

There are 5.1 acres of Viguiera-dominated coastal sage scrub within the non-graded LDA.

San Diego County Needle Grass (*Stipa [=Achnatherum] diegoensis*), List D

San Diego County needle grass is a CRPR 4.2 and County List D species. This perennial grass occurs in chaparral and coastal sage scrub at elevations less than 7,480 feet amsl. This species typically blooms from February to June. San Diego County needle grass was observed during 2017 focused plant surveys within chaparral and coastal sage scrub communities. Locations were mapped within the Planning Area 16 Otay Ranch RMP Preserve (27 individuals) and non-graded LDA (55~~80~~ individuals).

3.1.2 Special-Status Plant Species With a Moderate Potential to Occur

Plant species with a moderate potential to occur within the Otay Ranch RMP Preserve, Conserved Open Space, and non-graded LDA include small-flowered microseris (*Microseris douglasii* ssp. *platycarpha*), little mousetail (*Myosurus minimus* ssp. *apus*), and chaparral ragwort (*Senecio aphanactis*) (Table 5). The potential-to-occur determination is based on elevation, habitat, and soils present within the Project Area and Dudek's knowledge of biological resources in the area and regional distribution of each species. Species that have moderate or high potential to occur within the Otay Ranch RMP Preserve, Conserved Open Space, and non-graded LDA are described in more detail in Table 5.

Table 5
Special-Status Plant Species That Have Moderate Potential to Occur within the Otay Ranch RMP Preserve, Conserved Open Space, and/or Non-Graded LDA

Species	Status (Federal/ State/CRPR / MSCP South County / County)	Primary Habitat Associations/Life Form / Blooming Period/ Elevation Range	Potential to Occur
Small-flowered microseris (*Microseris douglasii* ssp. *platycarpha*)	None/None/4.2/ None/List D	Cismontane woodland, coastal scrub, valley and foothill grassland, vernal pools; clay/annual herb/March–May/50–3,500 feet amsl	This has been recorded in the vicinity (CNPS 2016; SDNHM 2016). There is suitable habitat within the Preserve areas; however, this inconspicuous annual species was not detected during the focused plant surveys.
Little mousetail (*Myosurus minimus* ssp. *apus*)	None/None/3.1/ Covered/List C	Vernal pools, valley and foothill grassland; alkaline/annual herb/March–June/60–2,100 feet amsl	This species is recorded adjacent to Proctor Valley Road near the Project Area (CDFW 2017) and there is suitable habitat within Preserve areas; however, it was not detected during focused plant surveys. Therefore, it is considered to have a moderate potential to occur on site.
Chaparral ragwort (*Senecio aphanactis*)	None/None/2B.2/ None/List B	Chaparral, cismontane woodland, coastal scrub/sometimes alkaline/annual herb/ January–April/50–2,625 feet amsl	This species is recorded within the vicinity (CNPS 2016; CDFW 2016b), including the Jamul Mountains quadrangle. There is suitable habitat within the Preserve areas. This early-blooming annual species may not have been detected during focused surveys given the timing of its bloom period.

3.1.3 Anticipated Conservation Levels for Special-Status Plant Species

The RMP provides a summary of the distribution of special-status plant species within Otay Ranch. Policy 2.7 of the RMP outlines standards of preservation of various plant species while

Table 5 of the RMP provides a summary value of how well the RMP Preserve protects each species afforded coverage by the RMP. The value of preservation is expressed in percentages, which the RMP states is a "subjective assessment of the overall quality and quantity of the on-site population(s) of each species that is incorporated into the Preserve. It is primarily a measure of the percentage of the area of the Otay Ranch distribution of each species included in the Preserve" (City of Chula Vista and County of San Diego 1993b). A total of 85 plant and animal species are "covered" by the MSCP Plan. With approval of each Subarea Plan and corresponding implementing agreement, each participating local jurisdiction received permits and/or management authorized to directly impact or "take" MSCP Covered Species. The Covered Species include species listed as endangered or threatened by the federal or state Endangered Species Acts, as well as unlisted species. Table 3-4a in the MSCP Plan provides a list of the MSCP Covered plant species. Table 3-5 in the MSCP Plan includes specific conditions required for take authorizations as well as the conservation level anticipated for each Covered Species. Table 6 provides the RMP and MSCP Plan anticipated conservation levels for each special-status plant species observed within the Otay Ranch RMP Preserve and the Proposed Project's contribution to the preservation of the species.

Table 6
Otay Ranch RMP and MSCP Anticipated Conservation Levels for Special-Status Plant Species

Species Scientific Name/ Common Name	Regulatory Status: Federal/ State/ MSCP Coverage CRPR	Otay Ranch RMP	MSCP Table 3-5	Project Preservation
County List A				
Arctostaphylos otayensis Otay manzanita	None None Covered 1B.2	The RMP Ranch-wide standard included in the Preserve a minimum of 75% of known occurrences.	The MSCP provides coverage for this species because it places 100% of the major populations into the Preserve.	The Proposed Project would conserve 100% of the populations within the Otay Ranch RMP Preserve.
Bloomeria clevelandii San Diego goldenstar	None None 1B.1 Covered	The RMP Ranch-wide standard included in the Preserve a minimum of 54% of known points of occurrence. The RMP anticipated 54% of known Otay Ranch populations of this species to be retained in the Preserve.	The MSCP provides coverage for this species because the plan would place into the Preserve 8 of 11 major populations (72%), 125 of 144 occurrences (86%), and 38% of the grassland vegetation community.	The Proposed Project would preserve 84% of the existing population observed within the Project Area, which would contribute to the overall preservation of this species. All impacted populations will be translocated resulting in no net loss of the species.

Table 6
Otay Ranch RMP and MSCP Anticipated Conservation Levels for Special-Status Plant Species

Species Scientific Name/ Common Name	Regulatory Status: Federal/ State/ MSCP Coverage CRPR	Otay Ranch RMP	MSCP Table 3-5	Project Preservation
Calochortus dunnii Dunn's mariposa-lily	None SR 1B.2 Covered	The RMP Ranch-wide standard included in the Preserve a minimum of 100% of known occurrences.	The MSCP provides coverage for this species because it places 100% of the major populations into the Preserve.	The Proposed Project would preserve 100% of the existing population within the Otay Ranch RMP Preserve and would also preserve one individual in Conserved Open Space.
Clarkia delicata delicate clarkia	None None Not Covered 1B.2	The RMP Ranch-wide standard included in the Preserve a minimum of 75% of Otay Ranch populations of this species. Table 5 of the RMP indicates 75% of the Otay Ranch populations of this species retained in the Preserve.	This species is not a Covered Species.	The Proposed Project would preserve 100% of the existing population observed within the Otay Ranch RMP Preserve.
Clinopodium chandleri San Miguel savory	None None Covered 1B.2	The RMP Ranch-wide standard included in the Preserve a minimum of 50% of known occurrences.	The MSCP provides coverage for this species because it places 100% of the major populations into the Preserve.	The Proposed Project would preserve 100% of the existing population observed within the Otay Ranch RMP Preserve.
Dudleya variegata Variegated dudleya	None None Covered, Narrow Endemic 1B.2	The RMP Ranch-wide standard included in the Preserve a minimum of 75% of Otay Ranch populations of variegated dudleya (See Policy 2.7 of the RMP).	This MSCP provides coverage for this species because it places into the Preserve 56% of major populations and 75% of known localities. 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.	This species was not observed within the Otay Ranch RMP Preserve but was observed within Development Footprint. To compensate for project related impacts to this narrow endemic species, the existing populations of this species within the Development Footprint would be translocated to the Otay Ranch RMP Preserve and additional individuals would be planted to

Table 6
Otay Ranch RMP and MSCP Anticipated Conservation Levels for Special-Status Plant Species

Species Scientific Name/ Common Name	Regulatory Status: Federal/ State/ MSCP Coverage CRPR	Otay Ranch RMP	MSCP Table 3-5	Project Preservation
				achieve a 3:1 Otay Ranch RMP Preserve mitigation to impact ratio (105:35 individuals).
Lepechinia ganderi Gander's pitcher sage	None None Covered, Narrow Endemic 1B.3	The RMP Ranch-wide standard included in the Preserve a minimum of 75% of known occurrences.	The MSCP provides coverage for this species because it places 100% of the major populations into the Preserve.	The Proposed Project would preserve 100% of the existing population observed within the Otay Ranch RMP Preserve.
Lepidium virginicum var. *robinsonii* Robinson's pepper-grass	None None Not Covered 4.3	N/A	This species is not a Covered Species.	The Proposed Project would conserve 3% of the populations observed within the Project Area. To compensate for project related impacts to this species, the existing populations of this species within the Development Footprint subject to the BMO would be translocated to the Otay Ranch RMP Preserve and additional individuals would be planted to achieve a 2:1 Otay Ranch RMP Preserve mitigation to impact ratio (212:106 individuals). This would result in no net loss of the species.
Navarretia fossalis Spreading navarretia	FT None Covered 1.B	The RMP Ranch-wide standard included in the Preserve a minimum of 100% of known occurrences.	The MSCP provides coverage for this species because the plan would place into the Preserve 17.0 acres of 32.5 acres of USFWS designated critical habitat for this species (52%).	This species was not observed within the Project Area. Critical habitat for this species would be included within the Otay Ranch RMP Preserve (16 acres).

County List B				
Ferocactus viridescens San Diego barrel cactus	None None Covered 2.1	The RMP Ranch-wide standard included in the Preserve a minimum of 75% of Otay Ranch populations of this species. Table 5 of the RMP indicates 75% of the Otay Ranch populations of this species would be retained in the Preserve.	The MSCP provides coverage for this species because it places 81% of major populations into the Preserve.	The Proposed Project would conserve 5% of the populations observed within the Project Area (all populations within the Preserve are preserved). To compensate for project related impacts, the existing populations of this species within the Development Footprint would be translocated to the Otay Ranch RMP Preserve and additional individuals would be planted to achieve a 2:1 mitigation to impact ratio (96:48 individuals).
Iva hayesiana San Diego marsh-elder	None None Not Covered 2B.2	The RMP Ranch-wide standard included in the Preserve a minimum of 75% of Otay Ranch populations of this species. Table 5 of the RMP indicates 75% of the Otay Ranch populations of this species retained in the Preserve.	This species is not a Covered Species.	The Proposed Project would conserve 29% of the populations observed within the Project Area, which would contribute to the Ranch-wide preservation of the species. Additional mitigation would be provided at a 1:1 ratio for 1,024 individuals. It is expected that these individuals would be mitigated within temporarily impacted areas of the Otay Ranch RMP Preserve.

Table 6
Otay Ranch RMP and MSCP Anticipated Conservation Levels for Special-Status Plant Species

Species Scientific Name/ Common Name	Regulatory Status: Federal/ State/ MSCP Coverage CRPR	Otay Ranch RMP	MSCP Table 3-5	Project Preservation
Salvia munzii Munz's sage	None None Not Covered 2B.2	The RMP Ranch-wide standard included in the Preserve a minimum of 46% of Otay Ranch populations of this species. Table 5 of the RMP indicates 46% of the Otay Ranch populations of this species retained in the Preserve.	This species is not a Covered Species.	The Proposed Project would conserve 36% of the populations observed within the Project Area, which would contribute to the Ranch-wide preservation of the species.
County List D				
Artemisia palmeri San Diego sagewort	None None Not Covered 4.2	The RMP Ranch-wide standard included in the Preserve a minimum of 75% of Otay Ranch populations of this species. Table 5 of the RMP indicates 90-100% of the Otay Ranch populations of this species retained in the Preserve.	This species is not a Covered Species.	The Proposed Project would conserve 75% of the populations observed within the Project Area.
Juncus acutus ssp. *leopoldii* Southwestern spiny rush	None None Not Covered List 4.2	The RMP Ranch-wide standard included in the Preserve a minimum of 50% of Otay Ranch populations of this species. Table 5 of the RMP indicates 70%–80% of the Otay Ranch populations of this species retained in the Preserve.	This species is not a Covered Species.	The Proposed Project would conserve 87% of the populations observed within the Project Area.
Pentachaeta aurea ssp. *aurea* Golden-rayed pentachaeta	None None Not Covered List 4.2	This species is not included in the Otay Ranch RMP.	This species is not a Covered Species.	The Proposed Project would conserve 50% of the populations observed within the Project Area.
Selaginella cinerascens Ashy spike-moss	None None Not Covered List 4.1	The RMP Ranch-wide standard included in the Preserve a minimum of 50% of Otay Ranch populations of this species. Table 5 of the RMP indicates 70%–80% of the Otay Ranch populations of this species retained in the Preserve.	This species is not a Covered Species.	The Proposed Project would conserve 45% of the populations observed within the Project Area.

Table 6
Otay Ranch RMP and MSCP Anticipated Conservation Levels for Special-Status Plant Species

Species Scientific Name/ Common Name	Regulatory Status: Federal/ State/ MSCP Coverage CRPR	Otay Ranch RMP	MSCP Table 3-5	Project Preservation
Viguiera laciniata San Diego County viguiera	None None Not Covered List 4.2	The RMP Ranch-wide standard included in the Preserve a minimum of 75% of Otay Ranch populations of this species. Table 5 of the RMP indicates 75% of the Otay Ranch populations of this species retained in the Preserve.	This species is not a Covered Species.	The Proposed Project would conserve 64% of the populations observed within the Project Area, which would contribute to the Ranch-wide preservation of the species.
Stipa [=Achnatherum] diegoensis San Diego County needle grass	None None Not Covered 4.2	The RMP Ranch-wide standard included in the Preserve a minimum of 75% of known occurrences.	This species is not a Covered Species.	The Proposed Project would conserve 64% of the populations observed within the Project Area.

3.2 Special-Status Wildlife Species

The County of San Diego divides special-status wildlife species into County Group 1 and County Group 2 based on the species' rarity and known threats (County of San Diego 2010). County Group 1 species include those that have a high level of sensitivity, are listed as threatened or endangered, or have a natural history requirement that increases their sensitivity. County Group 2 species include those that are becoming less common, although not so rare that extinction is imminent without immediate action. The CDFW assigns Species of Special Concern (SSC) statuses to species whose population levels are declining, have limited ranges, and/or are vulnerable to extinction due to continuing threats (CDFW 2017). In addition, Fully Protected (FP) species are protected by the CDFW and Watch List (WL) species are candidates for higher sensitive statuses. USFWS provides the Bird of Conservation Concern (BCC) status to migratory and non-migratory bird species that adhere to the 1988 amendment to the Fish and Wildlife Conservation Act that mandates the USFWS to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973" (USFWS 2008).

3.2.1 Special-Status Wildlife Species Observed

Special-status wildlife species directly observed within the Otay Ranch RMP Preserve include the following MSCP Covered, and/or County Group 1 species: Cooper's hawk (*Accipiter cooperii*), Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), grasshopper sparrow (*Ammodramus savannarum*), golden eagle (*Aquila chrysaetos*), red-shouldered hawk (*Buteo lineatus*), northern harrier (*Circus cyaneus*), loggerhead shrike (*Lanius ludovicianus*), coastal California gnatcatcher, San Diego fairy shrimp (*Branchinecta sandiegonensis*), mule deer (*Odocoileus hemionus*), American badger (*Taxidea taxus*; burrow only), Blainville's horned lizard (*Phrynosoma blainvillii*), long-eared owl (*Asio otus*), and white-tailed kite (*Elanus leucurus*). MSCP Covered, and/or County Group 1 species, coastal California gnatcatcher, was also observed within the Conserved Open Space and non-graded LDA.

Additional special-status wildlife species observed within the Otay Ranch RMP Preserve include western spadefoot (*Spea hammondii*), California horned lark (*Eremophila alpestris actia*), barn-owl (*Tyto alba*), yellow warbler (*Setophaga petechia*), monarch (*Danaus plexippus*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), San Diegan tiger whiptail (*Aspidoscelis tigris stejnegeri*), and rosy boa (*Lichanura trivirgata*). Species also observed within the Conserved Open Space and non-graded LDA include: San Diego black-tailed jackrabbit and San Diegan tiger whiptail. The location of the populations, within either the Otay Ranch RMP Preserve, Conserved Open Space and/or non-graded LDA, for each observed species is described below and shown on Figures 2-1 and 2-1A through 2-1U.

Amphibians and Reptiles

San Diegan Tiger Whiptail* (Aspidoscelis tigris stejnegeri)*, SSC/County Group 2

The San Diegan tiger whiptail is a SSC and County Group 2 species. It is found in coastal Southern California, mostly west of the Peninsular Ranges and south of the Transverse Ranges, north into Ventura County, and south into Baja California, Mexico (Lowe et al. 1970; Stebbins 2003).

The tiger whiptail (*A. tigris*) is found in a variety of habitats, primarily in areas where plants are sparse and there are open areas for running. According to Stebbins (2003), the species ranges from deserts to montane pine forests where it prefers warmer and drier areas. The species is also found in woodland and streamside growth, and it avoids dense grassland and thick shrub growth.

San Diegan tiger whiptail was observed during surveys in the east/central portion of the Project Area, within the Development Footprint, adjacent to Conserved Open Space (Figures 2-1 and 2-1A through 2-1U). There is suitable habitat, including open scrub and chaparral, and termite food

sources observed in the Otay Ranch RMP Preserve and therefore there is a high potential for this species to occur in the Otay Ranch RMP Preserve.

Red Diamondback Rattlesnake* (Crotalus ruber)*, SSC/County Group 2

The red diamondback rattlesnake is a SSC and County Group 2[1] species. It is found in a variety of habitats from the coast to the deserts, from San Bernardino County into Baja California, Mexico (below 5,000 feet amsl). It commonly occurs in rocky areas within coastal sage scrub, chaparral, juniper woodlands, and desert habitats, but can also be found in areas devoid of rocks (Lemm 2006).

Red diamondback rattlesnake was observed once within Otay Ranch RMP Preserve in Planning Area 16, outside of the Project Area during focused burrowing owl surveys. There is suitable habitat in the Otay Ranch RMP Preserve within the vegetation communities with rocky outcroppings (Figures 2-1 and 2-1A through 2-1U).

Blainville's Horned Lizard* (Phrynosoma blainvillii)*, SSC/MSCP Covered Species/ County Group 2

Blainville's horned lizard (previously coast horned lizard) is a SSC, MSCP Covered, and County Group 2 species. It is found from the Sierra Nevada foothills and central California to coastal Southern California. It is often associated with coastal sage scrub, especially areas of level to gently sloping ground with well-drained loose or sandy soil, but it can also be found in annual grasslands, chaparral, oak woodland, riparian woodland, and coniferous forest between 30 and 7,030 feet amsl (Jennings and Hayes 1994). This reptile typically avoids dense vegetation, preferring 20% to 40% bare ground in its habitat. The Blainville's horned lizard can be locally abundant in areas where it occurs, with densities of near 20 adults per acre. Adults are active from late March through late August, and young are active from August through November or December. Up to 90% of the diet of the Blainville's horned lizard consists of native harvester ants (*Pogonomyrmex* spp.).

Blainville's horned lizard was observed several times during surveys and there is suitable habitat throughout open areas in coastal sage scrub and chaparral communities (Figures 2-1 and 2-1A through 2-1U). Two occurrences were identified within the adjacent Preserve, and it is likely that this species would occur within or utilize the Otay Ranch RMP Preserve and other available

[1] The County of San Diego's biology guidelines refer to this species as northern red diamond rattlesnake (*Crotalus ruber ruber*); species names in this report follow the naming conventions described in Section 3.2.2.

open space. In addition, the presence of harvester ants observed within the Project Area would provide a food source for this species.[2]

Western Spadefoot* (Spea hammondii)*, SSC/County Group 2

Western spadefoot is an SSC and County Group 2 species. It is endemic to California and northern Baja California, Mexico. Spadefoot ranges from the north end of California's Central Valley near Redding, south, west of the Sierras and the deserts, and into northwest Baja California, Mexico (Jennings and Hayes 1994; Stebbins 2003). Although this species primarily occurs in lowlands, it also occupies foothill and mountain habitats. Within its range, the western spadefoot occurs from sea level to 4,000 feet amsl, but mostly at elevations below 3,000 feet amsl (Stebbins 2003).

The western spadefoot is almost completely terrestrial, entering temporary pools and drainages only to breed. This species aestivates in upland habitats near potential breeding sites in burrows approximately 1 meter (3 feet) in depth (Stebbins 1972). This species prefers open areas with sandy or gravelly soils in a variety of habitats, including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, river floodplains, alluvial fans, playas, and alkali flats (Stebbins 2003; Holland and Goodman 1998). However, the species is most common in grasslands with vernal pools or mixed grassland/coastal sage scrub areas (Holland and Goodman 1998).

Western spadefoot tadpoles were found in a vernal pool in the Otay Ranch RMP area during fairy shrimp surveys and because of this observation, focused surveys for this species were conducted in 2017 (Figures 2-1 and 2-1A through 2-1U). The vernal pool (identified as B2) also contains San Diego fairy shrimp and is located within the Village 14 Otay Ranch RMP Preserve, outside of the Project Area. In addition, there are two locations within the Otay Ranch RMP Preserve in Planning Area 16 (A27 and D6) as well as four locations within Conserved Open Space in Planning Area 19 (A22, A23, D23, and D5).

Birds

Coastal California Gnatcatcher* (Polioptila californica californica)*, Federally Threatened/SSC/MSCP Covered Species/County Group 1

Coastal California gnatcatcher is federally threatened, SSC, MSCP Covered, and a County Group 1 species. This species occurs in coastal Southern California and Baja California

[2] Harvester ants are a primary source of food for Blainville's horned lizards (Nafis 2014).

year-round, where it depends on a variety of arid scrub habitats. The coastal California gnatcatcher occurs mainly on cismontane slopes (coastal side of the mountains) in Southern California, ranging from Ventura and northern Los Angeles Counties south through the Palos Verdes Peninsula to Orange, Riverside, San Bernardino, and San Diego Counties. The species' range continues south to El Rosario, Mexico. Initially it was reported that 99% of all coastal California gnatcatcher locality records occurred at or below an elevation of 984 feet amsl (Atwood 1990; Atwood and Bolsinger 1992). Since that time, data collected at higher elevations show that the species may occur as high as 3,000 feet amsl, but that more than 99% of the known coastal California gnatcatcher locations occurred below 2,500 feet amsl (65 FR 63680). Because of the natural topography of the Southern California hills and mountain ranges, most of the higher-elevation locations are more inland, where population densities tend to be much lower than coastal populations.

Coastal California gnatcatcher typically occurs in or near coastal scrub vegetation that is composed of relatively low-growing, dry-season deciduous and succulent plants. Characteristic plants of this community include coastal sagebrush, various species of sage, Eastern Mojave buckwheat, lemonade sumac (*Rhus integrifolia*), California brittlebush (*Encelia californica*), and cactus (e.g., *Opuntia* spp.). Coastal California gnatcatchers also occur in chaparral, grassland, and riparian vegetation communities where the coastal scrub community is close by (Bontrager 1991). The use of these vegetation communities appears to be most frequent during late summer, autumn, and winter, with smaller numbers of birds using such areas during the nesting season. The coastal California gnatcatcher tends to occur most frequently in the coastal sagebrush-dominated stands on mesas, gently sloping areas, and along the lower slopes of the Coast Ranges (Atwood 1990). The coastal California gnatcatcher occurs in high frequencies and densities in coastal scrub communities with an open or broken canopy, whereas it is absent from coastal scrub dominated by tall shrubs and occurs in low frequencies and densities in low coastal scrub with a closed canopy (Weaver 1998).

Coastal California gnatcatchers glean insects and spiders from foliage of shrubs, primarily Eastern Mojave buckwheat and coastal sagebrush (Atwood 1993). Their diet is primarily composed of spiders, but is also composed of wasps, bees, and ants (Burger et al. 1999). Coastal California gnatcatcher habitat use has been positively associated with insect abundance and diversity (Redak et al. 1996, as cited in Diffendorfer et al. 2002).

Coastal California gnatcatcher nests usually are located in a small shrub or cactus 1 to 3 feet above the ground. Territory size varies and is influenced by season and locale (Preston et al. 1998), but is unrelated to vegetation structure (Braden et al. 1997). During the breeding/nesting season, territories in coastal areas are often smaller, averaging 5.7 acres (Atwood et al. 1998a, 1998b), than those in more inland regions, which average 8.4 acres (Braden et al. 1997).

Focused surveys for coastal California gnatcatcher resulted in the detection of three pairs for a total of six gnatcatchers observed within the southern portion of the Village 14 Otay Ranch RMP Preserve (Figures 2-1 and 2-1A through 2-1U). All pairs were observed in coastal sage scrub communities. USFWS-designated critical habitat for coastal California gnatcatcher overlaps a very small portion Otay Ranch RMP Preserve in Village 14 northwest of Proctor Valley Road (Figure 2-2).

Golden Eagle **(Aquila chrysaetos)*, BCC/WL; FP/MSCP Covered Species/County Group 1***

Golden eagle is a BCC, WL, FP, MSCP Covered, and County Group 1 species. In addition, the golden eagle is protected under the federal Bald and Golden Eagle Protection Act. As a state-fully protected species, take may only occur pursuant to scientific research or in connection with an authorized NCCP, such as the County's MSCP. The golden eagle is a yearlong, diurnally active species that is a permanent resident and migrant throughout California. Golden eagles are more common in northeast California and the Coast Ranges than in Southern California and the deserts. In Southern California, the species tends to occupy mountain, foothill, and desert habitats. Foraging habitat for this species includes open habitats with scrub, grasslands, desert communities, and agricultural areas. This species nests on cliffs within canyons and escarpments and in large trees (generally occurring in open habitats) and occurs primarily in rugged, topographically complex landscapes (Garrett and Dunn 1981; Johnsgard 1990). Most nests are located on cliffs or trees near forest edges, in trees within woodland savannas, or in small stands near open habitats (Kochert et al. 2002). Nest locations tend to be more closely associated with topographic heterogeneity than with a particular vegetation type (Call 1978).

Nest building can occur almost any time during the year. This species nests on cliffs, rock outcrops, large trees, and artificial structures such as electrical transmission towers, generally near open habitats used for foraging (Garrett and Dunn 1981; Scott 1985; Johnsgard 1990; Kochert et al. 2002). Golden eagles commonly build, maintain, and variably use multiple alternative nest sites in their breeding territories, routinely refurbishing and reusing individual nests over many years. Generally, the nests are large platforms composed of sticks, twigs, and greenery that are often 3 meters (10 feet) across and 1 meter (3 feet) high (Zeiner et al. 1990a). Pairs may build more than one nest and tend multiple nests prior to laying eggs (Kochert et al. 2002). Each pair can have up to a dozen nests, especially in cliff nesting habitat where nests persist for longer than they do in trees, but generally only two to three nests are used in rotation from one year to the next. Some pairs use the same nest each year, whereas others use different alternative nests more regularly. Succeeding generations of eagles may even use the same nest (Terres 1980, as cited in CPUC and BLM 2011).

In California, golden eagles breed from January through August, with peak breeding activity occurring from February through July. Breeding typically begins in January with courtship and

nest building, and egg laying typically occurs in February and March (Brown 1976; WRI 2010, as cited in CPUC and BLM 2011). Golden eagles typically lay one to three eggs, which they incubate for 43 to 45 days (Beebe 1974). The hatching and feeding of nestlings takes place from March through June. After their young fledge, the adult eagles may continue to feed the young birds for several months (WRI 2010, as cited in CPUC and BLM 2011). In the prey-rich oak woodland and savannah habitats of the California Coast Ranges, established golden eagle breeding pairs typically nest in most years (Hunt et al. 1999; Hunt and Hunt 2006); however, the long breeding cycle may contribute to some pairs breeding only every other year even when food is abundant (WRI 2010, as cited in CPUC and BLM 2011). In other situations, where overall ecosystem productivity is lower or more variable from year to year, pairs need to range farther in search of food and may not nest every year because of the energetic demands of securing dispersed prey (Kochert et al. 2002).

Lagomorphs (rabbits and hares) and ground squirrels are of primary importance in the diet of most golden eagles, including in San Diego County, but their diet may include a wide variety of other mammals, reptiles, and birds, and frequently includes carrion, especially during winter (Olendorff 1976; Johnsgard 1990; Kochert et al. 2002).

This species has been observed flying throughout the Otay Ranch RMP Preserve and is likely to use all areas of open habitat within the Otay Ranch RMP Preserve for foraging. The Otay Ranch RMP Preserve within Village 14 or Planning Areas 16/19 is not known to support golden eagle nesting sites. The nests within the closest known territory, the Rancho San Diego territory (or San Miguel Mountain territory), were destroyed during 2000 and 2007 (USFWS 2014; WRI 2010). Two artificial nesting platforms were constructed in the same region and have not been successful at supporting golden eagles (USFWS 2014). Both the natural nests and the artificial nesting platforms are located outside of the Project Area including the open space, which would remain after development. More recently, eagle specialists from H.T. Harvey surveyed the Project Area and surrounding area in the 2016 and 2017 breeding seasons, including the locations of the former San Miguel Mountain nest site and the artificial nest platforms installed by USFWS and the Bureau of Land Management (BLM) (H.T. Harvey 2017). Through those surveys, H.T. Harvey did not locate any nests, nor did H.T. Harvey observe any eagles displaying courtship or pre-nesting behavior within the San Miguel, Jamul or Proctor Valley areas (H.T. Harvey 2017). Golden eagles observed in the area or tracked by USGS were considered transient adult and subadult that occur seasonally or periodically in these areas (H.T. Harvey 2017).

White-Tailed Kite* (Elanus leucurus)*, FP/County Group 1

White-tailed kite is a FP and County Group 1 species. White-tailed kite occurs mainly in lowlands of southern and northwestern cismontane California in savannah, open woodland, marshes, cultivated fields, and partially cleared lands (Zeiner et al. 1990a). White-tailed kites hunt in the morning and late afternoon for voles and mice, usually near farmlands. The kite is non-migratory but can be nomadic and dispersive in its movements and often occurs in communal roosts (Unitt 2004). Nests are made of piled sticks and twigs and placed near the tops of oak, willow, or other trees near marshes and foraging areas (Zeiner et al. 1990a).

White-tailed kite was observed once in November 2014 toward the east/central portion of the Village 14 Otay Ranch RMP Preserve (Figures 2-1 and 2-1A through 4-1U). There is suitable foraging habitat within the Otay Ranch RMP Preserve, (45 acres); and due to the Otay Ranch RMP Preserve's proximity to Sweetwater Reservoir, and Lower and Upper Otay Reservoirs where there is more suitable riparian woodland for nesting, this species likely forages in the Otay Ranch RMP Preserve occasionally. Foraging habitat consists of cismontane alkali marsh, eucalyptus woodland, mulefat scrub, oak riparian forest, and non-native grassland. Due to the lack of dense riparian or oak woodland within the Otay Ranch RMP Preserve, as well as lack of observations during the nesting season, this species is unlikely to nest within the Otay Ranch RMP Preserve.

Cooper's Hawk* (Accipiter cooperii)*, WL/MSCP Covered Species/County Group 1

Cooper's hawk is a WL, MSCP Covered, and a County Group 1 species. It is found throughout California in wooded areas. This species inhabits live oak, riparian, deciduous, or other forest habitats near water. Nesting and foraging usually occur near open water or riparian vegetation. Nests are built in dense stands with moderate crown depths, usually in second-growth conifer or deciduous riparian areas. Cooper's hawks use patchy woodlands and edges with snags for perching while they are hunting for prey such as small birds, small mammals, reptiles, and amphibians within broken woodland and habitat edges (Zeiner et al. 1990a).

A Cooper's hawk was observed flying overhead during biological surveys, but since much of the Project Area is likely used by this species, the observations were not mapped. There is some suitable nesting habitat in the southern willow scrub and eucalyptus within the Planning Areas 16/19 Otay Ranch RMP Preserve (Figures 2-1 and 2-1A through 2-1U). The Otay Ranch RMP Preserve supports nesting opportunities within habitats with trees.

Southern California Rufous-Crowned Sparrow* (Aimophila ruficeps canescens)*, WL/MSCP Covered Species/County Group 1

Southern California rufous-crowned sparrow is a WL, MSCP Covered, and County Group 1 species. The current distribution of the Southern California rufous-crowned sparrow is restricted to a narrow belt of semiarid coastal sage scrub and sparse chaparral from Santa Barbara south to the northwestern corner of Baja California (Bent 1968; Collins 1999; Grinnell 1926; Grinnell and Miller 1944; Todd 1922; Unitt 1984; Zeiner et al. 1990a). The subspecies has also been found on San Martin Island. The Southern California rufous-crowned sparrow is considered a resident throughout its range. No true migratory movements have been recorded, though limited movements to lower elevations in some areas have been reported during especially severe winters (Collins 1999).

Southern California rufous-crowned sparrows were observed on several occasions within the northern portion of the Planning Area 19 Otay Ranch RMP Preserve in coastal sage scrub habitats during surveys (Figures 2-1 and 2-1A through 2-1U).

Grasshopper Sparrow* (Ammodramus savannarum)*, SSC/County Group 1

Grasshopper sparrow is a SSC and County Group 1 species. In California, grasshopper sparrows breed (and primarily winter) on slopes and mesas containing grasslands of varying compositions (Garrett and Dunn 1981; Grinnell and Miller 1944). The species frequents dense, dry or well-drained grassland, especially native grassland with a mix of grasses and forbs for foraging and nesting. Grasshopper sparrows require fairly continuous native grassland areas with occasional taller grasses, forbs, or shrubs for song perches (Garrett and Dunn 1981). Grasshopper sparrows tend to avoid grassland areas with extensive shrub cover, and the presence of native grasses is less important than the absence of trees (County of Riverside 2008; Smith 1963).

Grasshopper sparrow was observed during surveys but the observations were not mapped. Given the habitat within the Otay Ranch RMP Preserve, Conserved Open Space, and non-graded LDA, it is likely that this species uses these areas.

Long-Eared Owl* (Asio otus)*, SSC/County Group 1

Long-eared owl is a SSC and County Group 1 species. It is an uncommon yearlong resident throughout most of the state, with the exception of the Central Valley and Southern California desert regions, where is it generally a winter visitor (Zeiner et al. 1990a). Along the coastline of Southern California, the long-eared owl may be a resident breeder (Bloom 1994; Marks et al. 1994) or a rare winter visitor (Garrett and Dunn 1981).

Long-eared owl primarily uses riparian habitat for roosting and nesting, but can also use live oak thickets and other dense stands of trees (Zeiner et al. 1990a). It appears to be more associated with forest edge habitat than with open habitat or forest habitat (Holt 1997). The species usually does not hunt in the woodlands where it nests, but in open areas such as fields, rangelands, and clearings. At higher elevations, the species is found in conifer stands that are usually adjacent to more open grasslands and shrublands (Marks et al. 1994). In California, long-eared owls also nest in dense or brushy vegetation amid open habitat (Bloom 1994). Long-eared owls have also been known to nest in caves, cracks in rock canyons, and in artificial wicker basket nests (Garner and Milne 1998; Marks et al. 1994).

Long-eared owl was observed once in November 2014 toward the southern portion of the Village 14 Otay Ranch RMP Preserve (Figures 2-1 and 2-1A through 2-1U). There are some breeding records in surrounding areas to the north (Unitt 2004). Due to the lack of dense riparian woodland or oak woodland within the open space areas, this species has low potential to nest.

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

Red-shouldered hawk is not considered special status by any state or federal agencies; however, it is a County Group 1 species. Red-shouldered hawks inhabit a broad range of North American forests, but favor mature, mixed deciduous–coniferous woodlands, especially bottomland hardwood, riparian areas, flooded deciduous swamps, oak woodlands, eucalyptus groves, and suburban areas with nearby woodlots (Dykstra et al. 2008). This species nests in riparian habitats near permanent water and forages along edges of wet meadows, swamps, and emergent wetlands (Zeiner et al. 1990a).

Red-shouldered hawk was detected within the Otay Ranch RMP Preserve but the observations were not mapped. Within the Otay Ranch RMP Preserve, there are no permanent water sources; however, ephemeral and intermittent sources are present. There is suitable foraging habitat throughout the Otay Ranch RMP Preserve. Nesting and foraging modeled habitat for this species includes chamise chaparral, disturbed chamise chaparral, disturbed habitat, eucalyptus woodland, oak riparian forest, and non-native grassland. The Otay Ranch RMP Preserve supports nesting opportunities within habitats with large trees.

Turkey Vulture* (Cathartes aura)*, County Group 1

The turkey vulture is not considered special status by any state or federal agencies; however, it is considered a County Group 1 species. In California, it is common during the nesting season and is a yearlong resident west of the Sierra Nevada, especially in coastal areas. Summer and

yearlong ranges also include the southeastern United States; portions of Texas, Mexico, Central America, and South America; and some islands in the Caribbean (Kirk and Mossman 1998).

Turkey vultures use a variety of habitats while foraging on both wild and domestic carrion. They prefer open stages of most habitats. In the western United States, they tend to occur regularly in areas of hilly pastured rangeland, non-intensive agriculture, and areas with rock outcrops suitable for nesting, although they are not generally found in high-elevation mountain areas (Kirk and Mossman 1998; Zeiner et al. 1990a). Nest locations tend to be difficult to find and are usually located in a crevice among granite boulders (Unitt 2004). However, this species prefers hilly areas that provide deflective updrafts for flight and generally avoids extensive areas of row-crop farmland (Kirk and Mossman 1998).

Turkey vulture was observed foraging throughout the Otay Ranch RMP Preserve during biological surveys, but the observations were not mapped. The Otay Ranch RMP Preserve does not support suitable cliffs and large trees for nesting, but there is suitable foraging habitat within the Otay Ranch RMP Preserve. Suitable foraging habitat includes most vegetation communities and undeveloped land cover.

Northern Harrier* (Circus cyaneus)*, SSC/MSCP Covered Species/County Group 1

Northern harrier is a SSC, MSCP Covered, and County Group 1 species. Northern harriers use a wide variety of open habitats in California including deserts, coastal sand dunes, pasturelands, croplands, dry plains, grasslands, estuaries, flood plains, and marshes (Macwhirter and Bildstein 2011). The species can also forage over coastal sage scrub or other open scrub communities. Nesting areas are associated with marshes, pastures, grasslands, prairies, croplands, desert shrub-steppe, and riparian woodland (Macwhirter and Bildstein 2011). Winter habitats similarly include a variety of open habitats dominated by herbaceous cover. Northern harrier populations are most concentrated in areas with low vegetation.

One northern harrier was observed foraging in the northern portion of the Planning Areas 16/19 Otay Ranch RMP Preserve (Figures 2-1 and 2-1A through 2-1U). Northern harriers are known to nest in Otay River, and there is suitable nesting habitat along Proctor Valley drainage; however, based on the low frequency of observations, this species is likely not currently nesting within the Otay Ranch RMP Preserve.

Loggerhead Shrike* (Lanius ludovicianus)*, BCC/SSC/County Group 1

Loggerhead shrike is a BCC, SSC, and County Group 1 species. It is found in lowlands and foothills throughout California, and it remains in the southern portion of the state year-round. Preferred habitats for the loggerhead shrike are open areas that include scattered shrubs, trees,

posts, fences, utility lines, or other structures that provide hunting perches with views of open ground, as well as nearby spiny vegetation or built structures (such as the top of chain-link fences or barbed wire) that provide means to skewer prey items. The species occurs most frequently in riparian areas along the woodland edge, grasslands with sufficient perch and butcher sites, scrublands, and open-canopied woodlands, although they can be quite common in agricultural and grazing areas; and they can sometimes be found in mowed roadsides, cemeteries, and golf courses, although they occur rarely in heavily urbanized areas (Zeiner et al. 1990a). Loggerhead shrikes build nests in stable shrubs or trees requiring dense foliage for well-concealed nests and likely nests in the Otay Ranch RMP Preserve.

Loggerhead shrike was observed within Village 14 on the eastern edge of the Otay Ranch RMP Preserve (Figures 2-1 and 2-1A through 2-1U).

Yellow Warbler* (Setophaga petechia), *BCC/SSC/County Group 2

Yellow warbler inhabits riparian woodland in coastal and desert lowlands, montane chaparral, open ponderosa pine, and mixed conifer habitats (Zeiner et al. 1990a). This species breeds along the coast of California west of Sierra Nevada and along eastern California from Lake Tahoe south to Inyo County. The yellow warbler occurs in medium-density woodlands and forests with heavy brush understory and migrates to sparse to dense woodland and forest habitats.

Yellow warbler was observed foraging within Otay Ranch RMP Preserve in Planning Area 16. This species was observed during 2017 focused coastal California gnatcatcher surveys. The yellow warbler was not mapped because the bird was frequently moving and calling within sparse chaparral and was likely to be a migrant due to unsuitable nesting habitat.

Invertebrates

San Diego Fairy Shrimp* (Branchinecta sandiegonensis), *Federally Endangered/County Group 1

San Diego fairy shrimp is a federally endangered and County Group 1 species.[3] In 2015 and 2016, focused surveys were conducted within the Study Area, which includes the Project Area and areas outside the Project Area along the existing segments of Proctor Valley Road. A total of 105 features were identified within the Study Area as potential suitable habitat for vernal pool branchiopods. Most

[3] The County's MSCP also identifies San Diego fairy shrimp as a Covered Species. However, a 2006 federal court decision invalidated the City of San Diego's MSCP coverage for fairy shrimp, and the County's MSCP includes similar coverage provisions for the species. For this reason, the County has taken the position that the MSCP, as written, does not provide take authorization coverage for San Diego fairy shrimp.

of the features were located alongside or within existing dirt roads within the Study Area and are moderately disturbed in character. Many of the features detected show evidence of historical off-highway-vehicle disturbance (i.e., shaped like tire tracks). The features detected were road ruts (depressions that are typically formed by vehicular traffic within or immediately adjacent to roadways, generally lack aquatic vegetation, and are heavily disturbed by vehicular traffic), ephemeral basins (surface depressions that retain sufficient water level, support aquatic vegetation, and generally lack vehicle disturbance, or vernal pools (depressions that retain sufficient water level, support vernal pool indicator plant species, and support vernal pool branchiopods).

Of the 105 features surveyed, 15 supported either the non-special-status versatile fairy shrimp or the federally listed endangered San Diego fairy shrimp with an additional 11 containing immature fairy shrimp that were unidentifiable to species (i.e., *Branchinecta* sp.). During the focused fairy shrimp surveys conducted in 2014/2015 and 2015/2016, a total of 49 features (39 features in 2014/2015 and 10 features in 2015/2016) were identified as potential suitable habitat for vernal pool branchiopods within the Project Area. Within the Project Area, nine features were found to support fairy shrimp during the focused protocol surveys. Of these nine features, four features had San Diego fairy shrimp and were all characterized as road ruts (A22, A23, A27, and D4) (Figures 3-1A and 3-1B, Fairy Shrimp Survey Area and Results). Five of the features supported versatile fairy shrimp. Feature A27 is located within the Otay Ranch RMP Preserve and would remain in the Preserve following project development. The Development Footprint for the Proposed Project has been revised to avoid impacts to the other three features: A22, A23, and D4. These three features would remain within an area designated as Conserved Open Space.

Quino Checkerspot Butterfly **(Euphydryas editha quino)*, Federally Endangered/County Group 1***

The Quino checkerspot butterfly is a FE and County Group 1 species. This species is found only in western Riverside County, southern San Diego County, and northern Baja California, Mexico (USFWS 2003). This species is found on sparsely vegetated hilltops, ridgelines, and occasionally on rocky outcrops in open chaparral and coastal sage scrub habitat (typically at less than 3,000 feet amsl). This species requires host plants within these vegetation communities for feeding and reproduction. The primary larval host plant is dotseed plantain; however, several other species have been documented as important larval host plants, including desert plantain, sometimes called woolly plantain (*Plantago patagonica*); thread-leaved bird's beak (*Cordylanthus rigidus*); white snapdragon (*Antirrhinum coulterianum*); owl's clover; and Chinese houses (*Collinsia* spp.) (USFWS 2003). USFWS-designated critical habitat for Quino checkerspot butterfly overlaps the majority of the Project Area. Although not observed within the Land Exchange Alternative, this species is described in more detail herein because it has previously been recorded within the Proposed Project (CDFW 2016c; HELIX 2017; USFWS 2015).

HELIX biologists completed host plant mapping within the Otay Ranch RMP Preserve portion of the Project Area in 2016. A total of 2.3 acres of Quino checkerspot butterfly host plants were mapped within non-impacted portions of the Project Area (1.21 within Otay Ranch RMP Preserve and 1.08 within Conserved Open Space and 0.01 acre within non-graded LDA). Results are noted below:

- 60% of the host plant locations within the Otay Ranch RMP Preserve (55 points of the 92 locations) were mapped as low density (1–100 plants). Within non-graded LDA, 67% of the host plant locations were mapped as low density (2 points of the 3 locations). Within the Conserved Open Space, 65% of the host plant locations were mapped as low density (24 points of the 37 locations).
- 29% of the host plant locations within the Otay Ranch RMP Preserve (27 points and patches of the 92 locations) were mapped as medium density (100–1,000 plants). Within the non-graded LDA, 33% of the host plant locations were mapped as medium density (1 point of the 3 locations). Within the Conserved Open Space, 16% of the host plant locations were mapped as medium density (6 points of the 37 locations).
- 11% of the host plant locations within the Otay Ranch RMP Preserve (10 points and patches of the 92 locations) were mapped as high density (1,000–10,000 plants), as shown in Figure 3-1B. Within the Conserved Open Space, 19% of the host plant locations were mapped as high density (7 points and patches of the 37 locations). No high-density host plant locations were mapped within non-graded LDA.
- The high-density host plant locations (1,000–10,000 individuals) within the non-graded areas occurred within openings of coastal sage scrub and chaparral.

The majority of the host plant locations in the Otay Ranch RMP Preserve (84 of the 92 mapped locations; 91%) were small points ranging from a few square feet to 250 square feet. Of the 84 locations, the majority of those (78 of the 84 locations; 93%) were low density (1–100 plants) or medium density (100–1,000 plants), and most occurred within a matrix of chaparral and coastal sage scrub communities.

In addition to preservation of host plants, the Proposed Project would result in the preservation of 404.8 acres of potential habitat with the Otay Ranch RMP Preserve and 156.1 acres within Conserved Open Space.

Mammals

San Diego Black-Tailed Jackrabbit (Lepus californicus bennettii)*, SSC/County Group 2*

The San Diego black-tailed jackrabbit is a SSC and County Group 2 species. It is confined to coastal Southern California, with marginal eastern records being Mount Piños, Arroyo Seco, Pasadena, San Felipe Valley, and Jacumba (Hall 1981). It is found in many diverse habitats, but primarily in arid regions supporting short-grass habitats. Jackrabbits typically are not found in high grass or dense brush where it is difficult for them to move quickly, and the openness of open scrub habitat likely is preferred over dense chaparral. Jackrabbits are common in grasslands that are overgrazed by cattle, and they are well adapted to using low-intensity agricultural habitats (Hall 1981). As previously stated, jackrabbits are a primary prey source for golden eagles.

This species was observed on multiple occasions throughout the Otay Ranch RMP Preserve during biological surveys (Figures 2-1 and 2-1A through 2-1U). Due to the high mobility of this species, not all observations were mapped. This species can occur throughout nearly all of the upland vegetation communities within the Otay Ranch RMP Preserve.

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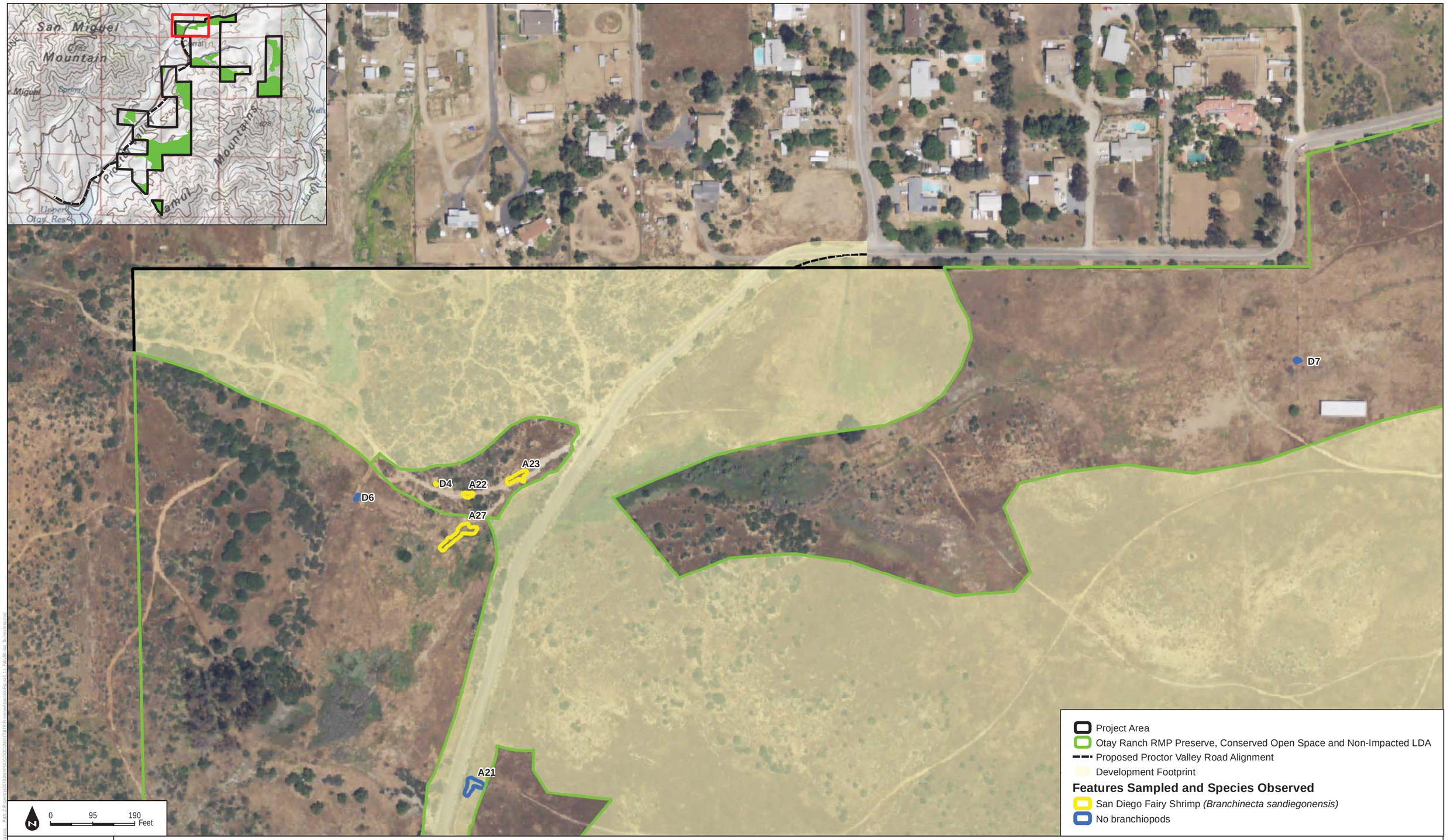

DUDEK

SOURCE: Bing Maps 2017; Hunsaker 2016

FIGURE 3-1A

Fairy Shrimp Survey Area and Results

Otay Ranch Village 14 and Planning Areas 16/19 - Preserve Status Report

NOTE: Survey areas may include additional acreage outside of the Project Area

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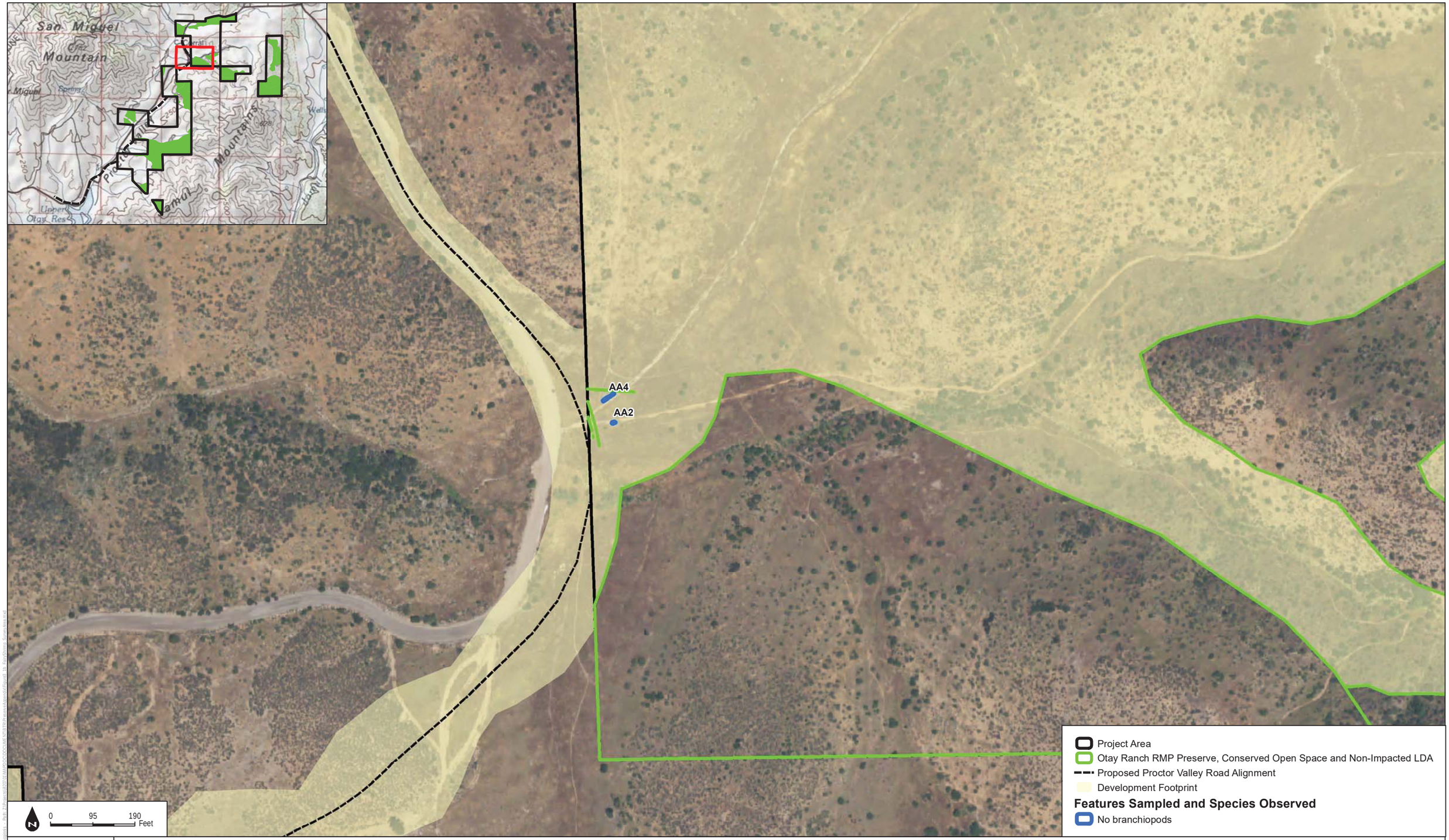

SOURCE: Bing Maps 2017; Hunsaker 2016

FIGURE 3-1B

Fairy Shrimp Survey Area and Results

NOTE: Survey areas may include additional acreage outside of the Project Area

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San Diego Desert Woodrat* (Neotoma lepida intermedia)*, SSC/County Group 2

The San Diego desert woodrat is a SSC and County Group 2 species. This species is found in coastal Southern California into Baja California, Mexico (Reid 2006). Marginal eastern records for the San Diego desert woodrat in the United States include San Luis Obispo, San Fernando in Los Angeles County, the San Bernardino Mountains and Redlands in San Bernardino County, and Julian in San Diego County (Hall 1981). Desert woodrats are found in a variety of shrub and desert habitats and are primarily associated with rock outcroppings, boulders, cacti, or areas of dense undergrowth.

Woodrat middens were observed, indicating this species occurs within the Otay Ranch RMP Preserve. Suitable habitat within the Otay Ranch RMP Preserve includes the upland vegetation communities.

American Badger* (Taxidea taxus)*, SSC/MSCP Covered/County Group 2

The American badger is a SSC, MSCP Covered, and County Group 2 species. In California they are found throughout the state except in coastal Northern California (Zeiner et al. 1990b). American badgers typically occur in open, sparsely vegetated habitats, but also use modified habitats such as agriculture. They are found in dry, open areas with friable soils, and can occur throughout the Study Area. Their distribution in a landscape coincides with the availability of prey, burrowing sites, and mates; with males' distribution ranging wider than females' during the breeding and summer months (Minta 1993). In general, badger activity within a home range tends to concentrate in areas with suitable soils for burrowing or with colonies of ground squirrels.

An American badger burrow was documented in the Planning Area 16 Otay Ranch RMP Preserve. The burrow showed distinct claw marks indicative of a badger burrow.

Reptiles

Rosy Boa* (Lichanura trivirgata)*, County Group 2

Rosy boa is not considered special status by any state or federal agencies; however, it is a County Group 2 species. The rosy boa in California ranges from Los Angeles, eastern Kern, and southern Inyo counties, and south through San Bernardino, Riverside, Orange, and Diego counties (Spiteri 1988; Stebbins 2003; Zeiner et al. 1990b). It occurs at elevations from sea level to 5,000 feet amsl in the Peninsular and Transverse mountain ranges. Within its range in Southern California, the rosy boa is absent only from the southeastern corner of California around the Salton Sea and the western and southern portions of Imperial County (Zeiner et al.

1990b). The rosy boa inhabits rocky shrubland and desert habitats, and is attracted to oases and streams, but does not require permanent water (Stebbins 2003).

Rosy boa was observed once during surveys within the Village 14 Otay Ranch RMP Preserve (Figures 2-1 and 2-1A through 2-1U), and there is suitable habitat in the vegetation communities with rocky areas intermixed with shrubs within the Otay Ranch RMP Preserve surrounding this species location. In addition, there are small rock outcrops in non-graded LDA portions of the Project Area in the most eastern portion of Planning Area 16 and within the adjacent Conserved Open Space.

Birds

California Horned Lark* (Eremophila alpestris actia)*, WL/County Group 2

California horned lark is a WL and County Group 2 species. The California horned lark is a permanent resident found throughout much of the southern half of California. This species breeds and resides in the coastal region of California from Sonoma County southeast to the U.S./Mexico border, including most of the San Joaquin Valley, and eastward to the foothills of the Sierra Nevada (Beason 1995; Grinnell and Miller 1944). It is found from grasslands along the coast and deserts near sea level to alpine dwarf-shrub habitat above tree line. This species prefers open habitats, grassland, rangeland, shortgrass prairie, montane meadows, coastal plains, and fallow grain fields, and it nests on the ground in a hollow scrape.

This species was observed during biological surveys, with several individuals generally occurring at mapped locations (Figures 2-1 and 2-1A through 2-1U). However, due to the high mobility of this species not all observations were mapped. Mapped locations include observations in Village 14 Otay Ranch RMP Preserve and Planning Areas 16/19 Otay Ranch RMP Preserve. There is suitable foraging and nesting habitat within the Project Area.

Western Bluebird* (Sialia mexicana)*, MSCP Covered/County Group 2

Western bluebird is a MSCP Covered and County Group 2 species. They are common resident birds in San Diego County, where they prefer montane coniferous and oak woodlands (Unitt 2004). It nests in old-growth red fir, mixed conifer, and lodgepole pine habitats near wet meadows used for foraging. Because this species is not considered special status by state or federal agencies, it is not tracked in the CNDDB.

Western bluebirds were observed during surveys, and one observation was mapped along Proctor Valley North at the edge of the Planning Area 19 Otay Ranch RMP Preserve. There is suitable nesting habitat within the eucalyptus trees and suitable foraging habitat Otay Ranch RMP Preserve includes many of the vegetation communities in the Otay Ranch RMP Preserve.

Barn Owl* (Tyto alba)*, County Group 2

The barn owl is a not considered special status by any state or federal agencies; however, it is a County Group 2 species. It is common throughout its range throughout most continents, and in the Americas, it occurs in much of continental United States, south through Central and South America to Tierra del Fuego (Marti et al. 2005). In San Diego County, it is an uncommon permanent resident and occurs in urban settings, roosting in buildings, palm leaves, and nest boxes.

Barn owls do not seem to use specific habitat affinities, provided there are ample sites for nesting opportunities and adequate ground for hunting small mammals (Taylor 1994). Habitat types that are commonly used include open habitats such as grassland, chaparral, riparian, and other wetland types, from sea level to 1,680 meters (5,512 feet) amsl (Zeiner et al. 1990a).

This species was observed during focused surveys for coastal California gnatcatcher in the northwest portion of the Otay Ranch RMP Preserve, east of Proctor Valley Road, but its location was not mapped. Although there is suitable habitat for foraging, there are limited trees or similar structures that would support nesting for this species. Suitable foraging habitat in the Otay Ranch RMP Preserve includes the majority of the vegetation communities.

Mammals

Mule Deer* (Odocoileus hemionus)*, MSCP Covered Species/County Group 2

The mule deer is a MSCP Covered and County Group 2 species. It is a common species with a widespread distribution throughout the western United States and Canada and south into mainland and Baja California, Mexico (Hall 1981). It occurs throughout most of California, except in deserts and intensively farmed areas without cover (Zeiner et al. 1990b). Throughout its range, mule deer uses coniferous and deciduous forests, riparian habitats, desert shrub, coastal scrub, chaparral, and grasslands with shrubs. It is often associated with successional vegetation, especially near agricultural lands (NatureServe 2014). It uses forested cover for protection from the elements and open areas for feeding (Wilson and Ruff 1999). Mule deer fawn in a variety of habitats that have available water and abundant forage, including moderately dense shrubs and forests, dense herbaceous stands, and higher-elevation riparian and mountain shrub vegetation.

Mule deer were observed during biological surveys, but the locations were not mapped due to the high mobility of this species. Mule deer were flushed from upland habitats several times during surveys and are likely to use most of the Otay Ranch RMP Preserve.

Invertebrates

Monarch (Danaus plexippus), *County Group 2*

The monarch butterfly is not considered special status by any state or federal agencies; however, it is a County Group 2 species. It follows a pattern of seasonal migration. In the summer, this species is found in New England, the Great Lakes region, and the northern Rocky Mountains. These areas are occupied from May through late August to mid-September (Urquhart 1987). The New England and Great Lakes populations migrate southwest to wintering grounds in the Sierra Madre of Mexico. The Rocky Mountains population migrates southwest to wintering grounds along the California coast.

The species' distribution is controlled by the distribution of its larval host plant (i.e., various milkweeds, genus *Asclepias*). Eggs are deposited and hatch on the underside of leaves of the milkweed plant. Upon hatching, the larvae feed upon the fine hairs on the leaves of the plant and stay on the same plant throughout its molting stages. After molting, the larvae leave the milkweed and construct its chrysalis elsewhere. However, once an adult monarch butterfly emerges from the chrysalis, it soon returns to a milkweed plant for foraging and shelter (Urquhart 1987).

Monarch butterfly wintering sites are considered special status by CDFW (2016b). Wintering sites in California are associated with wind-protected groves of large trees (primarily eucalyptus or pine) with nectar and water sources nearby, generally near the coast. A few California sites (e.g., Pacific Grove and Natural Bridges) support concentrated numbers of overwintering adults, but adults often winter as scattered individuals or in small clusters (Emmel and Emmel 1973). Sexually mature monarch butterflies mate along their northern migratory route (while returning to their summer grounds) and deposit eggs on milkweed plants. Adults die shortly after mating and laying eggs, leaving the completion of the northern migration to their offspring.

This species was observed during Quino checkerspot butterfly surveys and Mexican whorled milkweed (*Asclepias fascicularis*), a potential host plant, was recorded within the Project Area. There are small patches of eucalyptus within the Project Area, but they are not expected to be large enough to support wintering colonies. The nearest wintering colony of monarch butterfly in San Diego County is near University of California, San Diego coastal site along Aluz Street, approximately 23 miles northwest of the Project Area (Pelton et al. 2016).

3.2.2 Special-Status Wildlife Species with a Moderate to High Potential to Occur

Two MSCP Covered Species have a high potential to occur within the Otay Ranch RMP Preserve: ferruginous hawk (*Buteo regalis*), and orangethroat whiptail (*Aspidoscelis hyperythra*). These species also have the potential to occur within the Conserved Open Space and non-graded LDA.

Other special-status wildlife species with a high potential to occur within the Otay Ranch RMP Preserve include Bell's sage sparrow (*Artemisiospiza belli belli*), burrowing owl (*Athene cunicularia*), Quino checkerspot (*Euphydryas editha quino*), pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis californicus*), western red bat (*Lasiurus blossevillii*), Yuma myotis (*Myotis yumanensis*), San Diego desert woodrat (*Neotoma lepida intermedia*), big free-tailed bat (*Nyctinomops macrotis*), cougar (*Puma concolor*), red diamondback rattlesnake (*Crotalus ruber*), San Diego banded gecko (*Coleonyx variegatus abbotti*), and Coronado skink (*Plestiodon skiltonianus interparietalis*). Species that have moderate or high potential to occur within the Otay Ranch RMP Preserve, Conserved Open Space, and non-graded LDA are described in more detail in Table 7.

Table 7
Special-Status Wildlife Species That Have High or Moderate Potential to Occur within the Otay Ranch RMP Preserve, Conserved Open Space, and/or Non-Graded LDA

Species	Status (Federal / State / San Diego South County MSCP/ San Diego County)	Primary Habitat Associations	Status Within the Otay Ranch RMP Preserve, Conserved Open Space, and Non-Graded LDA, or Potential to Occur
Birds			
golden eagle (*Aquila chrysaetos* (nesting and wintering))	BCC/FP, WL/ Covered/ Group 1	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats	Not observed within the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project. A pair of golden eagles was observed foraging within the Project Area in 2014 by USFWS staff; two additional observations of a foraging golden eagle were recorded in 2014 just outside of the Project Area by Dudek, and additional unpaired eagles have been identified in the Valley by USFWS personnel during 2015. There is no suitable nesting habitat within the Project Area for this species. The closest known historical nesting area, which has since collapsed and is not active, is on San Miguel Mountain, is over 3,000 feet to the north of the Project Area (H.T. Harvey 2017). The nearest known recently active golden eagle nest (as of 2011) is located in the Cedar Canyon area near Otay Mountain, just over 5 miles from the proposed development (USFWS 2012, as cited in H.T. Harvey 2017)

Table 7
Special-Status Wildlife Species That Have High or Moderate Potential to Occur within the Otay Ranch RMP Preserve, Conserved Open Space, and/or Non-Graded LDA

Species	Status (Federal / State / San Diego South County MSCP/ San Diego County)	Primary Habitat Associations	Status Within the Otay Ranch RMP Preserve, Conserved Open Space, and Non-Graded LDA, or Potential to Occur
Bell's sage sparrow (*Artemisiospiza belli belli*)	BCC/WL/ None/Group 1	Nests and forages in coastal scrub and dry chaparral; typically in large, unfragmented patches dominated by chamise; nests in more dense patches but uses more open habitat in winter	High potential to occur. There is suitable habitat throughout the Project Area and this species has been recorded in the Jamul Mountains quadrangle (CDFW 2016b).
burrowing owl (*Athene cunicularia* (burrow sites and some wintering sites))	BCC/SSC/ Covered/ Group 1	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows	Burrowing owl has not been observed within the Preserve or other non-graded areas the Proposed Project, but there is high potential for it to occur. This species has been recorded in the Jamul Mountains quadrangle (CDFW 2016b). During recent plant surveys in July 2015, a potential burrowing owl sign (white wash, feathers, and pellets) was observed at one burrow in the central portion of the Project Area (outside of the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project). However, no actual owls were observed or have been observed within the Project Area.
ferruginous hawk (*Buteo regalis* (wintering))	BCC/WL/ Covered/ Group 1	Winters and forages in open, dry country, grasslands, open fields, agriculture	There is high potential for ferruginous hawk to forage within the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project during the winter season.
least bittern (*Ixobrychus exilis* (nesting))	BCC/SSC/ None/Group 2	Nests in freshwater and brackish marshes with dense, tall growths of aquatic and semi-aquatic vegetation	Moderate potential to occur. There is some freshwater marsh in the Planning Area 19 Otay Ranch RMP Preserve within the southern drainage near Proctor Valley Road that could support this species. This species has been recorded in the CNDDB 9-quadrangle search (CDFW 2016b).
yellow warbler (*Setophaga petechia* (nesting))	BCC/SSC/ None/Group 2	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine and mixed conifer habitats	This species has been observed in 2017 foraging overhead within the Planning Area 16, but outside of the Otay Ranch RMP Preserve or other non-graded areas. This species has been recorded in the Jamul Mountains quadrangle (CDFW 2016b). There are very small patches of riparian scrub within the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project that has low potential to support this species.

Table 7
Special-Status Wildlife Species That Have High or Moderate Potential to Occur within the Otay Ranch RMP Preserve, Conserved Open Space, and/or Non-Graded LDA

Species	Status (Federal / State / San Diego South County MSCP/ San Diego County)	Primary Habitat Associations	Status Within the Otay Ranch RMP Preserve, Conserved Open Space, and Non-Graded LDA, or Potential to Occur
western bluebird (*Sialia mexicana*)	None/None/ Covered/ Group 2	Nests in old-growth red fir, mixed conifer, lodgepole pine habitats near wet meadows used for foraging	A pair of western bluebirds was observed within along Proctor Valley Road North and can occur in suitable habitat throughout the Project Area. This species has moderate potential to nest in eucalyptus trees within the Planning Area 19 Otay Ranch RMP Preserve.
Common barn-owl (*Tyto alba*)	None/None/ None/Group 2	Open habitats including grassland, chaparral, riparian, and other wetlands	This species was observed within the Project Area and has potential to forage throughout the Preserve or other non-graded areas within the Proposed Project and has moderate potential to nest in eucalyptus trees within the Planning Area 19 MSC Otay Ranch RMP Preserve.
Invertebrates			
Quino checkerspot (*Euphydryas editha quino*)	FE/None/ None/Group 1	Annual forblands, grassland, open coastal scrub and chaparral; often soils with cryptogamic crusts and fine-textured clat; host plants include *Plantago erecta* (dwarf plantain), *Antirrhinum coulterianum* (white snapdragon), and *Plantago patagonica* (woolly plantain) (Silverado Occurrence Complex)	High potential to occur. Focused surveys for Quino checkerspot butterfly were conducted in 2015 and 2016; the results were negative but stopped early due diminishing host plants and lack of recent regional Quino checkerspot butterfly sightings (HELIX 2016, 2017). Quino checkerspot butterfly has been recorded within the Project Area: there are two records prior to 1990 (CDFW 2016b); and one from 2001 and one from 2006 (USFWS 2015). Additionally, USFWS documented a total of eight individuals within the vicinity of the Project Area in 2017. These observations are considered to be incidental because they were made during a general reconnaissance of the area and not pursuant to a focused or protocol survey for the species. Two individuals were observed west of the central portion of the Village 14 Development Footprint, and four individuals were observed immediately off site west of Proctor Valley Road. One more individual was observed immediately east of Proctor Valley Road and one individual adjacent to the northeastern portion of the Development Footprint. There are additional records north and south of the Project Area. There is suitable habitat in the coastal sage scrub, openings in chaparral, and in some of the non-native grassland. Approximately 404.8 acres of suitable habitat and 0.72 acre of host plants would remain within the Otay Ranch RMP Preserve while 0.92 acre of host plants and 143.5 acre of suitable habitat would remain within Conserved Open Space and non-graded LDA.

Table 7
Special-Status Wildlife Species That Have High or Moderate Potential to Occur within the Otay Ranch RMP Preserve, Conserved Open Space, and/or Non-Graded LDA

Species	Status (Federal / State / San Diego South County MSCP/ San Diego County)	Primary Habitat Associations	Status Within the Otay Ranch RMP Preserve, Conserved Open Space, and Non-Graded LDA, or Potential to Occur
Hermes copper (*Lycaena hermes*)	FC/None/ None/Group 1	Mixed woodlands, chaparral and coastal scrub	Moderate potential to occur. There are approximately 8.6 acres mapped as suitable Hermes copper habitat within the Otay Ranch RMP Preserve (6.5 acres) or other non-graded areas the Proposed Project (1.6 acres in Conserved Open Space and 0.6 acres in Non-graded LDA). It should be noted that the 2015 and 2017 habitat assessments and focused surveys did not cover the entire Otay Ranch RMP Preserve (Figure 3-2, Hermes Copper Survey Area). There may be additional host plants located in the areas not surveyed. Results of the focused surveys in 2015 and 2017 were negative, but this species has been recorded in the Jamul Mountains quadrangle (CDFW 2016b).
wandering skipper (*Panoquina errans*)	None/None/ Covered/ Group 1	Salt marsh	Moderate potential to occur. There is some salt grass (*Distichlis spicata*) within the cismontane alkali marsh that occurs along drainages within the Otay Ranch RMP Preserve. This species has not been observed, however, has been recorded in the CNDDB nine-quadrangle search (CDFW 2016b).
alkali skipper (*Pseudocopaeodes eunus eunus*)	None/None/ None/Group 1	Grassy spots on alkali flats; playa/salt flats	Moderate potential to occur. There is some salt grass (*Distichlis spicata*) within the cismontane alkali marsh that occurs along drainages within the Otay Ranch RMP Preserve. This species has not been observed. Additionally, this species has not been recorded in the CNDDB nine-quadrangle search (CDFW 2016b).
Mammals			
pallid bat (*Antrozous pallidus*)	None/SSC/ None/Group 2	Grasslands, shrublands, woodlands, forests; most common in open dry habitats with rocky outcrops for roosting, but also roosts in built structures and trees	High potential to forage in suitable habitat within the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project. Low to moderate potential to roost in large boulders and trees within the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project. This species has been recorded in the CNDDB 9-quadrangle search (CDFW 2016b).
Dulzura pocket mouse (*Chaetodipus californicus femoralis*)	None/SSC/ None/Group 2	Open habitat, coastal scrub, chaparral, oak woodland, chamise chaparral, mixed conifer habitats; disturbance specialist; 0 to 3,000 feet amsl	Moderate potential to occur. There is suitable habitat for this species within the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project. This species has not been recorded in the Jamul Mountains quadrangle, but is documented in surrounding quadrangles (CDFW 2016b).

Table 7
Special-Status Wildlife Species That Have High or Moderate Potential to Occur within the Otay Ranch RMP Preserve, Conserved Open Space, and/or Non-Graded LDA

Species	Status (Federal / State / San Diego South County MSCP/ San Diego County)	Primary Habitat Associations	Status Within the Otay Ranch RMP Preserve, Conserved Open Space, and Non-Graded LDA, or Potential to Occur
northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)	None/SSC/ None/Group 2	Coastal scrub, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon–juniper, and annual grassland	Moderate potential to occur. There is suitable habitat for this species within the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project. This species has not been recorded in the Jamul Mountains quadrangle, but is documented in surrounding quadrangles (CDFW 2016b).
western mastiff bat (*Eumops perotis californicus*)	None/SSC/ None/Group 2	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees and tunnels	High potential to forage in suitable habitat within the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project. Low to moderate potential to roost in large boulders and trees within the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project. This species has been recorded in the Jamul Mountains quadrangle (CDFW 2016b).
western red bat (*Lasiurus blossevillii*)	None/SSC/ None/Group 2	Forest, woodland, riparian, mesquite bosque and orchards, including fig, apricot, peach, pear, almond, walnut, and orange; roosts in tree canopy	High potential to forage in suitable habitat within the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project. Low to moderate potential to roost in large boulders and trees within the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project. This species has been recorded in the Jamul Mountains quadrangle (CDFW 2016b).
California leaf-nosed bat (*Macrotus californicus*)	None/SSC/ None/Group 2	Riparian woodlands, desert wash, desert scrub; roosts in mines and caves, occasionally buildings	Moderate potential to forage in suitable habitat within the Preserve or other non-graded areas within the Proposed Project. There is no roosting habitat within the Preserve or other non-graded areas within the Proposed Project. This species has been recorded in the CNDDB 9-quadrangle search (CDFW 2016b). Mostly a desert species.
Yuma myotis (*Myotis yumanensis*)	None/None/ None/Group 2	Riparian, arid scrublands and deserts, and forests associated with water (streams, rivers, tinajas); roosts in bridges, buildings, rock crevices, caves, mines, and trees	High potential to forage in suitable habitat within the Preserve or other non-graded areas within the Proposed Project. Low to moderate potential to roost in rock crevices and trees within the Preserve or other non-graded areas within the Proposed Project. This species has been recorded in the Jamul Mountains quadrangle (CDFW 2016b).
San Diego desert woodrat (*Neotoma lepida intermedia*)	None/SSC/ None/Group 2	Coastal scrub, desert scrub, chaparral, cacti, rocky areas	Woodrat middens have been observed within the Project Area and this species likely occurs. This species has been recorded in the CNDDB 9-quadrangle search (CDFW 2016b).

Table 7
Special-Status Wildlife Species That Have High or Moderate Potential to Occur within the Otay Ranch RMP Preserve, Conserved Open Space, and/or Non-Graded LDA

Species	Status (Federal / State / San Diego South County MSCP/ San Diego County)	Primary Habitat Associations	Status Within the Otay Ranch RMP Preserve, Conserved Open Space, and Non-Graded LDA, or Potential to Occur
pocketed free-tailed bat (*Nyctinomops femorosaccus*)	None/SSC/ None/Group 2	Pinyon–juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, palm oases; roosts in high cliffs or rock outcrops with dropoffs, caverns, buildings	Moderate potential to forage in suitable habitat within the Preserve or other non-graded areas within the Proposed Project. Low to moderate potential to roost in boulders within the Preserve or other non-graded areas within the Proposed Project. This species has been recorded in the Jamul Mountains quadrangle (CDFW 2016b). A mostly desert species.
big free-tailed bat (*Nyctinomops macrotis*)	None/SSC/ None/Group 2	Rocky areas; roosts in caves, holes in trees, buildings, and crevices on cliffs and rocky outcrops; forages over water	High potential to forage in suitable habitat within the Preserve or other non-graded areas within the Proposed Project. Low to moderate potential to roost in large boulders and trees within the Preserve or other non-graded areas within the Proposed Project. This species has been recorded in the Jamul Mountains quadrangle (CDFW 2016b).
cougar (*Puma concolor*)	None/None/ Covered/ Group 2	Scrubs, chaparral, riparian, woodland, forest; rests in rocky area, and on cliffs and ledges that provide cover; most abundant in riparian area and brushy stages of most habitats throughout California, except deserts	Cougar sign was observed within the northwestern portion of the Project Area during coastal California gnatcatcher surveys. The Preserve or other non-graded areas within the Proposed Project is generally open and does not provide a lot of cover for this species.
Reptiles			
California legless lizard (*Anniella pulchra*)	None/SSC/ None/Group 2	Stabilized dunes, beaches, dry washes, chaparral, scrubs, pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils	Moderate potential to occur. There is some potential for this species to occur where there are sandy soils. This species has been recorded in the CNDDB nine-quadrangle search (CDFW 2016b).
orangethroat whiptail (*Aspidoscelis hyperythra*)	None/WL/ Covered/ Group 2	Low-elevation coastal scrub, chaparral, and valley–foothill hardwood	High potential to occur. There is suitable habitat for this species in the coastal sage scrub and chaparral. This species has been recorded in the Jamul Mountains quadrangle (CDFW 2016b).

Table 7
Special-Status Wildlife Species That Have High or Moderate Potential to Occur within the Otay Ranch RMP Preserve, Conserved Open Space, and/or Non-Graded LDA

Species	Status (Federal / State / San Diego South County MSCP/ San Diego County)	Primary Habitat Associations	Status Within the Otay Ranch RMP Preserve, Conserved Open Space, and Non-Graded LDA, or Potential to Occur
San Diego banded gecko (*Coleonyx variegatus abbotti*)	None/SSC/ None/Group 1	Rocky areas within coastal scrub and chaparral	High potential to occur. The Preserve or other non-graded areas within the Proposed Project supports suitable habitat for this species and is within its range (Nafis 2016).
red diamondback rattlesnake (*Crotalus ruber*)	None/SSC/ None/Group 2	Coastal scrub, chaparral, oak and pine woodlands, rocky grasslands, cultivated areas, and desert flats	High potential to occur. This species was observed within the Project Area, however not within the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project.
San Diego ringneck snake (*Diadophis punctatus similis*)	None/None/ None/Group 2	Moist habitats including wet meadows, rocky hillsides, gardens, farmland grassland, chaparral, mixed conifer forest, and woodland habitats	Moderate potential to occur. There is suitable habitat for this species within the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project. This species has been recorded in the Jamul Mountains quadrangle (CDFW 2016b).
Coronado skink (*Plestiodon skiltonianus interparietalis*)	None/WL/ None/Group 2	Woodlands, grasslands, pine forests, chaparral; rocky areas near water	High potential to occur. This species has high potential to occur within some of the rocky chaparral and coastal sage scrub with drainages where there is seasonal water in the Otay Ranch RMP Preserve or other non-graded areas within the Proposed Project. This species has been recorded in the Jamul Mountains quadrangle (CDFW 2016b).
coast patch-nosed snake (*Salvadora hexalepis virgultea*)	None/SSC/ None/Group 2	Brushy or shrubby vegetation; requires small mammal burrows for refuge and overwintering sites	Moderate potential to occur. There is suitable habitat for this species within the Project Area. This species has not been recorded in the Jamul Mountains quadrangle, but is documented in surrounding quadrangles (CDFW 2016b).

3.2.3 Anticipated Conservation Levels for Special-Status Wildlife Species

Similar to special-status plant species, the RMP provides a summary of the distribution of certain special-status wildlife species within Otay Ranch, as well as the percentage of populations anticipated to be retained in the Preserve. Table 3-5 of the MSCP Plan provides a list of the MSCP Covered wildlife species along with the specific conditions required for take authorizations and the conservation levels anticipated for each Covered Species. Table 8 provides the RMP and MSCP Plan anticipated conservation levels for each special-status wildlife

species observed within the Otay Ranch RMP Preserve and the Proposed Project's contribution to the preservation of the species.

Table 8
Otay Ranch RMP and MSCP Anticipated Conservation Levels for Special-Status Wildlife Species

Species Common Name (Scientific Name)	Regulatory Status: Federal/State/ MSCP/ County Group	Otay Ranch RMP	MSCP Table 3-5	Project Preservation
Amphibians and Reptiles				
western spadefoot (*Spea hammondii*)	None SSC Not Covered Group 2	No preservation requirements	This species is not a Covered Species.	The Proposed Project would preserve two features within the Otay Ranch RMP Preserve and four features within Conserved Open Space.
San Diegan tiger whiptail (*Aspidoscelis tigris stejnegeri*)	None SSC Not Covered Group 2	No preservation requirements	This species is not a Covered Species.	The Proposed Project would preserve 41% of suitable habitat within the Project Area.
rosy boa (*Lichanura trivirgata*)	None None Not Covered Group 2	No preservation requirements	This species is not a Covered Species.	The Proposed Project would preserve 41% of suitable habitat within the Project Area.
Blainville's horned lizard (*Phrynosoma blainvillii*)	None SSC Covered Group 2	No preservation requirements	This species would be covered by the MSCP because 60% of its potential habitat and 63% of known point occurrences would be conserved.	The Proposed Project would preserve 41% of suitable habitat within the Project Area.
Birds				
Cooper's hawk (*Accipiter cooperii*) (nesting)	None WL Covered Group 1	Although this species is listed in Table 5 of the RMP, the Otay Ranch distribution and percentage retained in the Preserve are not provided for this species.	This species would be covered by the MSCP because 59% of potential foraging and 52% of potential nesting habitat and 92% of known occurrences would be conserved.	The Proposed Project would preserve 94% of suitable nesting habitat and 41% of suitable foraging habitat within the Project Area.

Table 8
Otay Ranch RMP and MSCP Anticipated Conservation Levels for Special-Status Wildlife Species

Species Common Name (Scientific Name)	Regulatory Status: Federal/State/ MSCP/ County Group	Otay Ranch RMP	MSCP Table 3-5	Project Preservation
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	None WL Covered Group 1	The RMP states that because 70% of the coastal sage scrub on the Ranch would be included in the Preserve, this species would receive adequate protection. Table 5 of the RMP indicates 70-75% of the Otay Ranch populations of this species retained in the Preserve.	This species would be covered by the MSCP because 61% of potential habitat (including 71% of mapped localities) would be conserved.	The Proposed Project would preserve 41% of suitable habitat within the Project Area.
grasshopper sparrow (*Ammodramus savannarum*) (nesting)	None SSC Not Covered Group 1	No preservation requirements	This species is not a Covered Species.	The Proposed Project would preserve 27% of suitable habitat within the Project Area.
golden eagle (*Aquila chrysaetos*) (nesting and wintering)	BCC FP,WL Covered Group 1	Although this species is listed in Table 5 of the RMP, the Otay Ranch distribution and percentage retained in the Preserve are not provided for this species.	This species would be covered by the MSCP because 53% of potential foraging and nesting habitat would be conserved. Local populations are not critical to, and the plan would not adversely affect the species' long-term survival.	The Proposed Project would preserve 41% of suitable foraging habitat within the Project Area.
long-eared owl (*Asio otus*)	None SSC Not Covered Group 1	No preservation requirements	This species is not a Covered Species.	The Proposed Project would preserve 41% of suitable habitat within the Project Area.
red-shouldered hawk (*Buteo lineatus*)	None None Not Covered Group 1	No preservation requirements	This species is not a Covered Species.	The Proposed Project would preserve 94% of suitable nesting habitat and 41% of suitable foraging habitat within the Project Area.

Table 8
Otay Ranch RMP and MSCP Anticipated Conservation Levels for Special-Status Wildlife Species

Species Common Name (Scientific Name)	Regulatory Status: Federal/State/ MSCP/ County Group	Otay Ranch RMP	MSCP Table 3-5	Project Preservation
northern harrier (*Circus cyaneus*) (nesting)	None None Not Covered Group 1	Although this species is listed in Table 5 of the RMP, the Otay Ranch distribution and percentage retained in the Preserve are not provided for this species.	This species is not a Covered Species.	The Proposed Project would preserve 86% of suitable nesting habitat and 44% of suitable foraging habitat within the Project Area.
white-tailed kite (*Elanus leucurus*)	None FP Not Covered Group 1	No preservation requirements	This species is not a Covered Species.	The Proposed Project would preserve 33% of suitable habitat within the Project Area.
California horned lark (*Eremophila alpestris actia*)	None WL Not Covered Group 2	No preservation requirements	This species is not a Covered Species.	The Proposed Project would preserve 45% of suitable habitat within the Project Area.
loggerhead shrike (*Lanius ludovicianus*) (nesting)	BCC SSC Not Covered Group 1	No preservation requirements	This species is not a Covered Species.	The Proposed Project would preserve 43% of suitable habitat within the Project Area.
coastal California gnatcatcher (*Polioptila californica californica*)	FT SSC Covered Group 1	Table 5 of the RMP indicates 52% of the Otay Ranch populations of this species retained in the Preserve.	This species would be covered by the MSCP because: over 73,300 acres of existing and potential gnatcatcher habitat would be conserved and linked together; over 91% of the core areas where the species occurs (Otay, San Miguel, Mission Trails, Santee, Kearny Mesa, Poway, San Pasqual, and Lake Hodges) would be conserved; and 65% of the known locations would be conserved.	The Proposed Project would preserve 51% of suitable habitat within the Project Area.
common barn owl (*Tyto alba*)	None None Not Covered Group 2	No preservation requirements	This species is not a Covered Species.	The Proposed Project would preserve 43% of suitable habitat within the Project Area.

Table 8
Otay Ranch RMP and MSCP Anticipated Conservation Levels for Special-Status Wildlife Species

Species Common Name (Scientific Name)	Regulatory Status: Federal/State/ MSCP/ County Group	Otay Ranch RMP	MSCP Table 3-5	Project Preservation
Mammals				
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	None SSC Not Covered Group 2	No preservation requirements	This species is not a Covered Species.	The Proposed Project would preserve 37% of suitable habitat within the Project Area.
mule deer (*Odocoileus hemionus*)	None None Covered Group 2	No preservation requirements	This species would be covered by the MSCP because 81% of the core areas, which support its habitat, would be conserved.	The Proposed Project would preserve 37% of suitable habitat within the Project Area.
American badger (*Taxidea taxus*)	None SSC Covered Group 2	No preservation requirements	This species would be covered by the MSCP because 58% of its potential habitat would be conserved.	The Proposed Project would preserve 43% of suitable habitat within the Project Area.
Invertebrates				
San Diego fairy shrimp (*Branchinecta sandiegonensis*)	FE None Not Covered Group 1	The RMP states that the San Diego fairy shrimp is widespread on Otay Ranch, although most common in the vernal pool areas, which would be included in the Preserve. Table 5 of the RMP indicates 100% of the Otay Ranch populations of this species retained in the Preserve.	This species would be covered by the MSCP because 88% of its potential habitat (vernal pool habitat) would be conserved.	The Proposed Project would preserve 100% of known occupied features within the Project Area.
monarch (*Danaus plexippus*)	None None Not Covered Group 2	No preservation requirements	This species is not a Covered Species.	The Proposed Project would preserve 94% of suitable habitat within the Project Area.

3.3 Habitat Connectivity and Wildlife Corridors

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the immigration and emigration of animals. Wildlife corridors contribute to

population viability by ensuring the continual exchange of genes between populations, which helps maintain genetic diversity; providing access to adjacent habitat areas, representing additional territory for foraging and mating; allowing for a greater carrying capacity; and providing routes for colonization of habitat lands following local population extinctions or habitat recovery from ecological catastrophes (e.g., fires).

Habitat linkages are patches of native habitat that function to join two larger patches of habitat. They serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation. The linkage does represent a potential route for gene flow and long-term dispersal. Habitat linkages may serve as both habitat and avenues of gene flow for small animals such as reptiles and amphibians. Habitat linkages may be represented by continuous patches of habitat or by nearby habitat "islands" that function as "stepping stones" for dispersal.

The MSCP Plan identifies 16 Biological Resource Core Areas (BRCAs) and associated habitat linkages within the MSCP Study Area. BRCAs are generally defined in the MSCP as areas "supporting a high concentration of sensitive biological resources which, if lost or fragmented, could not be replaced or mitigated elsewhere." Figure 2-2, Generalized Core and Biological Resources Area and Linkages, in the MSCP Plan depicts portions of Village 14 almost entirely within the Jamul Mountains BRCA with a small portion within the Sweetwater Reservoir/San Miguel Mountain/Sweetwater River BRCA (Figure 3-3, Biological Resources Core Area). The southern portions of Planning Areas 16/19 are located within the Jamul Mountains BRCA.

The Baldwin Otay Ranch Wildlife Corridors Studies Report (Ogden 1992) identifies several local and regional wildlife corridors in the Project Area. Figure 3-4, Wildlife Corridor and Habitat Linkages, shows the locations of these corridors in conjunction with land ownership. Although landscapes in San Diego County have changed significantly over the last two decades, the corridors identified in this study are still viable and currently traverse between large areas of open lands. As shown in Figure 3-4, these corridors are given identifications and are primarily located within public lands that provide undeveloped areas connected to each other that support wildlife movement across the landscape, including movement between various reservoirs, creeks, and upland habitats.

The L4 corridor traverses the Proctor Valley drainage and facilitates movement of species such as birds, small mammals, reptiles, and some amphibians. L4 is located primarily within Otay Ranch RMP Preserve as it crossed through the Project Area. The corridor is currently within open space areas managed by various entities except for the point at which it crosses the southern and northern portions of the existing Proctor Valley Road. Within the Project Area, it traverses chamise chaparral, cismontane alkali marsh, coastal sage scrub vegetation types, non-native grassland, open water, unvegetated channel, developed land, and disturbed habitat. This corridor

connects to L3 in the northern portion, which then passes south through the BLM land in the eastern portion connecting to R1. Where L3 connects to L4 in the south, L3 continues east through Otay Ranch RMP Preserve lands and MCSP Preserve lands, and BLM land and connects to R7 near the Jamul and San Ysidro Mountains. The L3 corridor is composed of two sections, the southern one that runs mostly east/west and the northern one that runs mostly north/south. With the Project Area, it traverses Diegan coastal sage scrub, disturbed habitat, non-native grassland, open water, and southern mixed chaparral. A regional corridor R1 is designated in a general east/west direction and follows along drainages toward Sweetwater Reservoir to the west and Jamul Mountains to the east. Species that travel farther distances could use this corridor as part of their home range or dispersal, including mule deer, coyote, and cougar, as well as birds and other species. The R1 corridor traverses chamise chaparral, coastal sage scrub vegetation types, non-native grassland, vernal pools, developed land, and disturbed habitat within the Project Area. Because the Proctor Valley Parcel is situated adjacent to Otay and Sweetwater Reservoirs, it could be used as a stopover or foraging area for species travel between the reservoirs. All of the R1 corridor would remain within the Otay Ranch RMP Preserve. To facilitate wildlife movement across Proctor Valley Road, which currently crosses the R1 corridor, a wildlife crossing would be installed (Figure 3-4).

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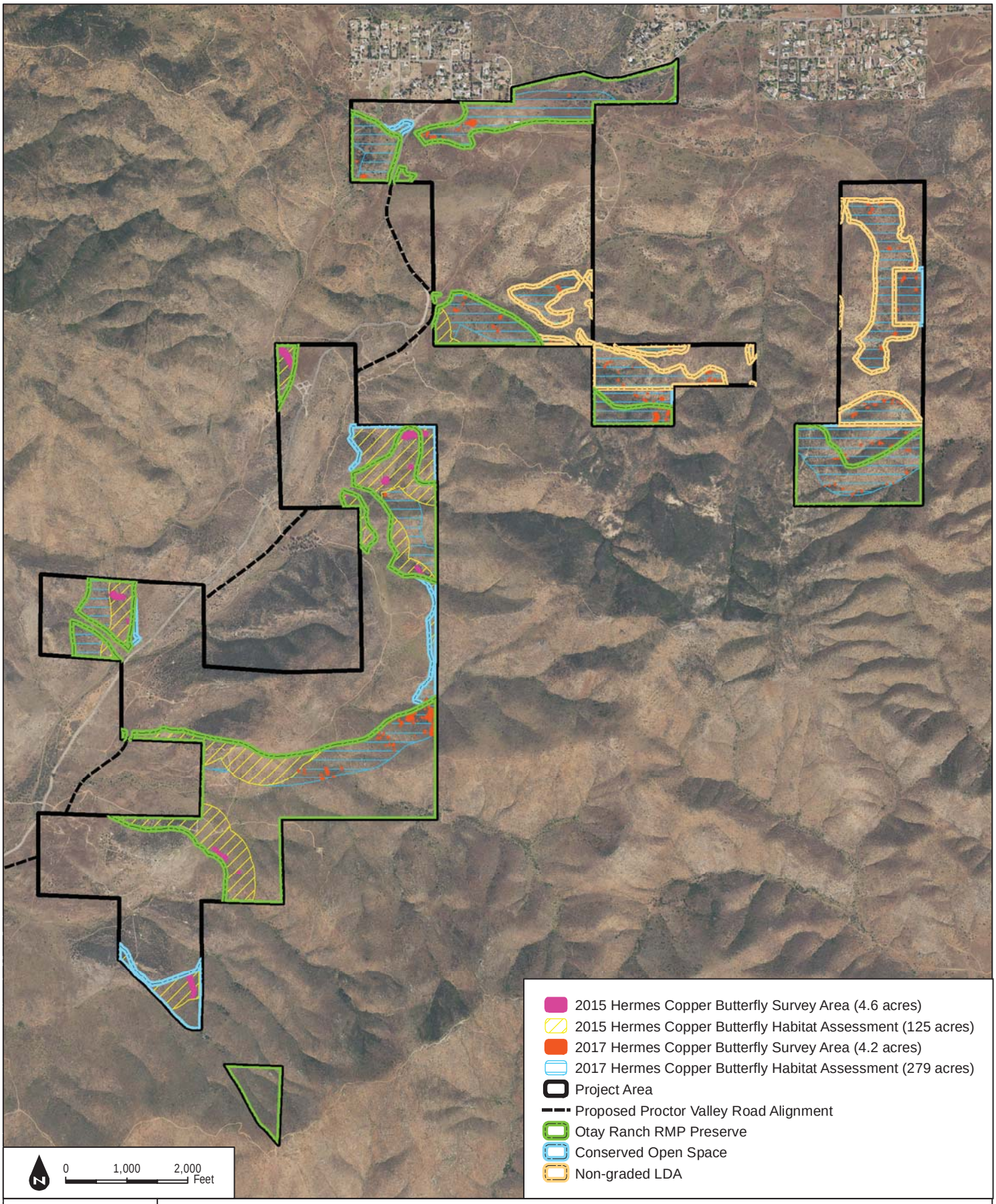

SOURCE: NAIP 2016; Hunsaker 2017

FIGURE 3-2

Hermes Copper Survey Area

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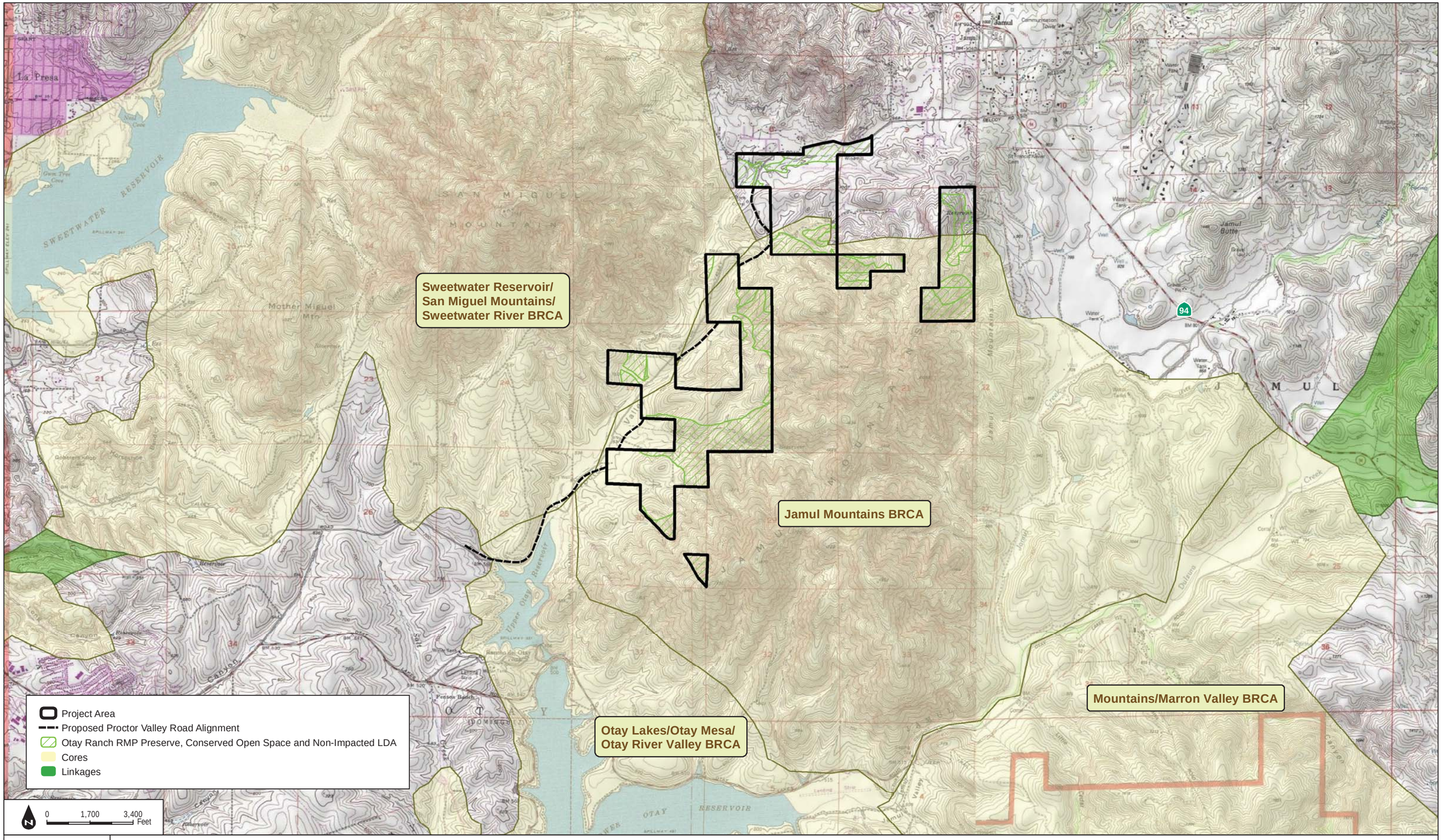

SOURCE: USGS 7.5-minute Topographic Map; Hunsaker 2017; SANGIS 2016

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FIGURE 3-3

Biological Resources Core Area

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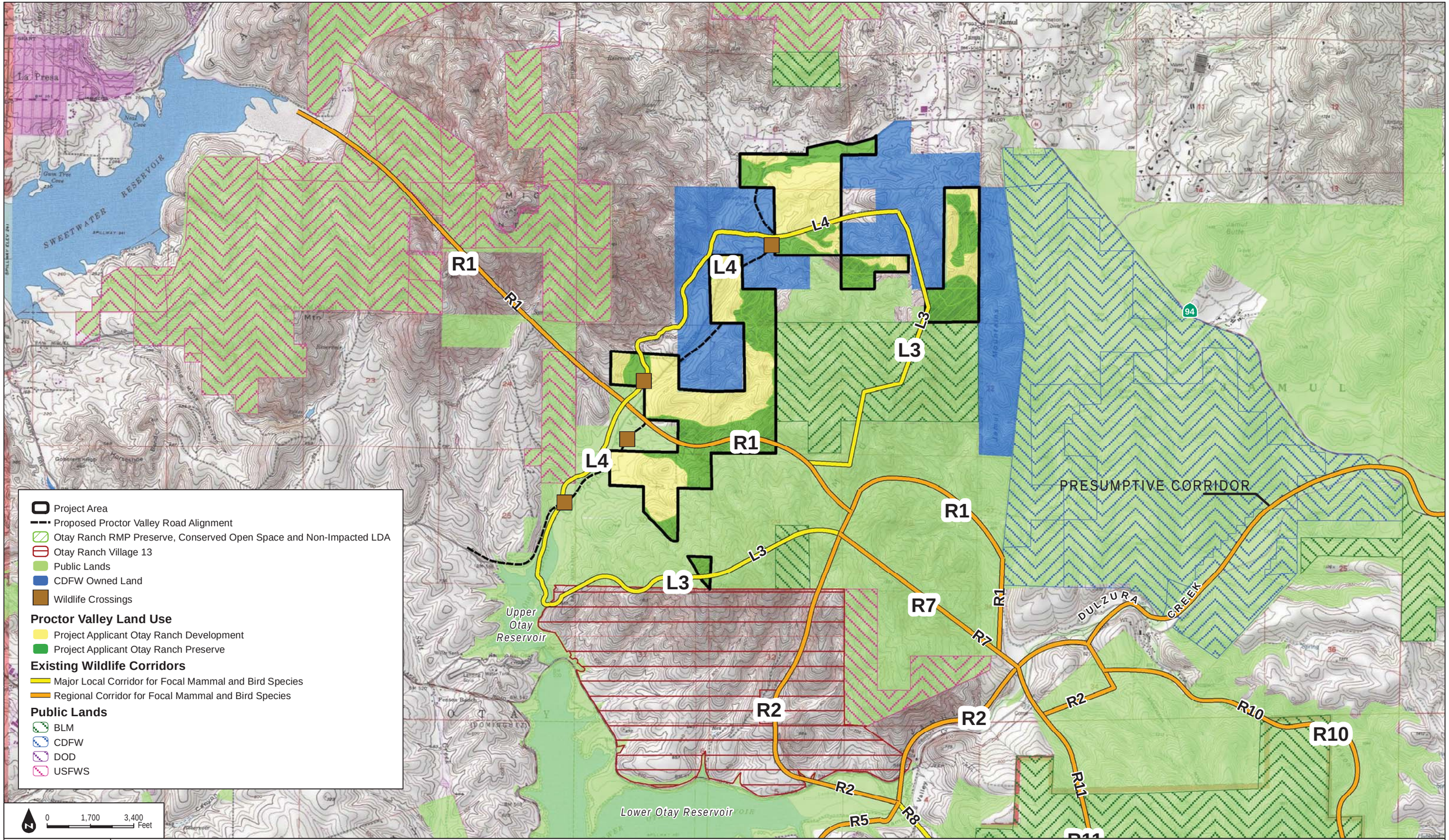

SOURCE: USGS 7.5-minute Topographic Map; Hunsaker 2017; SANGIS 2003; OGDEN 1992

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FIGURE 3-4

Wildlife Corridor and Habitat Linkages

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APPENDIX L

Review of Wildlife Movement and Corridor Studies Relevant to the Otay Ranch Village 14 and Planning Areas 16/19 Project

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MEMORANDUM

Subject:	Review of Wildlife Movement and Corridor Studies Relevant to the Otay Ranch Village 14 and Planning Areas 16/19 Project
Date:	September 4, 2018
Attachment(s):	Figure 3.17, California Essential Habitat Connectivity Project

The Otay Ranch Village 14 and Planning Areas 16/19 Project's (Proposed Project's) anticipated impacts on wildlife movement and nursery sites is based primarily on the Baldwin Otay Ranch Wildlife Corridors Study (Ogden 1992), known generally as the "Ogden Wildlife Corridor Study," which was prepared in conjunction with the 1993 GDP/SRP PEIR and which was the technical study used the MSCP Subarea Plan. The Ogden Wildlife Corridor Study is especially relevant to the Proposed Project because, unlike most regional wildlife movement assessments, it addresses the Project Area specifically. However, the County received comments regarding the Ogden Wildlife Corridor Study and its continued applicability to the Proposed Project. Some of the comments suggested that the County review more recent technical literature on wildlife movement to determine whether the conclusions drawn in the Ogden Wildlife Corridor Study remain valid. Therefore, Dudek reviewed a number of recent wildlife movement studies that cover all or parts of San Diego County to review the scientific assumptions, analytical approaches, conclusions, and recommendations of the Ogden Wildlife Corridor Study and incorporated into the MSCP Subarea Plan.

This memorandum provides a review of recent scientific studies of wildlife movement corridors and road crossings potentially relevant to the Proposed Project and the Project Area. This memorandum assesses the relevance of these studies and whether they support or conflict with the results of Ogden Wildlife Corridor Study.

Several wildlife corridor and crossing studies have been conducted since 2010, either statewide or in the general Project vicinity (i.e., coastal San Diego County), including (i) the California Essential Habitat Connectivity Project (CEHC), (ii) Connectivity Project Studies as part of the San Diego Management & Monitoring Program (SDMMP), (iii) the Comprehensive Multi-Species Connectivity Assessment and Planning for the Highway 67 Region of San Diego County, and (iv) the Wildlife Infrastructure Plan for State Route 94, San Diego County Post Miles 15.27 to 30.00. Below, we describe these studies and discuss their relevance to the Project site and the Ogden Study. This review also includes several studies describing general analytic and applied approaches to identifying corridors and crossings.

CALIFORNIA ESSENTIAL HABITAT CONNECTIVITY PROJECT (CEHC) (2010)

(https://www.wildlife.ca.gov/conservation/planning/connectivity/CEHC)

The CEHC was a statewide habitat connectivity planning project undertaken by the California Department of Transportation (Caltrans) and the California Department of Fish and Wildlife (CDFW) designed to produce a "statewide Essential Habitat Connectivity Map and provide guidance for implementing regional and local habitat connectivity plans" (Spencer et al. 2010). Generally, the Connectivity Map shows (i) large "Natural Landscape Blocks" that support native biodiversity, and (ii) "Essential Connectivity Areas" that connect the Natural Landscape Blocks. The Connectivity Map shows the Connectivity Areas at a very coarse landscape scale and is intended to serve as a "placeholder" to be replaced at some point by more specific or refined linkage designs at regional and local scales (Spencer et al. 2010). The Connectivity Map does not include the Project Area corridor design study area, and only shows a Natural Landscape Block generally east of the Project Area and a Connectivity Area crossing Interstate 8 (see Figure 3.17 of the CEHC report). Thus, it provides little useful information regarding the particular wildlife corridors associated with the Project Area.

The CEHC report also recommends procedures for designing local corridors for "focal" species that involve several steps, including least-cost modeling (see discussion below); selecting focal species; compiling and refining digital information (e.g., land covers, roads, topography, elevation, etc.); generating suitable habitat patches and resistance surfaces (see discussion below); and defining minimum linkage widths taking into consideration the home range sizes of focal species, potential edge effects, and potential interference of movement by territorial animals. To accommodate movement of large species such as puma and mule deer (both focal species in the Ogden Study), the CEHC report recommends 1.2-mile minimum corridor widths. This recommendation, however, has limited applicability to the R1 corridor identified by and discussed in the Ogden Study, because corridor R1, in its existing condition, is 1,300 to 2,200 feet wide based on rim-to-rim topography. The Project design actually improves this situation by pulling back development and widening the corridor to approximately 1,600 to 2,600 feet wide. Thus, while the CEHC minimum recommended width is larger than the R1 regional corridor assessed in the Ogden Study, it is important to note that the Ogden Study's conclusion that the R1 corridor can support "focal" species such as puma and mule deer was based on a field evaluation by experienced wildlife biologists and included site-specific recommendations for mitigating edge effects, including fencing and screening vegetation, as opposed to a general guideline for corridor widths.

CONNECTIVITY PROJECT STUDIES (2014)

(https://sdmmp.com/upload/SDMMP_Repository/0/cqn246dfsr0ybw9p8hv7mt5k1j3xgz.pdf)

The SDMMP document summarizes connectivity information and issues for several "at-risk" resources in the San Diego Multiple Species Conservation Program (MSCP) area, including mountain lion, bobcat, badger, mule deer, western pond turtle, lizards, small vertebrates at undercrossings (see additional review of Tracey et al. below), native bees, San Diego fairy shrimp, and wildlife linkage function. None of the studies summarized are directly related to the broader Ogden Study area (i.e., Otay Ranch) and the Project Area specifically. For example,

1. The mountain lion study (Vickers) focused on major road barrier to movement based on GPS tracking, trail cameras, and tracking, including SR-94 north of the Project Area (see discussion of the SR-94 project below). The Project Area is located along the western edge of areas that mountain lions are expected to use and would not itself be a barrier to north-south movement along the Peninsular Ranges discussed in the study.
2. The linkages assessed for bobcat movement (Jennings and Lewison) are all located north and east of the Project Area, generally the Peñasquitos/SR-56 area, the SR-67 Corridor between Lakeside and Poway, and the Ramona/SR-78 area. This study concluded that bobcat occupancy movement between MSCP preserves within and adjacent to these specific areas is being affected by habitat alteration and recreation, and that traffic on secondary roads may be the largest threat to bobcats and other medium-wide ranging species attempting to cross roads between core habitat areas. This study is not specifically relevant to, nor does it conflict with, the Project design of wildlife corridors or crossings. Rather, it demonstrates how modeling along with field data (wildlife cameras, mortality assessments, telemetry tracking) can be used to assess habitat linkages (see discussion below).
3. The badger study (Brehme) primarily focused on the presence and spatial activity of badgers in selected areas of western San Diego County. This study was not located in the Project vicinity and does not provide information relevant to wildlife corridors, nor is it in conflict with the Project.
4. Several underpasses were studied for small vertebrate use (e.g., rodents and reptiles) (Tracey et al.). While none were located near the Project Area (relevant preserve areas included Valley Center, Carmel County, Sorrento Valley Road, Scripps Poway Pkwy, Highway 52), this study is relevant to use of planned wildlife crossings on the Project, as discussed in more detail below.
5. The wildlife linkages function study (Rochester) used remote information (GIS, satellite imagery, land use data) to evaluate habitat linkages in western San Diego

County as functional or non-functional based on factors such as habitat availability and development-related habitat fragmentation. The study recommended follow-up monitoring of wildlife use at critical points along the linkages. This study did not include any linkages associated with the Project Area, and the information presented in the SDMMP document does not include any linkage design recommendations relevant to the Project.

6. The mule deer study (Bohonak and Mitelberg) involved a genetic analysis based on scat and does not relate directly to wildlife corridors on the Project Area, although samples were collected from the adjacent Rancho Jamul Ecological Reserve (RJER) and San Miguel Mountain to the west. The mule deer study recommended maintaining existing habitat connectivity in western San Diego County. The Project design accommodates mule deer movement and thus is consistent with this recommendation.
7. The western pond turtle study (Brown and Fisher) examined genetic diversity among populations in coastal San Diego, Orange, Los Angeles and Riverside Counties and is not specifically relevant to the Project Area's wildlife corridors.
8. The native bee study (Hung and Holway) focused on species in habitat fragments in the "Greater San Diego Region" and is not specifically relevant to the Project Area's wildlife corridors.
9. The San Diego fairy shrimp study (Bohonak and Simovich) focused on fairy shrimp genetics, primarily on MCB Camp Pendleton, MCAS Miramar, and in the City of San Diego, and is not specifically relevant to the Project Area's wildlife corridors.
10. The lizard study (Luckau) looked at the genetics of *Aspidoscelis hyperythra* (orange-throated whiptail, a special-status species) and *Sceloporus occidentalis* (western fence lizard, a common and abundant species) in San Diego County, including RJER and is not specifically relevant to the Project Area's wildlife corridors. Note, however, that the study found no relationship between genetic patterns and the presence of roads, suggesting that roads are not a barrier to dispersal of these two species.

SR-67 STUDY (2017)

The SR-67 study (Jennings and Zeller 2017) identified movement corridors for 12 focal species within the study area (generally ranging from Escondido in the north to El Cajon in the south), using existing species occurrences, monitoring data, and roadkill statistics. This information was used to create a wildlife crossing infrastructure plan for SR-67 and other roadways in the study area. The study then applied this information to additional species, including five federally-listed species and 13 other species of interest. Using occurrence records in combination with other environmental information thought to affect wildlife movement (e.g., topography, land cover,

water, development), Jennings and Zeller determined potential habitat use by 13 focal species in San Diego County. Based on this information, Jennings and Zeller generated Species Distribution Models (SDMs) that predict habitat suitability and "habitat resistance" (or resistance surface) for each particular species. The resistance surface indicates how easy or difficult it is for the species to move through the landscape. Jennings and Zeller then used two statistical connectivity models – referred to as "resistant kernals" and "Omniscape" – to identify landscape movement corridors. This approach is often termed "least-cost" modeling.

Because the SR-67 study area does not overlap the Project Area or the broader Ogden Study area, its conclusions and the resulting wildlife crossing infrastructure plan are not directly relevant to the Project Area. However, Table 5 of the SR-67 study makes recommendations for the optimal height and width dimensions of wildlife undercrossings at SR-67 that can be compared with the four wildlife undercrossings planned for the Project Area. All of the recommendations for arched or box culvert dimensions in the SR-67 study are consistent with the dimensions of the planned Project wildlife undercrossings.

The sophisticated and systematic methods used in the SR-67 study provide an example of current analytic approaches to identifying wildlife movement corridors and crossings contained in the scientific literature (e.g., Barrows et al. 2011; Cushman et al. 2013; Gray et al. 2016; Keeley et al. 2016; Koen et al. 2014; Landguth et al. 2012; Mateo-Sanchez et al. 2015; McRae et al. 2016; Zeller et al. 2016, 2017). Because quantitative modeling predicts wildlife movement areas when site-specific information may be lacking, an important consideration in modeling wildlife corridors is the need for empirical validation of predicted movement corridors (Cushman et al. 2013). The SR-67 study, however, does not include empirical data demonstrating the accuracy or predictive power of the quantitative models developed by Jennings and Zeller.

Although the SR-67 study was limited to a region north of the Project Area, it is relevant to the Ogden Study and corridor design in the sense that it reflects *current* approaches to corridor design (i.e., the use of quantitative modeling combined with field studies). Had the Ogden Study been initiated in recent years, it is likely that a set of SDMs would have been generated for focal species and surface resistance or least-cost modeling would have been conducted. However, these SDMS would have been verified using field studies (including track and scat surveys and wildlife camera surveillance of corridors) similar to those conducted in the 1992 Ogden Study. Thus, the empirical nature of the Ogden Study renders it more reliable than studies based solely on predictive models, especially for purposes of determining impacts in a CEQA setting. Given that the Ogden Study covered the entire Otay Ranch area in the field, it is unknown how much additional value the predictive modeling would have provided to the final delineation of movement corridors. There is no evidence that the Ogden Study conclusions would differ simply because quantitative modeling

was not conducted. The Ogden Study provides empirical evidence, not predictions, of where wildlife movement occurs on Otay Ranch.

SR-94 STUDY (2016)

The SR-94 Study (CBI 2016) focused on identifying locations where improvements to existing infrastructure could improve wildlife crossings of the road and, thus, improve connectivity between South County preserves bisected by SR-94. A total of 35 undercrossings were examined by wildlife experts in the field along 14.6 miles of SR-94. Recommendations for improvements included the following:

- Increasing the diameter and, thus, the openness ratio of the existing undercrossings
- Removing vegetation and debris blocking the undercrossings
- Restoring vegetation at approaches to the undercrossings
- Constructing fences to funnel wildlife to the undercrossings and block wildlife access to at-crossings of the road

The results and recommendations from the SR-94 study do not conflict with the conclusions drawn in the Ogden Study. While the SR-94 study looked at existing undercrossings, in concept it is similar to the design guidelines for the four main wildlife crossings on the Project Area according to the MSCP County Subarea Plan. These guidelines include (County of San Diego 1997):

- Minimizing roads that cross wildlife corridors
- Installing fencing that channels wildlife to underpasses or culverts
- Designing underpasses such that the length-to-width ratio (i.e., openness) is less than 2
- Using bridges rather than tunnels
- Installing sound insulation, including a natural substrate that is vegetated, including at entrances
- Providing line-of-sight through the tunnel

The design of the wildlife crossings for the Proposed Project were developed to incorporate the MSCP County Subarea Plan design criteria guidelines to the extent feasible and also to be consistent with the scientific literature to the maximum extent practical (see discussion below). For these reasons, the wildlife undercrossing design for the Proposed Project is consistent with the recommendations in the SR-94 Study.

WILDLIFE CROSSING DESIGN AND FUNCTION

As noted above, the Proposed Project's wildlife crossings were designed to be consistent with current scientific information regarding undercrossing crossing size dimensions and fencing guidelines. Three additional studies not cited in Appendix 2.4-1 Otay Ranch Village 14 and Planning Areas 16/19 Biological Resources Technical Report (Dudek 2018) are described here.

Tracey et al. (2014)

Tracey et al. (2014) studied use of eight wildlife undercrossings by small vertebrates in San Diego County. Specifically, Tracy et al. deployed motion detection cameras to capture movement by small rodents and reptiles, as well as medium- and large-sized species. Relatively large undercrossings were selected for the study and were of similar dimensions to the four planned undercrossings for the Proposed Project. The undercrossings assessed by Tracey et al. study ranged from 15 feet wide and 111 feet long to 87 feet wide and 285 feet long. In comparison, the four planned undercrossings for the Project would be 22 feet wide and 80 feet long, 84 feet wide and 111 feet long, 34 feet wide and 142 feet long, and 160 feet wide and 68 feet long.

The Tracey et al. study documented the following genera/species at and within the undercrossings: pocket mouse (*Chaetodipus spp*.), kangaroo rat (*Dipodomys spp.),* California vole (*Microtus californicus*), woodrat (*Neotoma spp.*), grey shrew (*Notiosorex crawfordi*), brush mouse (*Peromyscus boylii*), California mouse (*Peromyscus californicus*), deer mouse (*Peromyscus maniculatus*), other *Peromyscus spp*., domestic rat (*Rattus rattus),* orange-throated whiptail (*Cnemidophorus hyperythrus*), western whiptail (*Cnemidophorus tigris*), western fence lizard (*Sceloporus occidentalis*), granite spiny lizard (*Sceloporus orcutti*), side-blotched lizard (*Uta stansburiana*), red diamond rattlesnake (*Crotalus ruber*)—outside only, western rattlesnake (*Crotalus viridis*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), grey fox (*Urocyon cinereoargenteus*), mule deer (*Odocoileus hemionus*), greater roadrunner (*Geococcyx californianus*), opossum (*Didelphis marsupialis*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), spotted skunk (*Spilogale putorius*), black-tailed jackrabbit (*Lepus californicus*), cottontail (*Sylvilagus spp*.), California ground squirrel (*Spermophilus beecheyi*), and Merriam's chipmunk (*Neotamias merriami*).

The data in the Tracey et al. study indicate that large undercrossings such as those designed for the Project site can convey movement by a large diversity of wildlife species. For these reasons, the wildlife undercrossing design for the Proposed Project is consistent with the study's findings.

Kintsch and Cramer (2011)

Based on a literature review and field research, Kintsch and Cramer (2011) developed a wildlife "Passage Assessment System" for the Washington Department of Transportation that classified wildlife underpassing types by span (width) and height dimensions. "Large" underpasses have minimum dimensions of either 20 feet wide by 8 feet high, 10 feet wide by 10 feet high, or open space bridges. Large underpasses convey all "species movement guilds" defined by Kintsch and Cramer, including low mobility fauna (e.g., reptiles, frogs and toads, invertebrates), mobile small fauna (e.g., badger, skunk, squirrel), highly mobile adaptive fauna (e.g., coyote, bobcat), high openness mobile fauna (e.g., mountain lion), and adaptive ungulate (e.g., mule deer). All four of the planned undercrossing for the Proposed Project meet the minimum criteria for a large underpass, as defined by Kintsch and Cramer, and thus would be expected to function for all the species guilds. This study is consistent with the Proposed Project wildlife corridor crossings.

Rytwinski et al. (2016)

Rytwinski et al. (2016) examined the effectiveness of road mitigation, including fencing and undercrossings, in reducing roadkill by conducting a meta-analysis of 50 studies. Fencing with or without crossing structures reduced roadkill by approximately 54% overall, including an 83% reduction for large mammals. Surprisingly, crossing structures without fencing did not reduce roadkill. There were insufficient data to determine what attributes of crossing structures and fencing influence their effectiveness. As described above, the wildlife undercrossings for the Proposed Project would include fencing to funnel wildlife to the undercrossing and therefore is consistent with the study findings.

CONCLUSION

Based on the review of the literature, we conclude that (i) none of the recent wildlife corridor studies covers the Project site or the area surrounding it; (ii) none of the conclusions drawn in the recent studies is inconsistent with or undermines the validity of the Ogden Wildlife Corridor Study; and (iii) none of the recent studies recommends measures materially different from those recommended in the Ogden Wildlife Corridor Study. We have also determined, through extensive fieldwork and surveys for the Proposed Project, that conditions within and surrounding the Project Area have not materially changed since the Ogden Wildlife Corridor Study was prepared in 1992. Thus, the study, including its empirical findings, remains valid.

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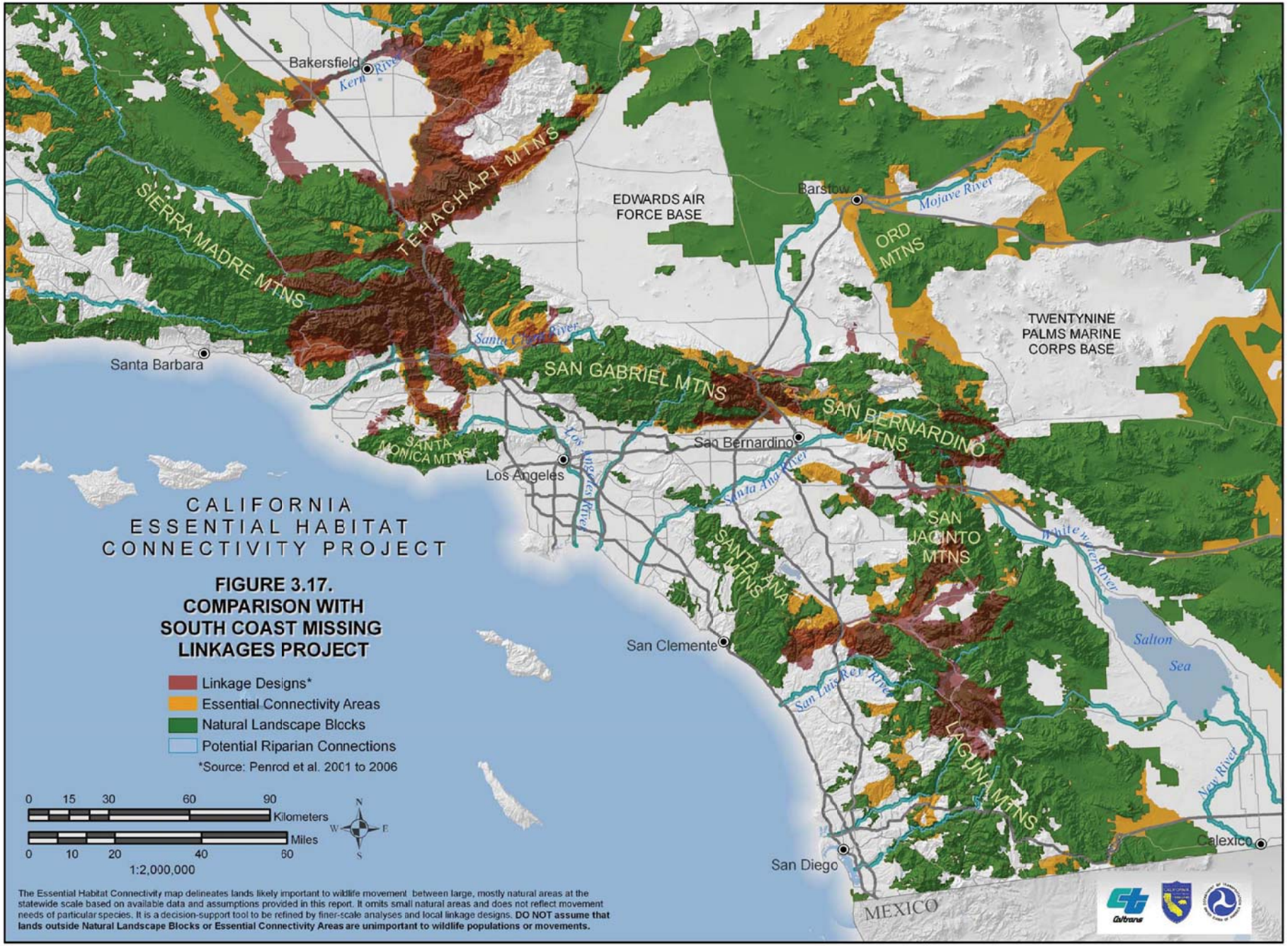
ATTACHMENT 1

Figure 3.17, California Essential Habitat Connectivity Project


Bakersfield
Kern River
SIERRA MADRE MTNS
TEHACHAPI MTNS
EDWARDS AIR FORCE BASE
Barstow
Mojave River
ORD MTNS
TWENTYNINE PALMS MARINE CORPS BASE
Santa Barbara
Santa Clara River
SAN GABRIEL MTNS
SAN BERNARDINO MTNS
SANTA MONICA MTNS
Los Angeles
Los Angeles River
San Bernardino
Santa Ana River
SAN JACINTO MTNS
SANTA ANA MTNS
White water River
San Clemente
Salton Sea
San Luis Rey River
LAGUNA MTNS
New River
Calexico
San Diego
MEXICO
CALIFORNIA ESSENTIAL HABITAT CONNECTIVITY PROJECT
FIGURE 3.17. COMPARISON WITH SOUTH COAST MISSING LINKAGES PROJECT
Linkage Designs*
Essential Connectivity Areas
Natural Landscape Blocks
Potential Riparian Connections
*Source: Penrod et al. 2001 to 2006
0 15 30 60 90
Kilometers
Miles
0 10 20 40 60
1:2,000,000
N
W
E
S
The Essential Habitat Connectivity map delineates lands likely important to wildlife movement between large, mostly natural areas at the statewide scale based on available data and assumptions provided in this report. It omits small natural areas and does not reflect movement needs of particular species. It is a decision-support tool to be refined by finer-scale analyses and local linkage designs. DO NOT assume that lands outside Natural Landscape Blocks or Essential Connectivity Areas are unimportant to wildlife populations or movements.