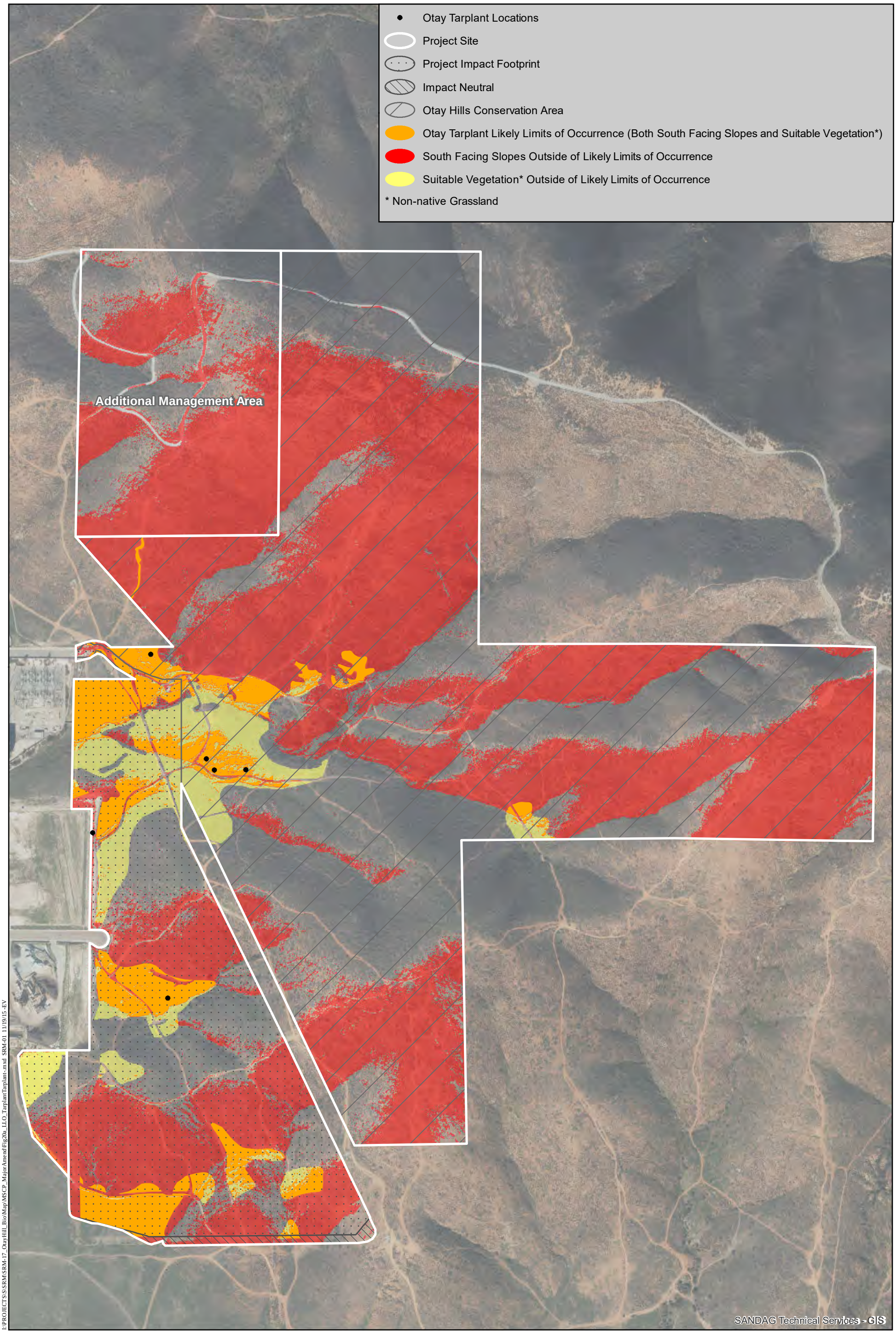

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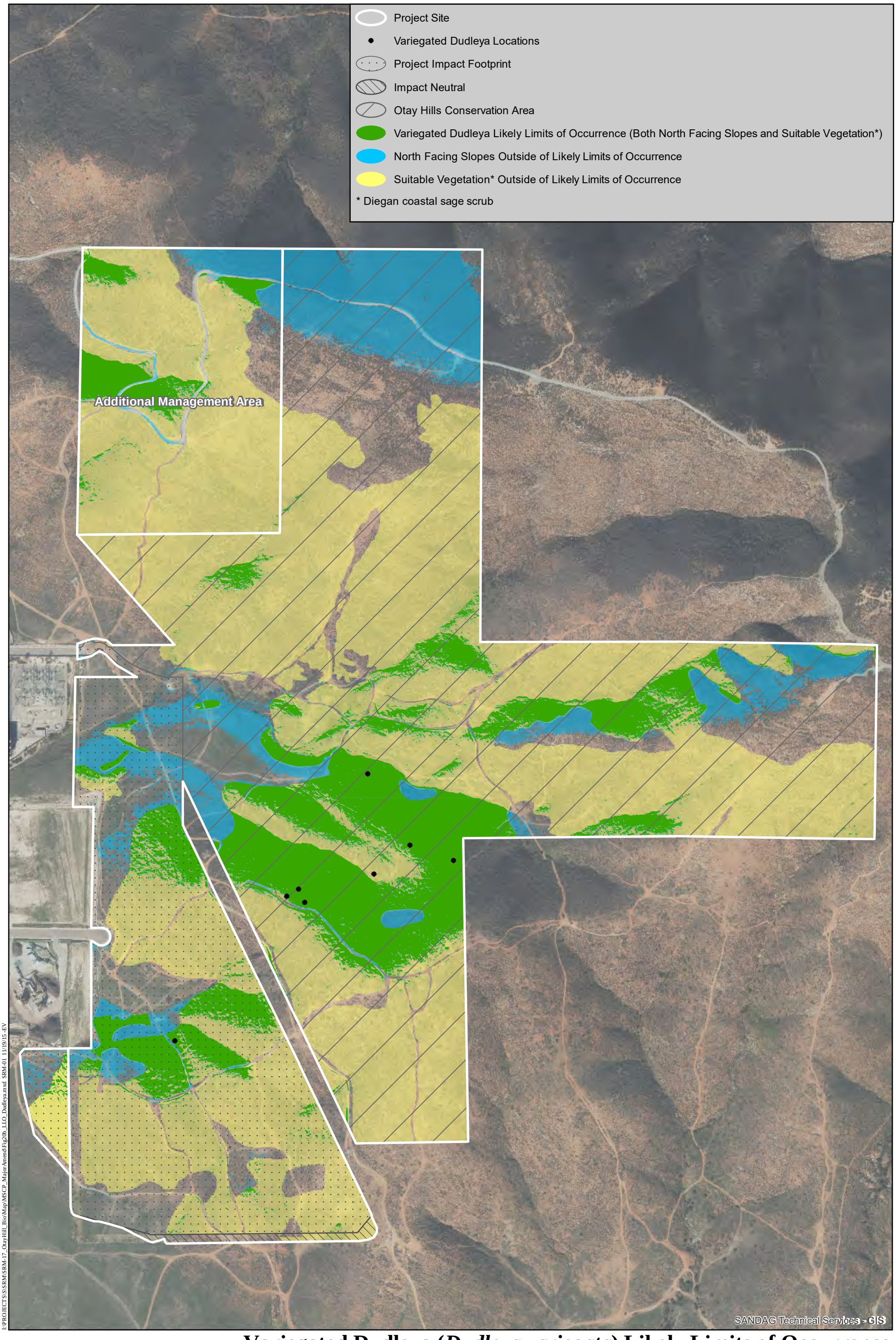
Otay Tarplant (*Deinandra conjugens*) Likely Limits of Occurrence

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 600 Feet

Figure 20a



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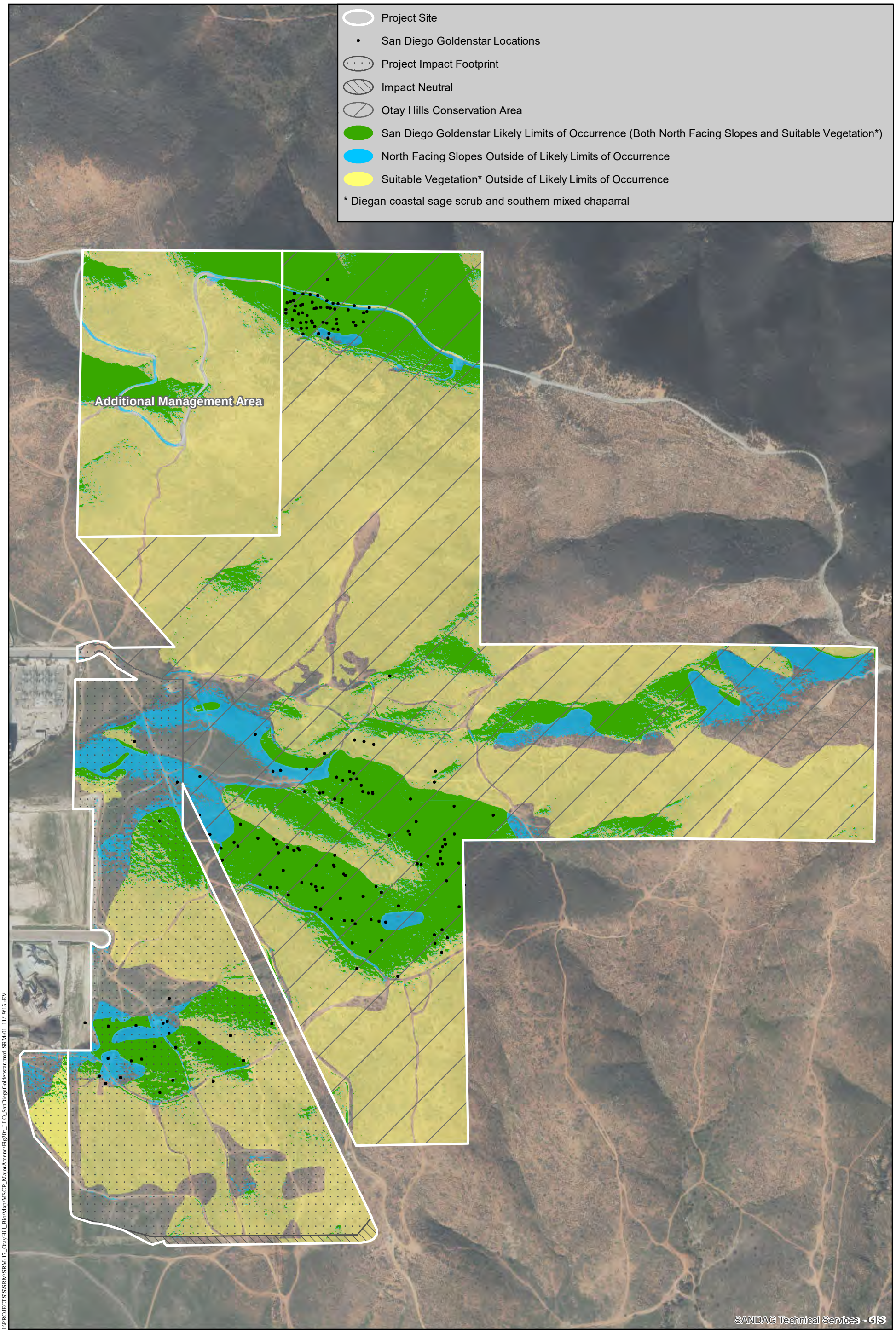
Variegated Dudleya (*Dudleya variegata*) Likely Limits of Occurrence

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 600 Feet

Figure 20b



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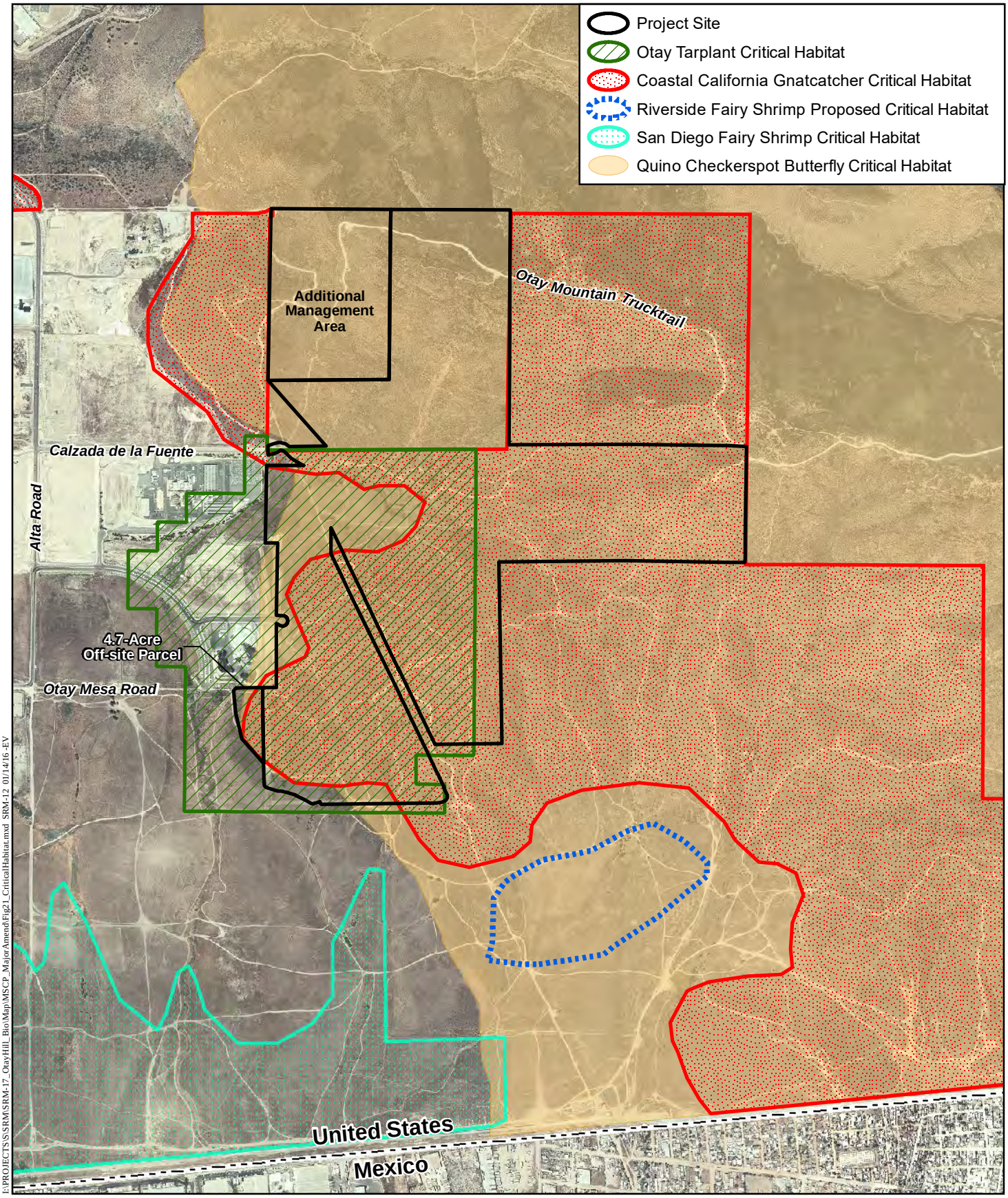
San Diego Goldenstar (*Bloomeria [Muilla] clevelandii*) Likely Limits of Occurrence

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 850 Feet

Figure 20c



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Critical Habitats

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N

0 1,500 Feet

Figure 21

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Table 7
DIRECT IMPACTS TO COVERED PLANT SPECIES BY PHASE
(individual plants)

PLANT SPECIES	PHASE 1	PHASE 2A	PHASE 2B	PHASE 2C[1]	TOTAL
San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*)	400		813	1	1214
Otay tarplant (*Deinandra conjugens*)		30			30
Variegated dudleya (*Dudleya variegata*)			120		120
San Diego barrel cactus (*Ferocactus viridescens*)		44	18	134	196
TOTAL	**400**	**74**	**951**	**135**	**1,560**

[1] Phase 2c includes off-site impacts to 25 individuals of San Diego barrel cactus on the Otay Crossings Commerce Park open space parcel.

4.4 EFFECTS ON CRITICAL HABITAT

Designated Critical Habitat for the QCB occurs on 402.2 acres of the Project site. The Project would directly impact 97.8 acres (24.3 percent; an additional 1.6 acres are impact neutral) and would preserve 304.4 acres of QCB Designated Critical Habitat (Figure 21).

Designated Critical Habitat for Otay tarplant occurs on 199.3 acres of the Project site. Impacts to 105.5 acres of Otay tarplant Designated Critical Habitat would occur on site (an additional 2.3 acres would be impact neutral), and 93.8 acres would be preserved in the OHCA. Otay tarplant was not observed on the off-site 4.7-acre parcel, however, and is not expected to occur there because of inappropriate soils (HELIX 2010; Figure 21).

Designated Critical Habitat for the coastal California gnatcatcher occurs on 262.1 acres of the Project site. The Project would directly impact 77.1 acres (29.3 percent; an additional 0.9 acre would be impact neutral) and would preserve 185.0 acres of Designated Critical Habitat for the coastal California gnatcatcher in the OHCA (Figure 21).

Potential indirect impacts on Critical Habitat could include those from noise (for coastal California gnatcatcher Designated Critical Habitat), invasive plant species, human activity, night lighting, fugitive dust, and increased fire as described in Section 4.2.

Impacts to Critical Habitat could also include fragmentation. The Project would impact the western edges of Designated Critical Habitat for the QCB and coastal California gnatcatcher; however, the critical habitat would be maintained as a contiguous block of habitat to the north, east, and south in the OHCA. The Project would fragment Otay tarplant Designated Critical Habitat to the west and south of the development footprint, however, this area is already developed and no longer has any constituent elements associated with Critical Habitat for this species.

Designated Critical Habitat for the San Diego fairy shrimp (*Branchinecta sandiegonensis*) occurs south of the Project site. However, it is approximately 750 feet south and is not, therefore, expected to be indirectly affected by the Project.

4.5 CUMULATIVE IMPACTS

In contrast with the analysis of cumulative impacts under Section 7 of the Act, NEPA analysis of cumulative impacts account for incremental impacts of the action on the environment when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. The USFWS will be preparing an EIS in which cumulative impacts will be addressed.

4.6 ANTICIPATED IMPACTS OF THE TAKING

This section describes the impacts to each Proposed Covered Species by the Project and whether or not the Project is consistent with the MSCP conditions for coverage. See Appendix A for more information.

4.6.1 Proposed Covered Wildlife Species

Quino Checkerspot Butterfly

The Project is located in Management Unit 3 of the Southwest San Diego Recovery Unit identified by the USFWS in the Recovery Plan for the QCB, and is considered a core area for the QCB in the QCB Recovery Plan (USFWS 2003). The Project would result in impacts to five of 57 locations where QCB adults (nine percent) were observed on the Project site during surveys in 2000, 2001, 2003, and 2008. All five locations would be impacted by Phase 2c, the last phase of vegetation impacts. The Project would preserve 52 locations (91 percent) where QCB adults were observed on the Project site in the OHCA.

Adult QCB are often observed in areas beyond the limits of their host plant locations, especially hilltops and ridgelines. In assessing QCB use of a site, both the breeding habitat (host plant locations) as well as hilltops and ridgelines should be considered. Detailed larval host plant mapping of the entire Project site was conducted in 2016. Isolated plants and small populations were recorded as points, while large populations were recorded as polygons. Large populations were visually estimated rather than counting each individual plant. The project would impact three clustered areas of dwarf plantain (defined as "moderate host plant locations" of more than 1,000 individuals), with the largest of the three occurring in the central portion of the impact footprint and the two smaller clusters occurring in the southern portion of the impact footprint. All of the QCB locations occur in the southern two clusters. Using the mid-point of the estimated host plant populations, the Project would impact approximately one percent of the QCB larval host plant, dwarf plantain (*Plantago erecta*) on the project site.

The OHCA distribution is more difficult to differentiate because of the significantly larger number of resources. There is a large cluster (defined as "high host plant location"; more than 10,000 individuals and as many as eight QCB locations) in the northern end of the OHCA. There are

scattered moderate host plant locations (and two QCB locations) in the west-central portion of the OHCA. An east-west ridgeline traverses the central portion of the OHCA that supports at least nine QCB locations and four high host plant locations of varying sizes. There is a smaller, disjunct moderate host plant location in the west-central portion of the site. There are two high host plant locations and one moderate host plant location in the southern portion of the OHCA that supports 24 QCB locations. In total, the OHCA would preserve approximately 1,192,307 individuals (99 percent) of dwarf plantain.

The Project would also preserve 47 individuals of purple owl's clover (*Castilleja exserta*) scattered across the OHCA. No purple owl's clover was observed in the impact area in the 2016 habitat mapping.

Taking into consideration the locations of the QCB sightings, the extent of potential QCB habitat around and near those locations, as well as locations of QCB larval host plants, 99 percent of the Project site is considered occupied by the QCB (409.5 acres total). As a result, implementation of the Project would directly impact 104.9 acres of QCB habitat, and a total of 97.8 acres of QCB critical habitat would be directly impacted. The Project Proponent proposes preservation of 304.6 acres of QCB-occupied habitat within 304.4 acres of QCB Designated Critical Habitat in the OHCA prior to commencement of habitat clearing. The OHCA supports 91 percent of the recorded QCB locations, seven out of 10 moderate host plant locations and all eight high host plant locations, containing approximately 99 percent of all QCB host plants mapped on the Project site. QCB adults, host plants, and occupied habitat occur on the AMA.

The OHCA is surrounded by the San Ysidro Mountains and foothills to the north and east, and most of these areas are BRCAs and Hardline Preserve that support the QCB. The Otay Mountain Cooperative Land and Wildlife Management Area and the BLM Otay Mountain Wilderness Area, National Wilderness Preservation System land also overlay areas to the east. The OHCA helps to maintain the connectivity among QCB populations in these areas.

The OHCA and AMA would be managed by a preserve manager responsible for implementing a Resource Management Plan (RMP; Appendix B). An RMP is a vehicle to identify management goals and objectives for the existing habitats and associated species in the OHCA in order to sustain the biological values of the open space in perpetuity. An RMP includes management and monitoring of biological resources to protect and, where appropriate, enhance them. It includes stewardship measures, including but not limited to, invasive plant species removal, fencing and signs upkeep, trespass restriction, and debris removal. There is potential for such stewardship measures to inadvertently impact the QCB (or other present endangered, threatened, or key sensitive species) through trampling during surveys, weeding, and other management activities. However, the RMP includes measures to avoid and/or minimize take of the species.

While not usually considered an effect on butterflies, HELIX consulted with QCB expert Dennis Murphy, Ph.D. (pers. comm. 2009) regarding the potential for indirect blasting noise and vibration to adversely affect the QCB. It was his opinion that beyond the concussion zone, noise or vibration would likely not be an issue for QCB, as described below.

The term concussion zone is assumed to be an area where direct impacts may occur from a blast. There are typically two forms of blasting impacts: airborne impacts (displacement and acceleration of air, as well as shock waves) and ground-borne shock waves radiating out from the blast zone.

No specific research is available to document exact distances, but it is unlikely that the displacement and acceleration of air through branches in shrubs would exceed that created by a strong gust of wind at ranges greater than two to three times the size of the actual blast area.

Ground-borne shock waves, while potentially intense in the immediate area of the blast and capable of causing structural damage to fragile buildings at greater distances, are unlikely to impact the QCB.

While the ground-borne vibration impacts area may be significantly limited, the airborne shockwave, typically measured as an overpressure pulse, may have impacts at greater distances. Specific information does not exist to predict the exact value of overpressure pulse that would impact butterflies (or larvae). However, it is reasonable to assume that the overpressure pulse is not likely to cause damage at any level that would not cause structural damage (including breaking glass) to a building. It should be further noted that the blast wave has significant ground plane interaction, and in locations where the wave travels along the ground, a low-lying plant would experience even lower levels of overpressure pulse. Therefore, potential airborne and ground-borne impacts from blasting are not anticipated for the QCB.

Invasive plants and fugitive dust could indirectly impact the QCB as described in Table 5, but the effects are expected to be minimal as described in Section 4.2.

As noted above, the project lies within a core area for the QCB as part of the West Otay Mountain Occurrence Complex. The QCB occur off site to the south, east, and north, as part of this larger occurrence complex. The Project will conserve 52 of 57 QCB locations (91 percent), and 99 percent of the host plant individuals. The OHCA contains all of the key habitat components including very significant host plant populations, nectaring resources, and hilltops and ridgelines. The OHCA is also surrounded by existing conservation to the north and east, and the project will preclude public access from the west. The RMP will provide for management and funding in perpetuity that will allow for preservation and enhancement of these QCB resources. Combined, these measures will maintain the function of Management Unit 3 of the Southwest San Diego Recovery Unit, and assist in recovery of the QCB.

Belding's Orange-Throated Whiptail

In 1995, the U.S. Geological Survey and San Diego State University began an intensive study of the diversity and autecology of the herpetofauna of the southern California portion of the California Floristic Province including much of the area within the MSCP region of San Diego County. It was concluded that the orange-throated whiptail does not currently appear at risk of extinction within the MSCP boundary; however, certain edge populations should be monitored for edge effects (U.S. Geological Survey and San Diego State University 2001). This species is assumed to be present within 392.0 acres of potential habitat on the Project site (i.e., all vegetation communities but disturbed habitat and developed land). Of this habitat, 96.3 acres would be

directly impacted and 320.4 acres (75.4 percent) of this habitat would be preserved in the 304.6-acre OHCA.

Invasive plants and fugitive dust could indirectly impact the orange-throated whiptail as described in Table 5, but the effects are expected to be minimal as described in Section 4.2.

The OHCA would be managed by a preserve manager responsible for implementing the RMP as described above under the QCB discussion. This species was afforded coverage under the MSCP because 75 percent of its potential habitat and 62 percent of known point locations will be conserved, and management directives will include addressing edge effects. Since this Project would preserve 75.4 percent of its potential habitat, and edge effects would be addressed through the RMP, the Project would be consistent with the goals of the MSCP for this Proposed Covered Species on the Project site.

As noted above, the project site is assumed occupied by this species. The OHCA contains all of the key habitat components including coastal sage scrub, chaparral, and washes with patches of brush and rocks and assumed to support termites, the whiptail's primary food source, across the site. The OHCA is also surrounded by existing conservation to the north and east, and the project will preclude public access from the west. The RMP will provide for management and funding in perpetuity that will allow for preservation and enhancement of these resources. Combined, these measures will maintain the function of the MSCP Preserve, and assist in recovery of the orange-throated whiptail.

Coast Horned Lizard

Eleven individual coast horned lizards were observed on the Project site, and the species is assumed to be present within 392.0 acres of potential habitat on the Project site (i.e., all vegetation communities but disturbed habitat and developed land). Of this habitat, 96.3 acres would be directly impacted, and 295.7 acres of this habitat (75.4 percent) would be preserved in the 304.6-acre OHCA.

Invasive plants and fugitive dust could indirectly impact the coast horned lizard as described in Table 5, but the effects are expected to be minimal as described in Section 4.2.

The OHCA would be managed by a preserve manager responsible for implementing the RMP as described above under the QCB discussion. This species was afforded coverage under the MSCP because 75.4 percent of its potential habitat and 63 percent of known point locations will be conserved, and management directives will include addressing ant species and edge effects. Since the Project would preserve 75.4 percent of its potential habitat, and species and edge effects would be addressed through the RMP, the Project would be consistent with the goals of the MSCP for this Proposed Covered Species.

As noted above, the project site is occupied by this species, which is assumed to be present throughout the plan area where potential habitat exists. The OHCA contains all of the key habitat components including coastal sage scrub, chaparral, areas with loose, fine soils, and open areas for basking, and also supports a native ant population that is the primary food source for the coast

horned lizard. The OHCA is also surrounded by existing conservation to the north and east that also conserves additional suitable habitat for this species, and the project will preclude public access from the west. The RMP will provide for management and funding in perpetuity that will allow for preservation and enhancement of these resources, and protective measures to maintain existing native ant populations, the primary food source for this species. Combined, these measures will maintain the function of the MSCP Preserve, and assist in recovery of the coast horned lizard.

Cooper's Hawk

The Cooper's hawk was observed on the Project site in 2012. The Project site does not support trees suitable for nesting, but approximately 395.1 acres of the Project site may provide foraging habitat for the species (i.e., all except for disturbed habitat and developed). This species was afforded coverage under the MSCP because 50 percent of potential foraging habitat, 52 percent of potential nesting habitat, and 57 percent of known localities will be conserved. On the Project site, 98.7 acres that are assumed to be potential foraging habitat for the Cooper's hawk would be directly impacted, and 296.4 acres (75.0 percent) of this habitat would be preserved in the 304.6-acre OHCA and subject to the RMP as described above under the QCB discussion. Since this Project would preserve 75.0 percent of potential foraging habitat for the Cooper's hawk, the Project would be consistent with the goals of the MSCP for this Proposed Covered Species.

Invasive plants and fugitive dust could indirectly impact the Cooper's hawk as described in Table 5, but the effects are expected to be minimal as described in Section 4.2.

The OHCA contains foraging habitat for the Cooper's hawk and at least scattered trees that could be used for nesting. The OHCA is also surrounded by existing conservation to the north and east that provides suitable foraging and nesting habitat, and the project will preclude public access from the west. The RMP will provide for management and funding in perpetuity that will allow for preservation and enhancement of this habitat. Combined, these measures will maintain the function of the MSCP Preserve, and assist in recovery of the Cooper's hawk.

Southern California Rufous-Crowned Sparrow

Twenty-two individual southern California rufous-crowned sparrows were observed/detected in various locations on the Project site. Five individuals would be directly impacted by the Project, as would 66.7 acres of Diegan coastal sage scrub (including disturbed) habitat. This species was afforded coverage under the MSCP because 77 percent of potential habitat including 71 percent of mapped localities will be conserved. Area-specific management directives include maintenance of dynamic processes, such as fire, to perpetuate some open phases of coastal sage scrub with herbaceous components.

Indirect noise impacts to Diegan coastal sage scrub may render the habitat undesirable to the southern California rufous-crowned sparrow and adversely affect its breeding, so the Project would be required to mitigate the impact at a 1:1 ratio through preservation of 20.6 acres Diegan coastal sage scrub in the OHCA and subject to the RMP.

Invasive plants and fugitive dust could indirectly impact the southern California rufous-crowned sparrow as described in Table 5, but the effects are expected to be minimal as described in Section 4.2.

The Project Proponent proposes preservation of 304.6 acres of conservation area in the OHCA with 225.3 acres of Diegan coastal sage scrub (including disturbed; 77.2 percent of the approximately 292.0 acres of potential sage scrub habitat on the Project site), 5.4 acres of coastal sage-chaparral scrub (100 percent of this habitat on the Project site), and 17 individual locations of rufous-crowned sparrows (77 percent) on the Project site. The OHCA would be managed by a preserve manager responsible for implementing the RMP as noted above. Therefore, the Project would be consistent with the goals of the MSCP for this Proposed Covered Species.

The OHCA contains this species' preferred habitat: coastal sage scrub and coastal sage/chaparral scrub and conserves 17 of the individual locations. The OHCA is also surrounded by existing conservation to the north and east where significant amounts of suitable habitat are also conserved, and the project will preclude public access from the west. The RMP will provide for management and funding in perpetuity that will allow for preservation and enhancement of these resources. Combined, these measures will maintain the function of the MSCP Preserve and assist in recovery of the southern California rufous-crowned sparrow.

Burrowing Owl

One burrowing owl was observed west of the SDG&E easement on the Project site in 2001. It was located in non-native grassland. The burrowing owl has not been observed during subsequent surveys including a burrowing owl survey in 2012. In East Otay Mesa, however, all grassland habitats are considered occupied by the burrowing owl per the burrowing owl strategy (County 2010d). Approximately 31.6 acres of potential burrowing owl grassland habitats (out of 48.6 acres on the Project site) would be directly impacted by the Project (0.5 acre native grassland and 31.1 acres non-native grassland).

Invasive plants and fugitive dust could indirectly impact the burrowing owl as described in Table 5, but the effects are expected to be minimal as described in Section 4.2.

This species was afforded coverage under the MSCP because 5,770± acres of potential and 4,000± acres of known suitable habitat (grassland) will be conserved including portions of Spring Canyon, San Pasqual Valley, Lake Hodges, Otay Mesa northeast of Brown Field, Otay Ranch, Otay River Valley, and Future Urbanizing Area 4. However, with the exception of Otay Mesa, burrowing owls no longer thrive in any of these locations. The MSCP also requires that "conservation of occupied burrowing owl habitat must be one of the primary factors in preserve design during the permit amendment process." The BMO, which implements the MSCP, requires that impacts to burrowing owl habitat be avoided to the maximum extent practicable.

In accordance with the Strategy For Mitigating Impacts to Burrowing Owls in the Unincorporated County (County 2010d), the County and the Wildlife Agencies require that, to the extent practicable, mitigation for impacts to grasslands and burrowing owls in East Otay Mesa occur in East Otay Mesa. If impacts are unavoidable, the BMO requires mitigation to be through the

conservation of occupied burrowing owl habitat or lands appropriate for restoration, management, and enhancement of burrowing owl nesting and foraging requirements at a ratio of no less than 1:1 (County 2010a).

One of the objectives for burrowing owl preservation in East Otay Mesa is to preserve grasslands—first through avoidance, then through in-kind mitigation with grasslands or suitable disturbed or agricultural lands in East Otay Mesa (County 2010d). The Project would mitigate for impacts to 0.5 acre of native grassland at a 2:1 ratio through on-site preservation of 0.7 acre of native grassland in the OHCA, as well as on- or off-site restoration or off-site acquisition of 0.3 acre of native grassland. Impacts to 31.1 acres of non-native grassland would be mitigated at a 1:1 ratio by preservation of 16.1 acres of non-native grassland in the OHCA subject to the RMP and 15.0 acres of grassland at an off-site location or through purchase of an approved conservation bank consistent with the BMO Burrowing Owl Strategy.

In accordance with the Strategy for Mitigating Impacts to Burrowing Owls in the Unincorporated County (County 2010d), impacts to the one location where a burrowing owl was sighted in 2001 would be mitigated by the passive translocation of the owl (if present when the Project is approved) to a suitable area in the OHCA, or possibly at another location if approved by the Wildlife Agencies, with creation of suitable nesting/burrowing features. A (passive) Burrowing Owl Translocation Plan, which would include installation of two clusters of three to five artificial burrows each, would be prepared and submitted to the Wildlife Agencies and County for review and approval in accordance with the California Department of Fish and Game (CDFG) Staff Report on Burrowing Owl Mitigation (2012). Approval and implementation of the Burrowing Owl Translocation Plan shall be required prior to commencement of construction of habitat clearing, extraction operation support facilities, and extraction activities. Translocation shall occur outside of the breeding season; no impacts to the species may occur during the breeding season.

Mitigation for burrowing owl grassland habitat would be provided in the OHCA (subject to the RMP as previously described) and at an off-site location (or purchase of credits at an approved conservation bank) at a minimum ratio of 1:1. Therefore, the Project would be consistent with the goals of the MSCP for this Proposed Covered Species.

As noted above, the project site is considered occupied by this species consistent with the burrowing owl strategy (County 2010d), which is assumed to be present throughout the plan area where grassland habitat exists. Although assumed occupied, the burrowing owl was only actually observed a single in 2001, and subsequent surveys have been negative. The soils on the site are generally not conducive to ground squirrel habitation and, as a result, potential suitable burrows and owl occupation, other than for foraging on both the development area and OHCA, are considered low. The OHCA does contain open grassland for foraging. The OHCA is also surrounded by existing conservation to the north and east, and the project will preclude public access from the west. The RMP will provide for management and funding in perpetuity that will allow for preservation and enhancement of these foraging resources. Off-site conservation of an additional 15.3 acres that is suitable for the owl will also benefit this species. Combined, these measures will maintain the function of the MSCP Preserve and assist in recovery of the burrowing owl.

Northern Harrier

The northern harrier was observed flying over the Project site one time out of all of the years of surveys. Approximately 31.6 acres (65 percent) of potential grassland habitats of this species would be directly impacted by the Project (0.5 acre [41.7 percent] of native grassland and 31.1 acres [65.2 percent] of non-native grassland). Additionally, cismontane alkali marsh could be habitat for the species. The Project would directly impact 0.16 acre (61.5 percent) out of 0.26 acre of this habitat.

Invasive plants and fugitive dust could indirectly impact the northern harrier as described in Table 5, but the effects are expected to be minimal as described in Section 4.2.

The northern harrier is found year-round in San Diego County but is more numerous and widespread as a winter visitor than a breeding bird (Unitt 2004). Wintering habitat includes fresh and saltwater wetlands, coastal dunes, grasslands, deserts, meadows, and crop lands. Breeding habitat includes freshwater wetlands, coastal brackish wetlands, open wet meadows and grasslands, shrub-steppe, desert sinks, areas along rivers and lakes, and crop fields. In 2004, it was reported that four to six pairs may still nest on Otay Mesa (Unitt 2004), upon which grasslands are much more extensive. Based on surveys conducted over a period of more than a decade, and the limited and patchy amount of grassland present on the Project site, the potential for northern harrier to breed on the Project site is considered low.

This species was afforded coverage under the MSCP because 42 percent of potential nesting habitat and 85,000± acres of its potential foraging habitat will be conserved. Additionally, "conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas." Within the existing major amendment area that is within the development footprint, much of the grassland habitat is patchy and interspersed with Diegan coastal sage scrub. There are no great expanses of grasslands on the Project site like there are on Otay Mesa. The Project would mitigate the losses of native and non-native grasslands in accordance with the BMO (2:1 for native grassland and 1:1 for non-native grassland). Mitigation would first occur through on-site preservation of non-native and native grassland in the OHCA subject to the RMP as previously described. Remaining required mitigation acreage would either involve grassland restoration on site or off site, or grassland would be acquired off site at an approved conservation bank. Considering that the grasslands that would be impacted are interspersed with sage scrub, this approach is consistent with the goals of the MSCP for this Proposed Covered Species. Additionally, 0.16 acre of cismontane alkali marsh direct impacts would be mitigated at a 3:1 ratio through on-site preservation of 0.1 acre of cismontane alkali marsh in the OHCA (subject to the RMP) and on- or off-site creation, restoration, and/or enhancement of 0.48 acre of riparian habitats, which may benefit this species.

As noted above, the northern harrier is not expected to nest on site, but the grassland and cismontane alkali marsh habitats on site could support northern harrier foraging. The OHCA contains native and non-native grassland and cismontane alkali marsh. The OHCA is also surrounded by existing conservation to the north and east, and the project will preclude public access from the west. The RMP will provide for management and funding in perpetuity that will allow for preservation and enhancement of these foraging resources. Off-site conservation of an

additional 15.1 acres that is suitable for northern harrier foraging will also benefit this species. Combined, these measures will maintain the function of the MSCP Preserve and assist in recovery of the northern harrier.

Coastal California Gnatcatcher

Five pairs of coastal California gnatcatcher were observed on the Project site in 2011, the most recent survey. The Project would directly impact one pair of coastal California gnatcatcher, 87.3 acres of habitat (66.7 acres of direct impacts and 20.6 acres of indirect noise impacts), and 77.1 acres of Designated Critical Habitat.

Indirect noise impacts to Diegan coastal sage scrub may render the habitat undesirable to coastal California gnatcatcher and adversely affect gnatcatcher breeding, therefore, the Project would be required to mitigate the impact at a 1:1 ratio through preservation of 20.6 acres Diegan coastal sage scrub in the OHCA subject to the RMP.

Invasive plants and fugitive dust could indirectly impact the coastal California gnatcatcher as described in Table 5, but the effects are expected to be minimal as described in Section 4.2.

This species was afforded coverage under the MSCP because over 73,300 acres of existing and potential gnatcatcher habitat will be conserved and linked together; over 81 percent of the BRCAs where the species occurs (Otay, San Miguel, Mission Trails, Santee, Kearny Mesa, Poway, San Pasqual, and Lake Hodges) will be conserved; and 65 percent (1,819 of 2,814) of the known locations will be conserved. Approximately 68 percent (57,874 acres) of habitat supporting core populations, 70 percent (30,273 acres) of very high value, and 62 percent (4,609 acres) high value coastal sage scrub habitat will be conserved. Critical habitat linkages between BRCAs will be conserved in a functional manner, with a minimum of 75 percent of the habitat within identified linkages conserved.

Area-specific management directives must include measures to reduce edge effects and minimize disturbance during the nesting period, fire protection measures to reduce the potential for habitat degradation due to unplanned fire, and management measures to maintain or improve habitat quality including vegetation structure. These measures would be addressed via implementation of the RMP as described above. No clearing of occupied habitat within the County's BRCAs may occur between March 1 and August 15.

The Project would preserve 225.3 acres (77.2 percent; includes long-term conservation of 20.6 acres impacted by noise during the life of the Project) of Diegan coastal sage scrub and four of the five current (2011) pair sightings (80 percent) of this species in the 304.6-acre OHCA subject to the RMP. The OHCA lies within the Otay Lakes/Otay Mesa/Otay River Valley BRCA and would contribute to the long-term sustainability of this BRCA. In addition, the Project would preserve 185.0 acres of Designated Critical Habitat for the coastal California gnatcatcher in the OHCA. Therefore, the Project would be consistent with the goals of the MSCP for this Proposed Covered Species.

The OHCA contains the Primary Constituent Elements for the coastal California gnatcatcher: 1) Diegan coastal sage scrub and coastal sage-chaparral scrub that provide space for individual and population growth, normal behavior, breeding, reproduction, nesting, dispersal, and foraging; and 2) non-sage scrub habitats such as chaparral, grassland, and riparian areas, in proximity to sage scrub habitats that provide space for dispersal, foraging, and nesting. The coastal sage scrub in the OHCA is suitable for this species as evidenced by the presence of four pairs of gnatcatchers. The OHCA is also surrounded by existing conservation to the north and east that also provides suitable habitat for this species and provides uninhibited dispersal between these conservation areas, and the project will preclude public access from the west. The RMP will provide for management and funding in perpetuity that will allow for preservation and enhancement of these resources. Combined, these measures will maintain the function of the MSCP Preserve and assist in recovery of the coastal California gnatcatcher.

Mountain Lion

The mountain lion was not observed or detected on the Project site, but it has potential to utilize the Project site because mountain lion tracks were observed in the vicinity and the site does support its primary food source (southern mule deer). This species was afforded coverage under the MSCP because 81 percent of BRCAs (Otay Mountain/Marron Valley, Jamul Mountains, Sweetwater Reservoir/San Miguel Mountain/Sweetwater River, McGinty Mountain/Sequan Peak-Dehesa, Lake Jennings/Wildcat Canyon-El Cajon Mountains, Central Poway/San Vicente Reservoir/North Poway, and Hodges Reservoir/San Pasqual Valley) will be conserved. The Project would impact 107.4 acres of potential mountain lion habitat (i.e., the entire development footprint) but would preserve 304.6 acres of habitat in the OHCA subject to the RMP. The OHCA lies within the Otay Lakes/Otay Mesa/Otay River Valley BRCA. While this is not one of the BRCAs noted above for the mountain lion, it lies adjacent to the Otay Mountain/Marron Valley BRCA, and combined, these areas represent thousands of acres of suitable habitat for mountain lion with few barriers for free movement across the landscape. Invasive plants and fugitive dust could indirectly impact the mountain lion as described in Table 5, but the effects are expected to be minimal as described in Section 4.2. The Project would be consistent with the goals of the MSCP for this Proposed Covered Species.

The size and location of the OHCA will provide live in habitat and prey (primarily southern mule deer), and will connect with thousands of acres of conserved and undeveloped land that will allow for free movement across the landscape by the mountain lion. Access control provided by the project, as well as the RMP and funding for management in perpetuity, will maintain the function of the MSCP Preserve and assist in recovery of the mountain lion.

Southern Mule Deer

One mule deer was observed in habitat to be preserved on the Project site, but more mule deer are expected to occur based on suitable habitat including forage and cover. This species was afforded coverage under the MSCP because 81 percent of BRCAs (Otay Mountain/Marron Valley, Jamul Mountains, Sweetwater Reservoir/San Miguel Mountain/Sweetwater River, McGinty Mountain/Sequan Peak-Dehesa, Lake Jennings/Wildcat Canyon-El Cajon Mountains, Central Poway/San Vicente Reservoir/North Poway, and Hodges Reservoir/San Pasqual Valley) will be

conserved. The Project would impact 107.4 acres of potential mule deer habitat (i.e., the entire development footprint) but would preserve 304.6 acres of habitat in the OHCA subject to the RMP. As stated above for the mountain lion, the OHCA lies within the Otay Lakes/Otay Mesa/Otay River Valley BRCA, which is adjacent to the Otay Mountain/Marron Valley BRCA, and combined, these areas represent thousands of acres of suitable habitat for southern mule deer with few barriers for free movement across the landscape. Invasive plants and fugitive dust could indirectly impact the southern mule deer as described in Table 4, but the effects are expected to be minimal as described in Section 4.2. The Project would be consistent with the goals of the MSCP for this Proposed Covered Species.

The size and location of the OHCA will provide live in habitat, forage, and cover, and will connect with thousands of acres of conserved and undeveloped land that will allow for free movement across the landscape by the southern mule deer. Access control provided by the project, as well as the RMP and funding for management in perpetuity, will maintain the function of the MSCP Preserve and assist in recovery of the southern mule deer.

4.6.2 Proposed Covered Plant Species

San Diego Goldenstar

This species was found on north-facing slopes on the Project site with a total estimate of 12,388 individuals. Of those, 1,214 individuals would be directly impacted by the Project: 400 in Phase 1, 813 in Phase 2b, and one in Phase 2c. This species was afforded coverage under the MSCP because eight of 11 major populations, 125 of 144 occurrences, and 38 percent of grasslands will be conserved. The MSCP 1995 and 1996 Species Evaluations (USFWS and CDFW 1996) states that "The major population in the 70 percent zone in the SE Otay Mesa area should be protected at 100 percent..." in the 1995 analysis. The 1996 analysis simply identifies the population as occurring within a Major Amendment area. Area-specific management directives will include monitoring of the transplanted populations(s) and specific measures to protect against detrimental edge effects to this species.

Section 86.507 of the BMO requires that impacts to List A and B sensitive plants be avoided to the maximum extent practicable. Where complete avoidance is infeasible, encroachment may be authorized depending on the sensitivity of the individual species and the size of the population except that encroachment shall not exceed 20 percent of the population on site. Impacts to 1,214 of 12,388 individuals (9.8 percent) of San Diego goldenstar do not exceed the 20 percent encroachment limit. The Project would preserve 11,174 individuals (90.2 percent of the population on the Project site and five of the six primary populations) of San Diego goldenstar. The BMO requires mitigation for impacts to this species. Mitigation shall include the preservation of the 72.27 acres of suitable habitat supporting 11,174 individuals on the Project site in the OHCA in addition to the translocation of corms located within the impact area.

Mitigation for San Diego goldenstar shall be mitigated by phase as follows:

- All San Diego goldenstar corms that are located within each phase shall be translocated according to Appendix C prior to implementation of mining activities within that phase.
  Phase 1 – at least 400
  Phase 2a – at least 813
  Phase 2b – at least 1

Based on the Likely Limits of Occurrence Analysis (HELIX 2016a), approximately 13.06 acres (16 percent; Figure 20a) of the suitable habitat for the species will be impacted and 69.46 acres (84 percent) will be preserved, providing ample space for transplantation of 1,214 individuals. Invasive plants and fugitive dust could indirectly impact San Diego goldenstar in the OHCA as described in Table 6, but the effects are expected to be minimal as described in Section 4.2.

The Project Proponent also would fund implementation of an RMP that includes measures to protect and enhance the preserved and/or translocated populations. Therefore, the Project would be consistent with the goals of the MSCP for this Proposed Covered Species.

As noted above, the project site supports 85.54 acres of suitable San Diego goldenstar habitat. The OHCA will conserve 90.2 percent of San Diego goldenstar locations, and 84 percent of the suitable habitat. The project also proposes to translocate all of the impacted San Diego goldenstar to the OHCA. The OHCA is also surrounded by existing conservation to the north and east, and the project will preclude public access from the west. Due to the large size of the OHCA, appropriate soils that occur on site, and the mosaic of high-quality habitat in which the San Diego goldenstar occurs, the OHCA is expected to provide all of the components necessary for long-term persistence of this species. The RMP will provide for management and funding in perpetuity that will allow for preservation and enhancement of these resources. Combined, these measures will maintain the function of the MSCP Preserve and assist in recovery of the San Diego goldenstar.

Dunn's Mariposa Lily

Two individuals of Dunn's mariposa lily were found in 2004 and eight in 2011 in habitat that would be preserved in the OHCA. Zero individuals would be directly impacted. Invasive plants could indirectly impact Dunn's mariposa lily in the OHCA as described in Table 6, but the effects are expected to be minimal as described in Section 4.2. The MSCP 1995 and 1996 Species Evaluations (USFWS and CDFW 1996) assumed 100 percent conservation of major populations outside of Major Amendment areas, and assumed that 100 percent conservation would be conserved within the Major Amendment area, although a protection mechanism had not been identified at that time. The MSCP assumes 100 percent conservation. The Project Proponent also would fund implementation of an RMP that includes measures to monitor and protect the preserved population, including control of exotic weed species. The Project is consistent with the goals of the MSCP for this Proposed Covered Species. Combined, these measures will maintain the function of the MSCP Preserve and assist in recovery of the Dunn's mariposa lily.

Orcutt's Bird's Beak

Twenty-one individuals of Orcutt's bird's beak were found in habitat that would be preserved in the OHCA. Zero individuals would be directly impacted. Invasive plants could indirectly impact Orcutt's bird's beak in the OHCA as described in Table 6, but the effects are expected to be minimal as described in Section 4.2. The MSCP assumes 100 percent conservation of the species. The Project Proponent also would fund implementation of an RMP that includes measures to monitor and protect the preserved population, including control of exotic weed species. The Project is consistent with the goals of the MSCP for this Proposed Covered Species. Combined, these measures will maintain the function of the MSCP Preserve, and assist in recovery of the Orcutt's bird's beak.

Tecate Cypress

Seventy-eight individuals of Tecate cypress occur within southern interior cypress forest and in other scattered locations on the Project site, none of which would be directly impacted, and all of which occur in the OHCA. Major populations occur immediately off site to the north and east in conservation, and the 78 individuals on site are the extreme western edge of this major population. Invasive plants, fugitive dust, and high return-interval fire could indirectly impact Tecate cypress in the OHCA as described in Table 6, but the effects are expected to be minimal as described in Section 4.2. The MSCP assumes 98 percent of major populations will be conserved, primarily on lands managed by the BLM to the east and north. The Project Proponent also would fund implementation of an RMP that includes measures to monitor and protect the preserved population. These measures could also benefit Thorne's hairstreak if it were to colonize the OHCA in the future. The Project is, therefore, consistent with the goals of the MSCP for this Proposed Covered Species. Combined, these measures will maintain the function of the MSCP Preserve and assist in recovery of the Tecate cypress.

Otay Tarplant

Of the 540 individuals of Otay tarplant found on the Project site, 30 individuals and 105.5 acres of critical habitat would be directly impacted by the Project. The largest number recorded on the Project site in any given year was 530 individuals. It is likely, however, that not all of the seeds germinate each year from the seed bank in the soil as evidenced by the data collected on the Project site over a number of years. Based on this, approximately 16.69 acres of modeled habitat may be lost supporting at least 30 individuals. Two populations of Otay tarplant occur in the OHCA, and a third occurs immediately off site at the entrance to the Project. The fourth population (30 individuals) occurs in the western portion of the development footprint, in Phase 2a. The Project site does not meet the MSCP threshold for major populations (1,000 individuals) for this species and was not discussed in the MSCP 1995 and 1996 Species Evaluations (USFWS and CDFW 1996). Invasive plants and fugitive dust could indirectly impact Otay tarplant in the OHCA as described in Table 6, but the effects are expected to be minimal as described in Section 4.2.

A population in excess of 730,000 individuals occurs within and adjacent to Johnson Canyon located within the Lonestar Ridge project site approximately two miles west of the Project site north of Brown Field (HELIX 2006). This large population represents the second largest known

Otay tarplant population in California and is proposed for preservation under the City of San Diego's MSCP Subarea Plan. In addition, Otay tarplant (estimated at 97 individuals) occurs immediately south of the Project site in an area proposed as biological open space by the Otay Crossings Project according to the California Natural Diversity Database (CNDDB; CDFW 2015), and a second population of approximately 800 individuals occurs in six locations within grasslands southeast of the Project site (EDAW 2001a). Therefore, the population on site and the resulting impacts are considered minimal.

This species was afforded coverage under the MSCP because 66 percent of major populations will be conserved. According to the MSCP, coverage of this species requires avoidance of populations in the Otay River Valley through sensitive design and development of the active recreation areas described in the Otay Ranch RMP and General Development Plan. Area-specific management directives must include specific measures for monitoring of populations, adaptive management of preserved populations (taking into consideration the extreme population fluctuations from year to year), and specific measures to protect against detrimental edge effects to this species.

According to the BMO, list A and B species should be avoided when possible. Where complete avoidance is infeasible, encroachment may be authorized depending on the sensitivity of the individual species and the size of the population except that encroachment shall not exceed 20 percent of the population on site. The Project would impact 30 individuals of Otay tarplant (5.6 percent of the population on the Project site). Because the project will not exceed the 20 percent impact it is consistent with the BMO. The BMO requires mitigation for unavoidable impacts to the 30 individuals. The applicant proposes to preserve 93.8 acres of Otay tarplant designated critical habitat and 6.58 acres of suitable habitat supporting 510 individuals of Otay tarplant (94.4 percent of the population on site including three primary populations). In addition, seeds will be collected from the Otay tarplant in the impact area and spread within suitable habitat in the OHCA prior to Phase 2a (Appendix C). The Otay tarplant in the impact neutral area is the result of manual seeding over the gas pipeline (for pipeline mitigation). The impact neutral area would not be impacted by the Project. It also would not be counted toward Project mitigation. Based on the Likely Limits of Occurrence Analysis (HELIX 2016a), approximately 16.69 acres (Figure 20b; 72 percent of the suitable habitat for the species will be impacted and 6.58 acres (28 percent) will be preserved. The Project Proponent also would fund implementation of the RMP that includes measures to monitor, protect, and enhance the preserved populations. Therefore, the Project would be consistent with the goals of the MSCP for this Proposed Covered Species.

As noted above, the project site supports 23.27 acres of suitable Otay tarplant habitat. The OHCA will conserve 94.4 percent of Otay tarplant locations, and 28 percent of the suitable habitat. The OHCA is also surrounded by existing conservation to the north and east, and the project will preclude public access from the west. Due to the large size of the OHCA, appropriate soils that occur on site, and the mosaic of high quality habitat in which the Otay tarplant occurs, the OHCA is expected to provide all of the components necessary for long-term persistence of this species. The RMP will provide for monitoring, management (including weeding of grassland habitat where this species occurs) and funding in perpetuity that will allow for preservation and enhancement of these resources. Combined, these measures will maintain the function of the MSCP Preserve, and assist in recovery of the Otay tarplant.

Variegated Dudleya

Of the 4,987 individuals of variegated dudleya found on the Project site, 120 individuals would be directly impacted by Phase 2b of the Project. Invasive plants and fugitive dust could indirectly impact variegated dudleya in the OHCA as described in Table 6, but the effects are expected to be minimal as described in Section 4.2. This species was afforded coverage under the MSCP because 56 percent of major populations and 75 percent of known localities will be conserved. The MSCP 1995 and 1996 Species Evaluations (USFWS and CDFW 1996) assumed 56 percent conservation of major populations outside of Major Amendment areas. No specific conservation assumption was identified for Major Amendment areas. Area-specific management directives must include species-specific monitoring and specific measures to protect against detrimental edge effects to this species, including effects caused by recreational activities. Some populations now occur within a Major Amendment Area (Otay Mountain), hence strategies to provide protection for this species within the Amendment Area must be included at the time permit amendments are proposed.

Section 86.507 of the BMO requires that impacts to List A and B sensitive plants be avoided to the maximum extent practicable. Where complete avoidance is infeasible, encroachment may be authorized depending on the sensitivity of the individual species and the size of the population except that encroachment shall not exceed 20 percent of the population on site. Impacts to 120 of 4,987 individuals (2.4 percent) of variegated dudleya do not exceed the 20 percent encroachment limit. The BMO requires mitigation for impacts to this species. The Project would preserve 4,867 individuals (97.6 percent of the population on the Project site) of variegated dudleya in the OHCA, including 48.90 acres of potential variegated dudleya habitat. Additionally, the variegated dudleya in the impact area will be salvaged by collecting the soil crust in the area where the 120 dudleya were observed and translocating to the OHCA prior to phase 2b (Appendix C). Based on the Likely Limits of Occurrence Analysis (HELIX 2016a), approximately 13.06 acres (Figure 20c; 21 percent of the suitable habitat for the species will be impacted and 48.65 acres (79 percent) will be preserved. The Project Proponent also would fund implementation of the RMP that includes measures to protect and enhance the preserved populations. Therefore, the Project would be consistent with the goals of the MSCP for this Proposed Covered Species.

As noted above, the project site supports 62.17 acres of suitable variegated dudleya habitat. The OHCA will conserve 97.6 percent of variegated dudleya locations, and 79 percent of the suitable habitat. The OHCA is also surrounded by existing conservation to the north and east, and the project will preclude public access from the west. Due to the large size of the OHCA, appropriate soils that occur on site, and the mosaic of high quality habitat in which the variegated dudleya occurs, the OHCA is expected to provide all of the components necessary for long-term persistence of this species. The RMP will provide for monitoring, management, and funding in perpetuity that will allow for preservation and enhancement of these resources. Combined, these measures will maintain the function of the MSCP Preserve and assist in recovery of the variegated dudleya.

San Diego Barrel Cactus

Of the 362 barrel cacti found on the Project site, 196 individuals would be directly impacted by the Project: 44 in Phase 2a, 18 in Phase 2b, and 134 in Phase 2c. The MSCP 1995 and 1996

Species Evaluations (USFWS and CDFW 1996) assumed 81 percent conservation of major populations outside of Major Amendment areas. An overall assumption of 70 percent conservation was identified for the East Otay Mesa area. Invasive plants and fugitive dust could indirectly impact San Diego barrel cactus in the OHCA as described in Table 6, but the effects are expected to be minimal as described in Section 4.2.

This species was afforded coverage under the MSCP because 81 percent of major populations will be conserved. This is an abundant species that would be protected at varying levels in several subareas: Carmel Mountain (64 percent), East Elliot (64 percent), Marron Valley (90 percent), Mission Trails Regional Park (94 percent), Otay Mesa (70 percent), Otay River Valley (100 percent), Sweetwater Reservoir (100 percent), and Sycamore Canyon/Fanita Ranch (50 percent). Area-specific management directives would include measures to protect this species from edge effects and unauthorized collection. Directives should also include appropriate fire management/control practices to protect against a too frequent fire cycle.

The Project would avoid and preserve 166 barrel cacti (45.9 percent) in the OHCA which is not consistent with the avoidance criterion of the BMO. According to the BMO, where complete avoidance is infeasible, encroachment may be authorized depending on the sensitivity of the individual species and the size of the population, except that encroachment shall not exceed 20 percent of the population on a site. Where impacts are allowed, the BMO requires mitigation for impacts at a 1:1 to 3:1 ratio. Because barrel cactus is a County List B species, a mitigation ratio of 2:1 is appropriate. Mitigation would consist of salvage of the 196 San Diego barrel cacti within the development footprint and translocation of these individuals to areas of appropriate habitat in the OHCA as well as planting an additional 196 San Diego barrel cacti in the OHCA for a total of 392 individual cacti planted. The cacti translocation would occur in accordance with a County- and Wildlife Agency-approved Barrel Cactus Translocation Plan (Appendix C), and would be phased according to the phasing of cacti impacts, with 44 cacti translocated in Phase 2a, 18 in Phase 2b, and 134 in Phase 2c. The Project Proponent also would fund implementation of the RMP that includes measures to monitor, protect, and enhance the preserved and translocated populations of San Diego barrel cactus. Therefore, the Project with the mitigation would be consistent with the goals of the MSCP for this Proposed Covered Species.

As noted above, the project will preserve 166 avoided barrel cacti and another 392 transplanted barrel cacti within the OHCA. The OHCA is also surrounded by existing conservation to the north and east, and the project will preclude public access from the west. Due to the large size of the OHCA, appropriate soils that occur on site, and the mosaic of high quality habitat in which the San Diego barrel cactus occurs, the OHCA is expected to provide all of the components necessary for long-term persistence of this species. The RMP will provide for monitoring, management, and funding in perpetuity that will allow for preservation and enhancement of these resources. Combined, these measures will maintain the function of the MSCP Preserve and assist in recovery of the San Diego barrel cactus.

Gander's Pitcher Sage

A total of 92 individuals were found in habitat that would be preserved in the OHCA. Invasive plants could indirectly impact Gander's pitcher sage in the OHCA as described in Table 6, but the

effects are expected to be minimal as described in Section 4.2. Zero individuals would be directly impacted. This population was identified as one of five major populations within the MSCP, and was assumed to be 100 percent conserved (USFWS and CDFG 1996). The Project is consistent with this assumption. Due to the large size of the OHCA, appropriate soils that occur on site, and the mosaic of high quality habitat in which the Gander's pitcher sage occurs, the OHCA is expected to provide all of the components necessary for long-term persistence of this species. Additionally, management directives for this species should address edge effects, measures to increase the populations, and fire management. These directives would be addressed through the RMP, so the Project would be consistent with the goals of the MSCP for this Proposed Covered Species on the Project site. Combined, these measures will maintain the function of the MSCP Preserve, and assist in recovery of the Gander's pitcher sage.

5.0 CONSERVATION PROGRAM/ MEASURES TO MINIMIZE AND MITIGATE FOR IMPACTS

5.1 BIOLOGICAL GOALS

Section 10(a)(2)(A) of the Federal Act requires that an HCP specify the measures that the permittee will take to minimize and mitigate to the maximum extent practicable the impacts of the taking of any federally listed animal species as a result of activities addressed by the HCP.

As part of the "Five Point" Policy adopted by the USFWS and National Marine Fisheries Service in 2000, HCPs must establish biological goals and objectives (65 *Federal Register* 35242, June 1, 2000). The purpose of the biological goals is to ensure that the operating conservation program in the HCP is consistent with the conservation and recovery goals established for the species. The goals are also intended to provide an understanding of why these actions are necessary. These goals are developed based upon the species' biology, threats to the species, the potential effects of the Covered Activities, and the scope of the HCP.

The MSCP was developed to conserve both the diversity and function of the ecosystem of southwestern San Diego County through the preservation and adaptive management of large blocks of interconnected habitat and smaller areas that support rare vegetation communities. The MSCP was also designed to conserve specific species (MSCP Covered Species) at levels that meet the take authorization issuance standards of the Federal Act and the NCCP Act. Maintaining ecosystem functions and persistence of extant populations of MSCP Covered Species is the biological goal of the MSCP.

The NCCP Conservation Guidelines, the MSCP, and biological information from the MSCP's Multi-habitat Planning Area (MHPA) preserve alternative were used to establish conservation goals and criteria for habitat and individual species for each segment of the San Diego County MSCP Subarea Plan. These goals and criteria are based on the needs of the 85 MSCP Covered Species and an analysis of their habitats in the MSCP area.

Any project approved by the County within the County Subarea Plan of the MSCP must be in conformance with the MSCP Plan and the County Subarea Plan. The Project is located within the

South County Segment of the County Subarea Plan and, therefore, must demonstrate such conformance. The conservation strategy for the Project was developed consistent with the goals and objectives of the MSCP and complements the existing conservation efforts within the County Subarea Plan.

Based on the above, the following goals have been identified with regard to biological resources:

Goal 1: Conserve native vegetation in the OHCA that is in the Otay Lakes/Otay Mesa/Otay River Valley BRCA and contiguous with the Otay Mountain/Marron Valley BRCA.

Goal 2: Conserve existing populations of Proposed Covered Wildlife Species through monitoring, maintenance, and management of the OHCA.

Goal 3: Conserve existing and transplanted populations of Proposed Covered Plant Species through monitoring, maintenance, and management of the OHCA.

Goal 4: Maintain the physical conditions of the open space for the benefit of biological resources, including Proposed Covered Species, through appropriate access controls, trash removal, fire management, and related measures.

Goal 5: Provide program administration through planning and reporting on the RMP implementation in a consistent and efficient manner.

Goal 6: Coordinate and integrate management of the OHCA with adjacent conserved lands within the Janal Management Unit of the San Diego Management and Monitoring Program (SDMMP) Management Strategic Plan (2013).

Goal 7: Mitigate for impacts to Proposed Covered Species in conformance with the MSCP Plan and the County Subarea Plan.

Objectives for meeting each goal are listed in Section 5.2. Specific tasks that must be implemented to achieve the objectives are included in the RMP or MUP Conditions of Approval.

5.2 BIOLOGICAL OBJECTIVES

This section lists the objectives for meeting each of the goals listed in Section 5.1. Section 5.3 explains how the Project meets these goals and is, therefore, consistent with the MSCP.

Goal 1: Conserve native vegetation in the OHCA.

Objective: Protect, maintain, and manage 304.6 acres of conservation area including at least 295.3 acres of sensitive habitat in the OHCA.

- Fee title of the OHCA shall be held by the County, Resource Manager, or other entity acceptable to the County and Wildlife Agencies.

- Record a conservation easement and biological open space easement that has been approved by the Wildlife Agencies to the County or Resource Manager for the 304.6 acres of open space.

- Record access easements to the Resource Manager as needed to access all of the OHCA for implementation of the RMP.

- Provide for long-term management of the 304.6-acre OHCA through implementation of the RMP and funding for long-term management.

- As part of RMP implementation, prepare a vegetation map during the first year of implementation of the RMP using the Vegetation Classification Manual for Western San Diego County, cross-referenced to Holland code.

- As part of RMP implementation, maintain and/or manage each of the native vegetation communities to ensure that each remains of equal or greater acreage and quality (for Proposed Covered Species) to that which currently exists (e.g., through regular removal of invasive plant species).

Table 8 presents the vegetation communities and their associated acreages that: 1) are currently present on the entire 414.4-acre Project site; 2) would be impacted by the Project; and 3) would be preserved in the OHCA. The last column in Table 8 presents the percent of each vegetation community preserved.

Table 8
VEGETATION COMMUNITY ACREAGES IMPACTED AND PRESERVED

VEGETATION COMMUNITY	TOTAL ACREAGE ON THE PROJECT SITE	ACREAGE IMPACTED BY THE PROJECT	ACREAGE PRESERVED IN THE OHCA[1]	PERCENT OF TOTAL ACREAGE ON THE PROJECT SITE PRESERVED
Mule fat scrub	0.03	0.00	0.03	100
Cismontane alkali marsh	0.34	0.27	0.07	21
Southern interior cypress forest	0.5	0.00	0.5	100
Disturbed wetland	0.01	0.01	0.00	0
Tamarisk scrub	0.10	0.06	0.04	40
Native grassland	1.2	0.5	0.7	58
Diegan coastal sage scrub (including –disturbed)	286.6	66.7	218.9	76
Coastal sage-chaparral scrub	5.4	0.0	5.4	100
Chamise chaparral	14.8	0.0	14.8	100
Southern mixed chaparral	38.6	0.0	38.6	100
Non-native grassland	47.4	31.1	16.1	34
Disturbed habitat	18.6	8.7	8.7	44
Developed land	0.7	0.0	0.7	100
TOTAL	**414.4**	**107.4**	**304.6**	**74**

[1]Does not include impact neutral areas

Goal 2: Conserve existing populations of Covered Wildlife Species through monitoring, maintenance, and management of the OHCA.

Objective: Maintain existing population(s) of QCB within the OHCA through management and monitoring of 304.6 acres of suitable habitat that includes six high density host plant areas, two high use areas (e.g. hilltops), and adult nectar sources of sufficient density that will provide long-term persistence (> than 100 years) of the on-site QCB population; and manage 61 acres of suitable habitat in the AMA to augment onsite and offsite QCB populations in the region.

Objective: Maintain existing populations of Belding's orange-throated whiptail and coast horned lizard within the OHCA through management and monitoring of 295.7 acres of suitable habitat that includes chaparral, Diegan coastal sage scrub and coastal sage-chaparral scrub.

Objective: Maintain existing populations of coastal California gnatcatcher and rufous-crowned sparrow within the OHCA through management and monitoring of 218.9 acres of Diegan coastal sage scrub and 5.4 acres of coastal sage-chaparral scrub.

Objective: Maintain existing foraging habitat for the northern harrier, burrowing owl, and Cooper's hawk, and maintain potential breeding habitat for the northern harrier and burrowing owl through management and monitoring of 0.7 acre of native grassland and 16.1 acres of non-native grassland.

Objective: Maintain habitat to help support the regional mountain lion and southern mule deer population through management and monitoring of 304.6 acres of suitable habitat.

Goal 3: Conserve existing and transplanted occurrences of Covered Plant Species through monitoring, maintenance, and management of the OHCA.

Objective: Maintain existing population(s) of San Diego goldenstar within the OHCA through management and monitoring of 72.27 acres of suitable habitat that includes five populations totaling 11,174 individuals (and an additional 1,214 translocated individuals) that will provide long-term persistence (> than 100 years) of the on-site San Diego goldenstar population.

Objective: Maintain existing population(s) of Otay tarplant within the OHCA through management and monitoring of 6.58 acres of suitable habitat that includes two populations totaling 510 individuals that will provide long-term persistence (> than 100 years) of the on-site Otay tarplant population.

Objective: Maintain existing population(s) of variegated dudleya within the OHCA through management and monitoring of 48.90 acres of suitable habitat that includes four populations totaling 4,867 individuals that will provide long-term persistence (> than 100 years) of the on-site variegated dudleya population.

Objective: Maintain existing population(s) of Dunn's mariposa lily, Orcutt's bird's beak, Tecate cypress, San Diego barrel cactus, and Gander's pitcher sage within the OHCA through management and monitoring of suitable habitat.

Goal 4: Maintain the physical conditions of the open space for the benefit of biological resources, including Proposed Covered Species, through appropriate access controls, trash removal, fire management, and related measures.

Objective: Resource Manager will control public access through the maintenance of signage, fencing, and gates; will cooperate and coordinate with law enforcement, U.S. Border Patrol, and adjacent landowners/managers; will maintain regular on-site presence; will remove trash; and will conduct monthly inspections.

Objective: Develop a fire management plan within one year of initiating management of the OHCA for review by the County and implement fire management activities in the OHCA in consultation with the appropriate fire agencies.

Objective: Implement protective measures outlined in the Conservation Easement and biological open space easement.

Objective: Resource Manager will implement Management Activities in a manner that avoids impacts to known Cultural Resources.

Goal 5: Provide program administration through planning and reporting on the RMP implementation in a consistent and efficient manner.

Objective: Resource Manager will submit an annual report and work plan to the County and Wildlife Agencies by November 1 of each year and revise work plan to meet changing management needs.

Goal 6: Coordinate and integrate management of the OHCA with adjacent conserved lands within the Janal Management Unit.

Objective: The Resource Manager will coordinate weed control actions, fire management, and public access controls with the BLM, SDG&E, County, SDMMP, other land managers in this Management Unit, or other adjacent landowners at least annually.

Goal 7: Mitigate for impacts to Proposed Covered Species in conformance with the MSCP Plan and the County Subarea Plan.

Objective: Prior to initiating project impacts, provide non-native grassland mitigation at a 1:1 ratio by conserving 15.0 acres of non-native grassland off site in addition to the 16.1 acres conserved on site.

Objective: Prior to initiating project impacts, provide native grassland mitigation at a 2:1 ratio by conserving 0.3 acre of native grassland off site in addition to the 0.7 acre conserved on site.

Objective: Provide San Diego barrel cactus mitigation at a 2:1 ratio through the salvage of the 196 San Diego barrel cacti from the development footprint and translocation of these individuals to areas of appropriate habitat in the OHCA, as well as plant additional 196 San Diego barrel cacti

in the OHCA for a total of 392 individual cacti planted. Translocation will occur consistent with the phasing schedule noted in Section 4.6.2 above.

Objective: Provide San Diego goldenstar mitigation at a 1:1 ratio by translocating 1,214 individuals into the OHCA. Translocation will occur consistent with the phasing schedule noted in Section 4.6.2 above.

Objective: Provide variegated dudleya mitigation by collecting the soil crust in the area where the 120 dudleya were observed and translocating to the OHCA prior to Phase 2b.

Objective: Provide Otay tarplant mitigation by collecting seed from the Otay tarplant in the impact area and spreading it within suitable habitat in the OHCA prior to Phase 2a.

5.3 AVOIDANCE, MINIMIZATION, AND CONSERVATION MEASURES

Section 5.3 identifies avoidance, minimization, and mitigation measures that will be implemented by the Project Proponent.

5.3.1 Measures to Avoid Impacts

Initially, the development footprint was approximately 210 acres (Figure 22). Concerns were expressed by County staff and the Wildlife Agencies regarding the footprint and potential biological impacts, especially as it related to impacts to the QCB. Specific concerns were expressed over impacts to the QCB locations on the knoll in the southern portion of the Project site where a majority of the QCB have been observed. Habitat east of the existing SDG&E transmission lines that bisect the property were identified as being the highest priority for conservation. The Project Proponent worked with County staff and the Wildlife Agencies between 2005 and 2014 to address these concerns and, in response, reduced the quarry and landfill portion of the development footprint to its current size, approximately 102.7 acres (107.4 acres total including the off-site parcel impacts). This redesign resulted in the avoidance of the following impacts to Proposed Covered Species (Table 9).

Table 9
COMPARISON OF SPECIES IMPACTS
BETWEEN ORIGINAL AND CURRENT DEVELOPMENT FOOTPRINTS

SPECIES	ORIGINAL DEVELOPMENT FOOTPRINT	CURRENT DEVELOPMENT FOOTPRINT
Wildlife		
Quino checkerspot butterfly (*Euphydryas editha quino*)	7 locations	5 locations
Coast horned lizard (*Phrynosoma blainvillii*)	11 individuals	4 individuals
Cooper's hawk (*Accipiter cooperii*)	1 individual foraging overhead	1 individual foraging overhead

Table 9 (cont.) COMPARISON OF SPECIES IMPACTS BETWEEN ORIGINAL AND CURRENT DEVELOPMENT FOOTPRINTS		
SPECIES	**ORIGINAL DEVELOPMENT FOOTPRINT**	**CURRENT DEVELOPMENT FOOTPRINT**
Wildlife (cont.)		
Burrowing owl (*Athene cunicularia*)	1 individual	1 individual
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	7 individual locations	5 individuals
Coastal California gnatcatcher (*Polioptila californica californica*)	4 Pair	1 pair
Southern mule deer (*Odocoileus hemionus fuliginata*)	1 individual	None
Plants		
San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*)	1,941 individuals	1,214 individuals
Otay tarplant (*Deinandra conjugens*)	520 individuals	30 individuals
Variegated dudleya (*Dudleya variegata*)	3,732 individuals	120 individuals
San Diego barrel cactus (*Ferocactus viridescens*)	218 individuals	196 individuals

5.3.2 Conservation Measures to Minimize Impacts

The following measures will also be implemented to minimize Project impacts to Proposed Covered Species on the Project site.

Conservation Measure 1 – Delineate and Monitor Site Preparation and Grading

Temporary construction fencing shall be erected under the supervision of a qualified biologist at or inside the edge of the development footprint where it interfaces with the OHCA. This fencing shall be erected prior to commencement of habitat clearing, extraction operation support facilities, and extraction activities. Fencing shall demarcate areas where human and equipment access and disturbance from clearing or land alteration are prohibited. All site preparation and grading activities near these interfaces shall be monitored by a qualified biologist during initial habitat clearing activities. Staging areas shall be restricted to approved impact areas only. These measures are intended to restrict Project activities to the development footprint and to avoid unauthorized impacts to Proposed Covered Species habitats and their habitats outside the footprint.

As part of the Project, a fence will be placed along the outside edge of extraction areas during construction for safety and security reasons. The fence also would help keep people out of the OHCA where Proposed Covered Species and their habitats are present. Finally, access restriction/trespass signs shall be placed along the western and southern boundary of the OHCA and along Otay Mountain Truck Trail as it passes through the AMA prior to the Project Proponent turning the property over to the RMP preserve manager that will manage the land. This signage will restrict unauthorized access to the OHCA and AMA, providing protection for Proposed Covered Species and their habitats from human activity.

Conservation Measure 2 – Attractive Nuisance Minimization

Some animals, including burrowing owls, are known to use open pipes, culverts, excavated holes, or other burrow-like structures. Therefore, measures shall be taken to discourage wildlife use of such structures to prevent wildlife injury or mortality from Project activities. Deterrent measures may include, but are not limited to, ensuring that the ends of all pipes and culverts are covered when they are not being used, and covering rubble piles, dirt piles, ditches, and berms that occur within the development footprint when they are not being regularly disturbed by quarry activities.

Additionally, open water may attract wildlife to the development footprint potentially resulting in wildlife injury or mortality due to Project activities. Where ponds or pits with water occur, they shall be fenced, or otherwise surrounded/covered to prevent wildlife access. Fencing shall be secured at the ground or buried to prevent animals digging under, and shall be wrapped around the base with a durable finer mesh material to prevent small mammal, reptile, and amphibian entry.

Ponds, pits, or trenches may present a trapping hazard for wildlife if they are steep-sided and/or lined with smooth-surfaced material. Potential solutions to prevent trapped wildlife shall be implemented and may include, but are not limited to, attaching textured liner material to create escape ramps, or depending on the configuration of the trapping hazard, earthen ramps, floating rafts, or ladders may be appropriate solutions.

During the initial clearing of each phase, the biological monitor will check implementation of nuisance minimization measures and conduct regular searches for wildlife in these areas. During regular plant operation, the project proponent will be responsible for attractive nuisance minimization measures, with annual compliance checks by a biological monitor.

Conservation Measure 3 – Native Hydroseed Mix

A hydroseed mix incorporating only native species shall be used following extraction activities to restore all slope areas adjacent to the OHCA (Figure 23). Weed control shall be provided for these areas. By planting these areas adjacent to the OHCA with a compatible, native seed mix and removing non-native species (i.e., weeding), the chance for non-native species to become established and spread into the OHCA, adversely affecting Proposed Covered Species and their

habitats, is minimized. A potential seed mix based upon native species present in the OHCA could include:

- *Artemisia californica* (California sagebrush)
- *Baccharis sarothroides* (broom baccharis)
- *Eriogonum fasciculatum* (California buckwheat)
- *Encelia californica* (California encelia)
- *Viguiera laciniata* (San Diego County sunflower)
- *Acmispon glaber* (deerweed)
- *Mimulus aurantiacus* (monkey-flower)
- *Eriophyllum confertiflorum* (golden yarrow)
- *Deinandra fasciculata* (fascicled tarweed)
- *Eschscholzia californica* (California poppy)
- *Nassella lepida* (foothill needlegrass)

The final seed mix will be submitted to the Wildlife Agencies for approval prior to impacts and will reflect that adjacent composition of species.

Conservation Measure 4 – Revegetation

Upon completion of the Project, final grading to establish the final landform, application of topsoil resources, and revegetation with natives or non-invasive non-natives shall be required for pad areas; native species only shall be used for slope areas adjacent to the OHCA. As described above, planting with native or non-invasive, non-native species (not adjacent to the OHCA), minimizes the potential for non-native species to spread into the OHCA and adversely affect Proposed Covered Species and their habitats. The revegetation plan shall be submitted to the County and Wildlife Agencies for approval prior to issuance of any clearing or grading permit. Revegetation practices are continuously improving, and newer, successful methods may be developed in the interim between approval of the revegetation plan and actual revegetation implementation. Implementation of the revegetation shall incorporate the most current, successful practices with approval by the County and Wildlife Agencies.

Conservation Measure 5 – Protection of Breeding or Nesting Avian Species

In order to minimize potential impacts on nesting birds, clearing of vegetation shall occur outside of the breeding season of most avian species (February 1 through September 15). Clearing during the breeding season could occur if it is determined that no nesting birds (or birds displaying breeding or nesting behavior) are present immediately prior to clearing. A pre-construction survey shall be conducted no more than three days prior to clearing or grading activities to determine if breeding or nesting avian species occur within impact areas prior to Project implementation. If breeding birds are found during the pre-construction survey, the monitoring biologist shall

determine an appropriate buffer to avoid impacting the nesting avian species until the young have fledged or the nesting attempt has failed.

Conservation Measure 6 – Noise Minimization Measures

The following conservation measures would be required as part of the facilities operation to minimize potential effects on coastal California gnatcatcher and southern California rufous-crowned sparrow habitat and breeding:

- No jaw crusher shall be operated closer than 350 feet from the closest property line or habitat location.

- No screen shall be operated closer than 165 feet from the closest property line or habitat location.

- No vertical crusher shall be operated closer than 85 feet from the closest property line or habitat location.

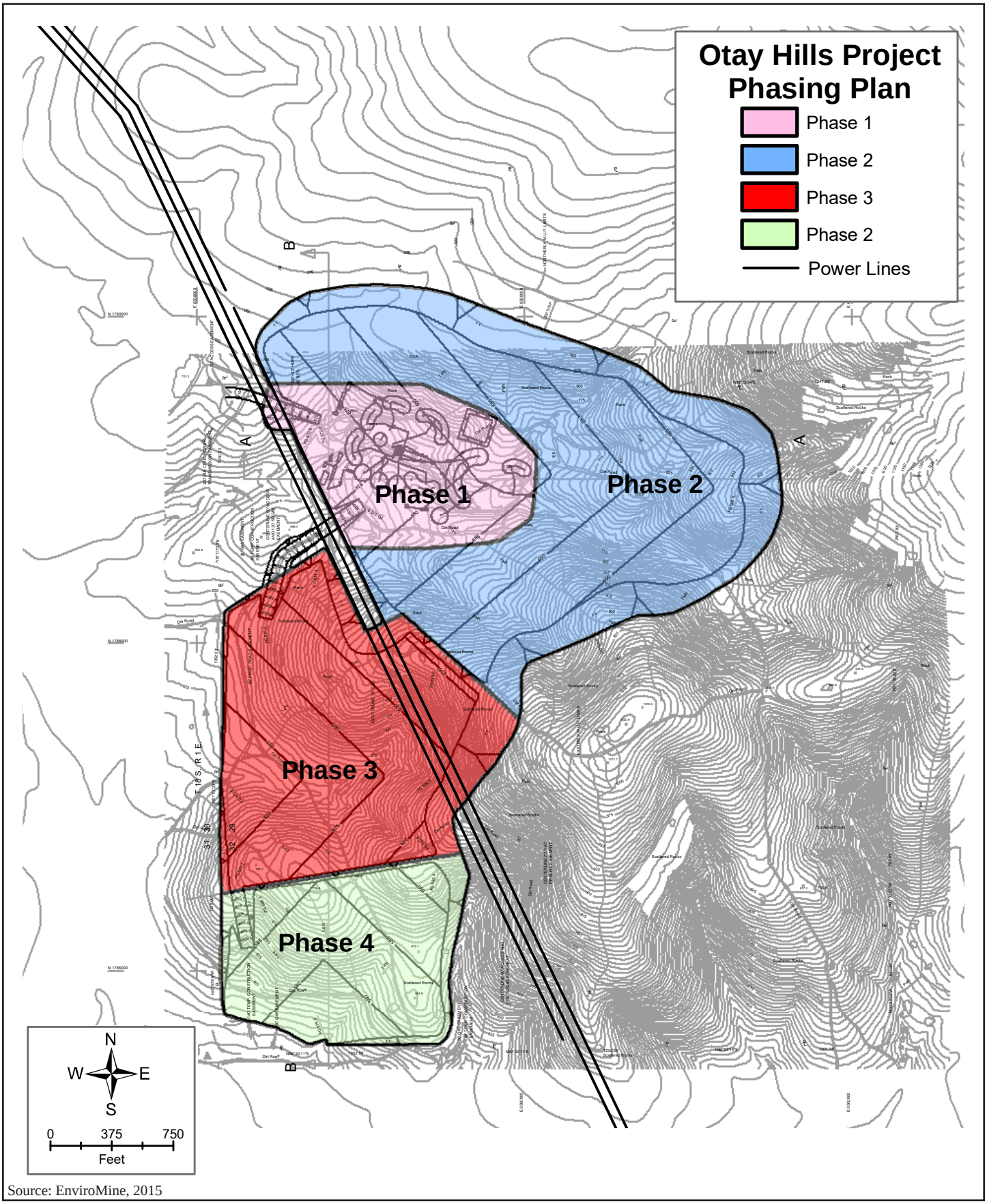
- All cone crushers used in the aggregate crushing process shall be shielded with noise control barriers: the barriers shall start at ground level and extend to at least a minimum of one foot higher than the direct line of sight between any portion of the shielded equipment and any suitable habitat areas to the east of the development footprint.

- All vertical crushers used in the aggregate crushing process shall be shielded with noise control barriers: the barriers shall extend to the ground or at least two feet below the crusher if it is an elevated unit and extend to at least a minimum of one foot higher than the direct line of sight between any portion of the shielded equipment and any suitable habitat areas to the east of the development footprint.

- All aggregate screens shall use synthetic screen elements (note this does not apply to recycled materials which may utilize steel screens).

- All sound attenuation fence/walls should be solid and constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, with no cracks or gaps, through or below the wall. (Project Note: conveyor belting is an excellent noise shielding material to allow a flexible barrier or provide lower skirts). Any seams or cracks must be filled or caulked. If wood is used, it can be tongue-and-groove and must be at least one inch total thickness or have a surface density of at least 3.5 pounds per square foot. Any door(s) or gate(s) must be designed with overlapping closures on the bottom and sides and meet the minimum specifications of the wall materials described above. The gate(s) may be of one-inch thick or better wood, solid-sheet metal of at least 18-gauge metal, or an exterior-grade solid-core steel door with prefabricated door jambs.

- If a cone crusher is used in the Asphaltic Concrete Plant, it shall be shielded with a barrier as described above for cone crushers used in the aggregate crushing process.



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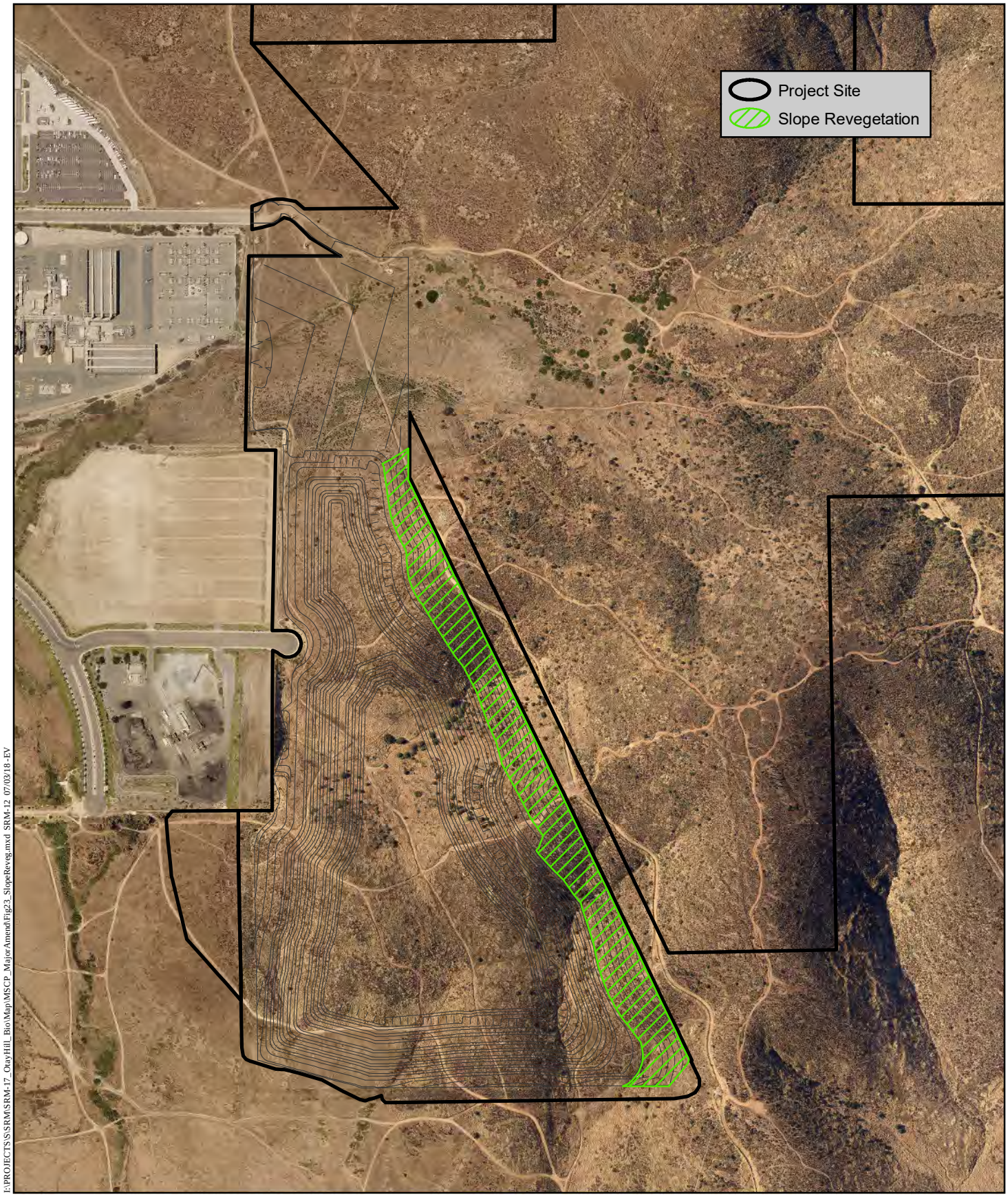
Source: EnviroMine, 2015

Original Proposed Project

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

Figure 22



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Slope Revegetation

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 600 Feet

Figure 23

If a portable plant is used for occasional processing of recycled materials, the unit shall only be used in the area south of the main plant. The unit shall never be positioned closer than 500 feet to the eastern or southern excavation boundary or the southern boundary of the normal equipment areas to control additional noise impacts to the east.

Conservation Measure 7 – Night Lighting Minimization Measures

To minimize the potential for night lighting from the Project to prevent nocturnal wildlife from using an area or increase the effectiveness of visually aided nocturnal predators, the Project shall adhere to Division 9 of the San Diego County Light Pollution Code and ensure that lighting within the development footprint adjacent to the OHCA would be of the lowest illumination allowed for human safety, selectively placed, shielded, and directed away from the preserved habitat.

Conservation Measure 8 – Fugitive Dust Minimization Measures

The Project will include watering, pursuant to County MUP requirements and a Stormwater Pollution Prevention Plan, to minimize dust generation and will top-water loaded trucks to prevent roadway dust. Additionally, the Project will comply with APCD permits and use BACT with full review and monitoring by the APCD to ensure a relatively emission- and dust-free operation. The BACT may include measures such as covered screens or water spray systems for screens and material transfer points.

5.3.3 Conservation Measures to Mitigate Unavoidable Impacts

The following measures would be implemented to mitigate unavoidable Project impacts to Proposed Covered Species on the Project site.

Conservation Measure 9 – Preserve and Manage Conservation Area

The Project Proponent shall record a conservation easement that has been approved by the Wildlife Agencies and the County for the 304.6-acre OHCA prior to commencement of habitat clearing. Additionally, a biological open space easement in favor of the County will also be recorded.

The OHCA shall be managed by a preserve manager (to be approved by the County and Wildlife Agencies prior to commencement of habitat clearing) that would be responsible for implementing the RMP (Appendix B). The RMP describes the management and monitoring tasks of the RMP. The RMP also includes stewardship measures, including but not limited to, fencing and signs upkeep, trespass restriction, and debris removal, as well as adaptive management and monitoring of Proposed Covered Species and their habitats. A maintenance agreement will be signed between the County and the Project Proponent to ensure that the County has the authority to oversee the RMP expenditures and adequacy of the management and monitoring. The Project Proponent shall fully fund the RMP to provide for monitoring and management of the open space preserve.

The RMP also addresses an additional 61-acre AMA that has an existing conservation easement in favor of the CDFW over the 61 acres, but lacks management funding. The RMP spells out more limited management obligations of the AMA. Management requirements for the AMA will be

limited to those tasks where the AMA is specifically mentioned. Any additional management actions on the AMA would be at the discretion of the Habitat Manager based on available funding.

Conservation Measure 10 – Quino Checkerspot Butterfly

Direct impacts to 104.9 acres of occupied QCB habitat and 97.8 acres of QCB critical habitat shall be mitigated through preservation of 304.6 acres of QCB-occupied habitat (and 304.4 acres of Designated Critical Habitat) in the OHCA and through active management consistent with Conservation Measure 9.

Potential indirect impacts to the QCB from invasive plant species and dust shall be mitigated through implementation of Conservation Measures 3, 4, and 8.

Conservation Measure 11 – Orange-throated Whiptail, Coast Horned Lizard, Cooper's Hawk, Mountain Lion, and Southern Mule Deer

Implementation of Conservation Measure 9 (Preserve and Manage Conservation Area), Conservation Measure 10 (Requirements for Any Off-site Mitigation), Conservation Measure 13 (Burrowing Owl [grassland mitigation]), and Conservation Measure 14 (Coastal California Gnatcatcher [coastal sage scrub]) would mitigate for impacts to the habitats of each of the species listed above.

Potential indirect impacts to these species from invasive plant species and dust shall be mitigated through implementation of Conservation Measures 3, 4, and 8.

Potential pit trapping hazards to sensitive reptile and mammal species shall be mitigated through implementation of Conservation Measures 1 and 2. Potential breeding season impacts to nesting birds shall be mitigated through implementation of Conservation Measure 5.

Conservation Measure 12 – Northern Harrier

Mitigation for impacts to 0.27 acre of cismontane alkali marsh (potential habitat for northern harrier) shall occur at a 3:1 ratio through on-site preservation of 0.1 acre of cismontane alkali marsh and on- or off-site creation, restoration, and/or enhancement of 0.81 acre of cismontane alkali marsh or other riparian habitats in consultation with the County and Wildlife Agencies prior to clearing of habitat. Prior to commencement of habitat clearing, the Project Proponent shall: 1) purchase off-site credits from an approved conservation bank or 2) acquire appropriate habitat within the County, dedicate the land as open space, and prepare an RMP to be approved by the County and Wildlife Agencies. An endowment for mitigation land off-site also shall be provided for management in perpetuity. Furthermore, implementation of Conservation Measure 9 (Preserve and Manage Conservation Area) and Conservation Measure 13 (Burrowing Owl [grassland mitigation]) would mitigate for impacts to other habitats used by the northern harrier.

Potential indirect impacts from invasive plant species and dust shall be mitigated through implementation of Conservation Measures 3, 4, and 8. Potential breeding season impacts to nesting birds shall be mitigated through implementation of Conservation Measure 5.

Conservation Measure 13 – Burrowing Owl

A survey for burrowing owl shall be conducted before habitat clearing in each Project phase consistent with the Strategy for Mitigating Impacts to Burrowing Owls in the Unincorporated County (County 2010d). If a burrowing owl(s) is sighted within the development footprint, the Wildlife Agencies and County shall immediately be notified to determine the appropriate steps to take. If, for example, an active burrow is present, impacts to this species may be minimized by the passive translocation of the owl, outside of the breeding season, to a suitable location in the OHCA that supports nesting and foraging habitat. If owls are observed, a Burrowing Owl Translocation Plan, which may include installation of a minimum of two clusters of three to five artificial burrows each for every burrow impacted, shall be prepared and submitted to the Wildlife Agencies and County for review and approval in accordance with the CDFG Staff Report on Burrowing Owl Mitigation (2012). Approval and implementation of the Burrowing Owl Translocation Plan shall be required prior to clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations.

Impacts to non-native grassland shall be mitigated at a 1:1 ratio by preservation of 16.1 acres of non-native grassland in the OHCA and 15.0 acres at an off-site location consistent with the Strategy for Mitigating Impacts to Burrowing Owls in the Unincorporated County (County 2010d).

Mitigation for impacts to native grassland shall occur at a 2:1 ratio through preservation of 0.7 acre of native grassland in the OHCA and either on-site restoration or off-site preservation of 0.3 acre of native grassland (consistent with the Strategy for Mitigating Impacts to Burrowing Owls in the Unincorporated County).

For both native and non-native grassland, prior to commencement of habitat clearing, the Project Proponent shall: 1) purchase off-site credits from an approved conservation bank or 2) acquire appropriate habitat within the County (consistent with the Strategy for Mitigating Impacts to Burrowing Owls in the Unincorporated County [County 2010d] for grassland habitats), dedicate the land as open space, and prepare an RMP to be approved by the County and Wildlife Agencies. An endowment for mitigation land off-site also shall be provided for management in perpetuity.

Potential indirect impacts to the burrowing owl from invasive plant species and dust shall be mitigated through implementation of Conservation Measures 3, 4, and 8.

Conservation Measure 14 – Coastal California Gnatcatcher and Southern California Rufous-crowned Sparrow

Direct impacts to one pair of coastal California gnatcatchers, five individual southern California rufous-crowned sparrows, 66.7 acres of Diegan coastal sage scrub, and 77.1 acres of gnatcatcher Designated Critical Habitat shall be mitigated through preservation of four pairs of gnatcatchers, 17 individual rufous-crowned sparrows, and 100.1 acres of coastal sage scrub habitat. Furthermore, approximately 20.6 acres of coastal sage scrub habitat could be impacted indirectly by noise during the life of the Project.

Mitigation for direct impacts to 66.7 acres of Diegan coastal sage scrub (including disturbed) shall be mitigated at a 1.5:1 ratio through preservation of 100.1 acres of Diegan coastal sage scrub (including disturbed) in the OHCA consistent with the Subarea Plan. The indirect noise impacts to 20.6 acres of Diegan coastal sage scrub (including disturbed) as a result of Project implementation shall be mitigated at a 1:1 ratio through preservation of an additional 20.6 acres of Diegan coastal sage scrub (including disturbed) in the OHCA. Preservation of Diegan coastal sage scrub (including disturbed) in the OHCA shall total 225.3 acres, of which 120.7 acres are needed to meet the required mitigation ratio under the Subarea Plan; the remaining 97.9 acres are considered additional conservation that is not available for future mitigation. This preservation shall occur prior to habitat clearing.

Impacts to 77.1 acres of critical habitat will be offset through the conservation and management of 185.0 acres of coastal California gnatcatcher Designated Critical Habitat within the OHCA. The mitigation land shall be actively managed consistent with Conservation Measure 9 above.

Grubbing or clearing of habitat during the breeding season of the coastal California gnatcatcher and southern California rufous-crowned sparrow (March 1 through August 15) is not allowed, unless it is determined via a pre-construction survey that no nesting gnatcatchers or rufous-crowned sparrows (or gnatcatchers or rufous-crowned sparrows displaying breeding or nesting behavior) are present immediately prior to grubbing or clearing. The results of the pre-construction survey will require approval of the Wildlife Agencies and County that no breeding or nesting gnatcatchers or rufous-crowned sparrows are present in the vicinity of the grubbing or clearing. Clearing and grubbing would be allowed if a 500-foot setback is provided from any gnatcatcher or rufous-crowned sparrow nest location.

Potential indirect impacts to the coastal California gnatcatcher and southern California rufous-crowned sparrow from invasive plant species, noise, and dust shall be mitigated through implementation of Conservation Measures 3, 4, 6, and 8.

Conservation Measure 15 – San Diego Goldenstar

Section 86.507 of the BMO requires that impacts to sensitive plants be avoided to the maximum extent practicable. Where complete avoidance is infeasible, encroachment may be authorized depending on the sensitivity of the individual species and the size of the population except that encroachment shall not exceed 20 percent of the population on site. Impacts to 1,214 of 12,388 individuals (9.8 percent) of San Diego goldenstar do not exceed the 20 percent encroachment limit. Mitigation shall include the preservation of the 72.27 acres of suitable habitat supporting 11,174 individuals on the Project site in the OHCA in addition to the translocation of corms located within the impact area, and it shall be actively managed consistent with Conservation Measure 9 above.

Mitigation for San Diego goldenstar shall be mitigated by phase as follow:

- All San Diego goldenstar corms that are located within each phase shall be translocated prior to implementation of mining activities within that phase.
  Phase 1 – at least 400
  Phase 2a – at least 813
  Phase 2b – at least 1

The location of translocation shall be determined prior to habitat clearing, with approval from the County and Wildlife Agencies.

Potential indirect impacts to San Diego goldenstar from invasive plant species and dust shall be mitigated through implementation of Conservation Measures 3, 4, and 8.

Conservation Measure 16 – Otay Tarplant

Section 86.507 of the BMO requires that impacts to this species be avoided to the maximum extent practicable and that encroachment not exceed 20 percent of the Otay tarplant population on site. Impacts to 30 of 540 individuals (5.6 percent) of Otay tarplant do not exceed the 20 percent encroachment limit, and the Project will avoid and preserve 510 individuals (and 6.42 acres of suitable habitat) in the OHCA. Additionally, the project will mitigate the impact to 30 Otay tarplant individuals by collecting and redistributing Otay tarplant seed in the OHCA prior to Phase 2a. Mitigation shall include the preservation of the 510 individuals on the Project site in the OHCA, and they shall be actively managed consistent with Conservation Measure 9 above. Impacts to 105.5 acres of Otay tarplant Designated Critical Habitat shall be mitigated with preservation of 93.8 acres of Otay tarplant Designated Critical Habitat in the OHCA and shall also be actively managed consistent with Conservation Measure 9 above.

Potential indirect impacts to Otay tarplant from invasive plant species and dust shall be mitigated through implementation of Conservation Measures 3, 4, and 8.

Conservation Measure 17 – Variegated Dudleya

Section 86.507 of the BMO requires that impacts to this species be avoided to the maximum extent practicable and that encroachment not exceed 20 percent of the variegated dudleya population on site. Impacts to 120 of 4,987 individuals (2.4 percent) of variegated dudleya do not exceed the 20 percent encroachment limit. Mitigation shall include the preservation of the 4,867 individuals in the OHCA, and they shall be actively managed consistent with Conservation Measure 9 above. In addition, the variegated dudleya in the impact area will be salvaged by collecting the soil crust in the area where the 120 dudleya were observed and translocating to the OHCA prior to phase 2b.

Potential indirect impacts to variegated dudleya from invasive plant species and dust shall be mitigated through implementation of Conservation Measures 3, 4, and 8.

Conservation Measure 18 – San Diego Barrel Cactus

Section 86.507 of the BMO requires that impacts to this species be avoided to the maximum extent practicable, and encroachment is not to exceed 20 percent of the population on site. Where impacts are allowed, in-kind preservation at a 1:1 to 3:1 ratio is required. Impacts to 196 of 362 individuals (54.1 percent) of San Diego barrel cactus exceeds the 20 percent encroachment limit and is, therefore, inconsistent with the BMO. The Project would avoid and preserve 166 individuals (45.9 percent of the population on site) in the OHCA.

Impacts to 196 individuals of San Diego barrel cactus shall be mitigated at a 2:1 ratio, which is consistent with the BMO. A 2:1 ratio is appropriate for a County list B species. Mitigation would consist of salvage of the 196 San Diego barrel cacti from the development footprint and translocation of these individuals to areas of appropriate habitat in the OHCA, as well as planting additional 196 San Diego barrel cacti in the OHCA for a total of 392 individual cacti planted. Any mitigation in the OHCA shall be actively managed consistent with Conservation Measure 9 above.

A Barrel Cactus Translocation Plan is attached as Appendix C. Approval of the Barrel Cactus Translocation Plan, proof of recordation of the Conservation Easement for the OHCA, and implementation of the Barrel Cactus Translocation Plan (Appendix C) shall be required prior to clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations for each phase.

Mitigation for San Diego barrel cactus shall be mitigated by phase as follow:

- Phase 2a shall include translocating 44 San Diego barrel cacti from the impact area into the OHCA and planting 44 additional nursery-grown individuals in the OHCA.

- Phase 2b shall include translocating 18 San Diego barrel cacti and planting 18 additional nursery-grown individuals.

- Phase 2c shall include translocating 134 San Diego barrel cacti and planting 134 additional nursery-grown individuals.

Potential indirect impacts to San Diego barrel cactus from invasive plant species and dust shall be mitigated through implementation of Conservation Measures 3, 4, and 8.

Table 10 presents a summary of Project impacts, minimization, and conservation measures to be implemented, and whether or not the MSCP goals for each of the impacted Proposed Covered Species are met.

Table 10
SUMMARY OF IMPACTS, MINIMIZATION,
AND CONSERVATION MEASURES, AND CORRESPONDING RESULTS

COVERED SPECIES AFFECTED	TYPE OF IMPACT	QUANTIFICATION OF TAKE OR IMPACT	MEASURES	MSCP GOALS MET
Wildlife				
Quino checkerspot butterfly	Direct loss of larvae and habitat. Indirect: habitat degradation from invasive plant species, dust.	104.9 acres of occupied habitat directly impacted. Five adult locations impacted and three breeding areas.	1, 3, 4, 8, 9, 10	N/A
Belding's orange-throated whiptail	Direct loss of individuals and habitat. Indirect: habitat degradation from invasive plant species, dust.	96.3 acres of habitat directly impacted.	1-4, 8, 9, 11	Yes
Coast horned lizard	Direct loss of individuals and habitat. Indirect: habitat degradation from invasive plant species, dust.	96.3 acres of habitat directly impacted.	1-4, 8, 9, 11	Yes
Cooper's hawk	Direct loss of foraging habitat. Indirect: foraging habitat degradation from invasive plant species, dust.	98.7 acres of foraging habitat directly impacted.	1, 3-5, 8, 9, 11	Yes
Southern California rufous-crowned sparrow	Direct loss of habitat. Indirect: habitat degradation from invasive plant species, dust.	Five individuals (of 22 present) and 66.7 acres of sage scrub habitat directly impacted.	1, 3-5, 8, 9, 14	Yes
Burrowing owl	Direct loss of habitat. Indirect: habitat degradation from invasive plant species, dust.	31.6 acres of grassland habitat directly impacted.	1-5, 8-9, 13	Yes

Table 10 (cont.)
SUMMARY OF IMPACTS, MINIMIZATION,
AND CONSERVATION MEASURES, AND CORRESPONDING RESULTS

COVERED SPECIES AFFECTED	TYPE OF IMPACT	QUANTIFICATION OF TAKE OR IMPACT	MEASURES	MSCP GOALS MET
Wildlife (cont.)				
Northern harrier	Direct loss of habitat. Indirect: habitat degradation from invasive plant species, dust.	31.6 acres of grassland habitat and 0.16 acre of cismontane alkali marsh habitat directly impacted.	1, 3-5, 8-9, 12	Yes
Coastal California gnatcatcher	Direct loss of habitat. Indirect: habitat degradation from noise, invasive plant species, and dust.	One pair (of four present) and 66.7 acres of Diegan coastal sage scrub habitat directly impacted. 20.6 acres of Diegan coastal sage scrub habitat indirectly impacted by noise.	1, 3-6, 8, 9, 14	Yes
Mountain lion	Direct loss of habitat. Indirect: habitat degradation from invasive plant species, dust.	107.4 acres of habitat directly impacted.	1, 3, 4, 8, 9, 11	Yes
Southern mule deer	Direct loss of habitat. Indirect: habitat degradation from invasive plant species, dust.	107.4 acres of habitat directly impacted.	1, 3, 4, 8, 9, 11	Yes
Plants				
San Diego goldenstar	Direct loss of individuals. Indirect: habitat degradation from dust and competition from invasive plant species.	1,214 individuals (of 12,338 present) directly impacted. 13.27 acres of potential habitat impacted (out of 85.54 existing).	1, 3, 4, 8, 9, 15	Yes
Otay tarplant	Direct loss of individuals. Indirect: habitat degradation from dust and competition from invasive plant species.	Thirty individuals (of 540 present) directly impacted. 16.69 acres of potential habitat impacted (out of 23.27 existing).	1, 3, 4, 8, 9, 16	Yes

Table 10 (cont.)
SUMMARY OF IMPACTS, MINIMIZATION, AND CONSERVATION MEASURES, AND CORRESPONDING RESULTS

COVERED SPECIES AFFECTED	TYPE OF IMPACT	QUANTIFICATION OF TAKE OR IMPACT	MEASURES	MSCP GOALS MET
Plants (cont.)				
Variegated dudleya	Direct loss of individuals. Indirect: habitat degradation from dust and competition from invasive plant species.	120 individuals (of 4,987 present) directly impacted. 13.27 acres of potential habitat impacted (out of 62.17 existing).	1, 3, 4, 8, 9, 17	Yes
San Diego barrel cactus	Direct loss of individuals. Indirect: habitat degradation from dust and competition from invasive plant species.	196 individuals (of 362 present) directly impacted.	1, 3, 4, 8, 9, 18	Yes

5.4 MONITORING

Monitoring tracks compliance with the terms and conditions of the HCP, Implementing Agreement (IA), and permit. There are three types of monitoring: 1) compliance monitoring tracks the permit holder's compliance with the requirements specified in the HCP, IA, and permit; 2) effects monitoring tracks the impacts of the covered activities on the Proposed Covered Species; and 3) effectiveness monitoring tracks the progress of the conservation strategy in meeting the HCP's biological goals and objectives (includes species surveys, reproductive success, etc.). Monitoring provides information for making adaptive management decisions.

Compliance monitoring for the MSCP and IA are handled through the County. Compliance with the permit conditions is assured because the mitigation measures are written into the MUP conditions such that subsequent approvals cannot be obtained until the mitigation measures are completed. Effects monitoring will be provided through pre-construction surveys for any vegetation clearance during the breeding season and biological monitoring to ensure that approved disturbance limits aren't exceeded. Effectiveness monitoring is provided through the RMP. The RMP will be implemented by the preserve manager hired to manage the OHCA in accordance with the conservation goals of the MSCP and this amendment for the affected Proposed Covered Species. Part of the management includes monitoring to gather information that will assist the preserve manager in making management decisions to conform to those goals and objectives (i.e., adaptive management). Part of this adaptive management approach may include revisions to monitoring measures noted below based and new information and/or changes in regional monitoring efforts over time. The preserve manager will coordinate with adjacent land managers to ensure that this segment of the preserve is meeting the goals and objectives of the MSCP as well as the Management Strategic Plan that has been prepared by the San Diego Management and Monitoring Program.

General monitoring tasks required in the RMP include:

- Conducting threats and stressors monitoring every year within the OHCA. Threats and stressors (e.g., off-road vehicle use, fire, vandalism, invasive species) will be noted during monthly inspections. This information will be compiled annually into a general assessment of the OHCA that will identify any new threats or stressors, or changes in their magnitude, and determine whether they trigger additional management and/or monitoring.

- Conducting habitat monitoring in five-year intervals within the OHCA, and annually for five years after a burn. Monitoring within the OHCA will identify any changes in vegetation community distribution and habitat quality, such as changes from fire, invasion by non-native species (including ants), or decline of existing species, and will indicate if modifications to current management actions are needed. New monitoring methods such as USGS rapid assessment protocol currently in development could be implemented in the future if the habitat manager, County, and Wildlife Agencies agree they are appropriate based on their benefit to the OHCA and the cost and time needed to implement. More frequent monitoring may be required following a significant fire within the OHCA. The main product of monitoring will be a report that will include a discussion of monitoring objectives, maintenance and management methods to meet those objectives, and an updated vegetation community map.

- Preparing the monitoring report that summarizes the monitoring goals, objectives, methods, and results of the biological monitoring efforts. The report will also address the effectiveness of current management actions, identify the need for corrective actions, and include recommendations for adaptive management. Management years will run from October 1 through September 30 with the annual report submitted to the County and Wildlife Agencies by November 1 of each year.

Additionally, monitoring for Proposed Covered Species would be included as part of the RMP. Specific monitoring types include status, trend, and habitat monitoring, as defined below.

- Status monitoring is a species-specific monitoring type that determines if a population exists or persists at conserved sites.

- Trend monitoring is a species-specific monitoring type that includes the collection of annual or periodic abundance data to determine if conserved populations are increasing, stable, or declining.

- Habitat monitoring is a general monitoring type that focuses on determining changes in habitat as a result of natural events or the loss of habitat value as a result of edge effects or other human related impacts.

Status, trend, and habitat monitoring would be required in the RMP for Proposed Covered Species including:

- Conducting annual assessments for sensitive plant species using SDMMP protocol (SDMMP 2013) to determine the number, size, variability, and health status of Covered

Plant Species in the OHCA and assess trends, relative abundance, and distribution status. This information will be included in the monitoring report.

- Monitor habitat quality annually for sensitive animal species to assess, trends, overall habitat quality, and potential threats using the USGS habitat protocol or other protocol acceptable to the resource agencies and the County.

- During the first year and every three years, map the extent of QCB host plants within high and moderate host plant areas, and identify non-native species cover and other threats.

- Approximately every three years starting in Year 3, conducting focused surveys for QCB in coordination with regional efforts. Scheduling of surveys and analysis of results should take climatic factors into account.

- Conduct larval surveys at least once every six years in high and moderate host plant areas. Up to 25 acres of high and moderate host plant areas would be surveyed twice during the optimum time for larval detection.

Results of Proposed Covered Species monitoring would be included in the monitoring report described under the general monitoring tasks described above.

5.5 PERFORMANCE AND SUCCESS CRITERIA

The goals for the proposed Amendment are listed in section 5.1, and objectives for each goal are listed in section 5.2.

This section provides specific success criteria for each Proposed Covered Species in achieving these goals.

5.5.1 Covered Wildlife Species

5.5.1.1 *Quino Checkerspot Butterfly*

Success Criterion 5.5.1.1a: Maintain existing population(s) of QCB within the OHCA through conservation, management, and monitoring of 304.6 acres of QCB-occupied habitat that includes seven acres of high use areas and nine acres of moderate host plant areas. A conservation easement and biological open space easement shall be placed over the 304.6 acres prior to initiation of habitat clearing, and management will be implemented consistent with phasing of development as outlined in the RMP. Habitat shall be maintained at existing quality or better over the long term.

Success Criterion 5.5.1.1b: Ensure viable QCB populations through conservation and management of at least 80 percent of existing high and moderate host plant areas on site in proportion to population fluctuations relative to reference sites within San Diego County.

5.5.1.2 *Belding's Orange-throated Whiptail*

Success Criterion 5.5.1.2a: Conserve and manage 295.7 acres of suitable habitat in the OHCA. A conservation easement and biological open space easement shall be placed over the 295.7 acres prior to initiation of habitat clearing, and management will be implemented consistent with phasing of development as outlined in the RMP. Habitat shall be maintained at existing quality or better over the long term.

5.5.1.3 *Coast Horned Lizard*

Success Criterion 5.5.1.3a: Conserve and manage 295.7 acres of suitable habitat in the OHCA. A conservation easement and biological open space easement shall be placed over the 295.7 acres prior to initiation of habitat clearing, and management will be implemented consistent with phasing of development as outlined in the RMP. Habitat shall be maintained at existing quality or better over the long term.

5.5.1.4 *Cooper's Hawk*

Success Criterion 5.5.1.4a: Conserve and manage 296.4 acres of suitable foraging habitat in the OHCA. A conservation easement and biological open space easement shall be placed over the 296.4 acres prior to initiation of habitat clearing and management will be implemented consistent with phasing of development as outlined in the RMP. Habitat shall be maintained at existing quality or better over the long term.

5.5.1.5 *Southern California Rufous-crowned Sparrow*

Success Criterion 5.5.1.5a: Conserve and manage 238.0 acres of suitable Diegan coastal sage scrub (including disturbed) habitat in the OHCA. A conservation easement and biological open space easement shall be placed over the 238.4 acres prior to initiation of habitat clearing, and management will be implemented consistent with phasing of development as outlined in the RMP. Habitat shall be maintained at existing quality or better over the long term.

5.5.1.6 *Burrowing Owl*

Success Criterion 5.5.1.6a: Conserve and manage 16.8 acres of suitable grassland habitats in the OHCA (16.1 acres of non-native grassland and 0.7 acre of native grassland) and 15.0 acres of non-native grassland off site (at an individual parcel or conservation bank). A conservation easement and biological open space easement shall be placed over the 16.8 acres prior to initiation of habitat clearing, and management will be implemented consistent with phasing of development as outlined in the RMP. Habitat shall be maintained at existing quality or better over the long term.

Success Criterion 5.5.1.6b: Implement a passive translocation of the owl (if it is present) to the OHCA with the creation of artificial burrows in accordance with a Burrowing Owl Translocation Plan approved by the County and Wildlife Agencies, if necessary.

5.5.1.7 *Northern Harrier*

Success Criterion 5.5.1.7a: Conserve and manage 16.8 acres of suitable grassland habitats in the OHCA and 15.0 acres off site (at an individual parcel or conservation bank; see 5.5.1.7, above). Conserve and manage 0.1 acre of cismontane alkali marsh in the OHCA and create, restore, and/or enhance 0.83 acre of cismontane alkali marsh in consultation with the County and Wildlife Agencies prior to initiation of habitat clearing. Habitat shall be maintained at existing quality or better over the long term.

5.5.1.8 *Coastal California Gnatcatcher*

Success Criterion 5.5.1.8a: Conserve and manage 225.3 acres of suitable Diegan coastal sage scrub (including disturbed) in the OHCA. A conservation easement and biological open space easement shall be placed over the 225.3 acres prior to initiation of habitat clearing, and management will be implemented consistent with phasing of development as outlined in the RMP. Habitat shall be maintained at existing quality or better over the long term.

5.5.1.9 *Mountain Lion*

Success Criterion 5.5.1.9a: Conserve and manage 304.6 acres of habitat in the OHCA. A conservation easement and biological open space easement shall be placed over the 304.6 acres prior to initiation of habitat clearing, and management will be implemented consistent with phasing of development as outlined in the RMP. Habitat shall be maintained at existing quality or better over the long term.

5.5.1.10 *Southern Mule Deer*

Success Criterion 5.5.1.10a: Conserve and manage 304.6 acres of habitat in the OHCA. A conservation easement and biological open space easement shall be placed over the 304.6 acres prior to initiation of habitat clearing, and management will be implemented consistent with phasing of development as outlined in the RMP. Habitat shall be maintained at existing quality or better over the long term.

5.5.2 Covered Plant Species

5.5.2.1 *San Diego Goldenstar*

Success Criterion 5.5.2.1a: Conserve and manage 72.27 acres of suitable habitat for 11,174 individuals of San Diego goldenstar in the OHCA. A conservation easement and biological open space easement shall be placed over all suitable habitat prior to initiation of habitat clearing, and management will be implemented consistent with phasing of development as outlined in the RMP. Habitat shall be maintained at existing quality or better over the long term.

Success Criterion 5.5.2.1b: Develop and implement a relocation plan of all corms of San Diego goldenstar found within the impact footprint into the OHCA. The relocation plan shall be reviewed

and approved by the County and Resource Agencies, and the translocated plants shall be weeded and monitored according to the RMP.

5.5.2.2 *Otay Tarplant*

Success Criterion 5.5.2.2a: Conserve and manage 6.58 acres of suitable habitat for 510 individuals of Otay tarplant in the OHCA. A conservation easement and biological open space easement shall be placed over all suitable habitat prior to initiation of habitat clearing, and management will be implemented consistent with phasing of development as outlined in the RMP. Habitat shall be maintained at existing quality or better over the long term.

Success Criterion 5.5.2.2b: Develop and implement a seed collection and dispersal plan for Otay tarplant into the OHCA. The seed collection and dispersal plan will be reviewed and approved by the County and Resource Agencies, and the translocated plants shall be weeded and monitored according to the RMP.

5.5.2.3 *Variegated Dudleya*

Success Criterion 5.5.2.3a: Conserve and manage 48.90 acres of suitable habitat for 4,867 individuals of variegated dudleya in the OHCA. A conservation easement and biological open space easement shall be placed over all suitable habitat prior to initiation of habitat clearing, and management will be implemented consistent with phasing of development as outlined in the RMP. Habitat shall be maintained at existing quality or better over the long term.

Success Criterion 5.5.2.3b: Develop and implement a relocation plan of a minimum of 120 individuals of variegated dudleya into the OHCA. The relocation plan shall be reviewed and approved by the County and Resource Agencies, and the translocated plants shall be weeded and monitored according to the RMP.

5.5.2.4 *San Diego Barrel Cactus*

Success Criterion 5.5.2.4a: Conserve and manage suitable habitat for 166 individuals of San Diego barrel cactus in the OHCA. A conservation easement and biological open space easement shall be placed over all suitable habitat prior to initiation of habitat clearing. Habitat shall be maintained at existing quality or better over the long term.

Success Criterion 5.5.2.4b: Develop and implement a relocation plan of a minimum of 392 individuals of San Diego barrel cactus into the OHCA. The relocation plan shall be reviewed and approved by the County and Resource Agencies, and the translocated cacti shall be weeded and monitored according to the RMP.

Success Criterion 5.5.2.5: ***Tecate Cypress, Dunn's Mariposa Lily, Orcutt's Bird's Beak, and Gander's Pitcher Sage***

Success Criterion 5.5.2.5a: Conserve and manage suitable habitat for eight individuals of Dunn's mariposa lily, 21 individuals of Orcutt's bird's beak, 78 individuals of Tecate cypress, and 92

individuals of Gander's pitcher sage in the OHCA. A conservation easement and biological open space easement shall be placed over all suitable habitat prior to initiation of habitat clearing, and management will be implemented consistent with phasing of development as outlined in the RMP. Habitat shall be maintained at existing quality or better over the long term.

5.6 ADAPTIVE MANAGEMENT STRATEGY

The term adaptive management was adopted by Holling (1978) for natural resource management. He described adaptive management as an interactive process that not only reduces but also benefits from uncertainty. Adaptive management includes steps that may be involved in a long-term adaptive implementation program, including opportunistic learning, management, monitoring, and directing the results of analysis and assessment back into the program through decision makers.

Objective 5.6.1: Ensure that, through the monitoring and reporting process, results of management are evaluated and management is adjusted appropriately to meet the RMP goals and the County's and Wildlife Agencies' commitment to the conservation goals of the MSCP and the Project.

The RMP is based on an adaptive management strategy that will facilitate and improve the decision-making process for operating the conservation program of the RMP as well as provide for informative decision-making. The RMP assumes that management and monitoring methods may change over time based on analysis of the data collected, improved scientific methodologies, and prioritization and evaluation of management activities.

Adaptive management relies on monitoring efforts such as those outlined in Section 5.4 above to detect changes in species, habitats, and/or threats. Linking the monitoring program with adaptive management actions will inform the land manager of the status of target species, natural communities, and essential ecological processes, as well as the effectiveness of management actions in a manner that provides data to allow informed management actions and decisions. When change is detected, the land manager assesses the information and responds by initiating, modifying, or even ending a particular management strategy, if necessary. An important component of implementing the management measures described above will include evaluating data from monitoring activities to determine whether trends in threats are part of a natural cycle of fluctuation or are anthropogenic. If there is a substantial decline in native species compared to the baseline (e.g., greater presence of invasive non-native plants) or other apparent threats to habitat conditions are observed, remedial measures will be evaluated with the Wildlife Agencies and implemented on an as-needed basis. Adaptive management measures shall be limited to funds available for adaptive management as detailed in the Property Analysis Record (PAR) for the Project.

Tasks

- Continue to learn and modify management approaches by testing assumptions through purposeful scientific monitoring.

- Annually assess the need for each management strategy, and update this RMP as appropriate to meet conservation goals.

- The Resource Manager shall coordinate with other land managers and the SDMMP on the most current management techniques to benefit sensitive species and address potential threats, and to ensure that monitoring methods will follow those being practiced by others so that information will be useful to local and regional assessments regarding habitat and species.

5.7 REPORTING

Section 5.2.4 discusses specific objectives and tasks associated with long-term management of the OHCA and implementation of the MSCP Amendment. Compliance reporting for the MSCP and IA are handled through the County. Compliance with the permit conditions is assured because the mitigation measures are written into the MUP conditions such that subsequent approvals cannot be obtained until the mitigation measures are completed. Effects monitoring will be provided through pre-construction surveys for any vegetation clearance during the breeding season and biological monitoring to ensure that approved disturbance limits are not exceeded, with reports provided by the project biologist to the County and Wildlife Agencies. Lastly, effectiveness reporting will be handled by the preserve manager. Annual Reports covering the October 1 through September 30 management year shall be prepared by the preserve manager and submitted to the County and Wildlife Agencies by November 1 of each year and will include:

1. Brief summary or list of Project activities accomplished during the reporting year (e.g., this includes development/construction activities, phase of construction, and other covered activities);

2. Project impacts (e.g., number of acres graded, type of habitat constructed, etc.);

3. Description of any take that occurred for each Proposed Covered Species (includes cause of take, form of take, take amount, location of take and time of day, and disposition of dead or injured individuals);

4. Brief description of conservation strategy implemented including off-site and on-site avoidance, and minimization and mitigation measures;

5. Any amendments to the HCP or Permit;

6. Monitoring results (compliance, effects and effectiveness monitoring) and survey information (if applicable);

7. Status of species planting, translocation efforts provided for under the HCP;

8. Description of any circumstances that required adaptive management and what management strategies were implemented. A summary table including the cumulative totals by reporting all adaptive management changes to the HCP, including a very brief summary of the actions;

9. Description of any changed or unforeseen circumstances that occurred and how they were dealt with;

10. Funding expenditures, endowment balance, and accrual; and

11. Proposed work plan and estimated funding requirements for the coming year.

6.0 PLAN IMPLEMENTATION

6.1 PLAN IMPLEMENTATION

The Board of Supervisors entered into an Implementing Agreement (IA) with the Wildlife Agencies for the MSCP County Subarea Plan on March 17, 1998. The IA is an agreement between the County and Wildlife Agencies that outlines their individual and collective roles in implementing the County MSCP Subarea Plan. The IA ensures that the County MSCP Subarea Plan will be implemented over the next 50 years and that state and federal Take Authorizations will be in effect for the same period of time. This amendment to the MSCP will be valid through the remainder the 50-year permit (until March 16, 2048). Any subsequent extensions of the MSCP would include take authorization for the Project, provided the Project is in compliance.

6.2 UNFORESEEN AND CHANGED CIRCUMSTANCES

Section 10 regulations [(69 Federal Register 71723, December 10, 2004 as codified in 50 CFR, Sections 17.22(b)(2) and 17.32(b)(2))] require that an HCP specify the procedures to be used for dealing with changed and unforeseen circumstances that may arise during the implementation of the HCP. In addition, the HCP No Surprises Rule [50 CFR 17.22 (b)(5) and 17.32 (b)(5)] describes the obligations of the permittee and the USFWS. The purpose of the No Surprises Rule is to provide assurance to the non-federal landowners participating in habitat conservation planning under the Act that no additional land restrictions or financial compensation will be required for species adequately covered by a properly implemented HCP, in light of unforeseen circumstances, without the consent of the permittee.

"Changed circumstances" is defined under the No Surprises Rule as changes in circumstances affecting a species or geographic area covered by a conservation plan that can reasonably be anticipated by plan developers and the USFWS and that can be planned for.

"Unforeseen circumstances" is defined under the No Surprises Rule as changes in circumstances affecting a species or geographic area covered by a conservation plan that could not reasonably have been anticipated by the conservation plan developer and the USFWS at that time of the conservation plan's negotiation and development and that result in a substantial and adverse change in the status of a Proposed Covered Species. Under the No Surprises Rule, the USFWS will not require the commitment of additional land, water, or financial compensation, or additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed to for species covered by the HCP without consent of the County. Under the rule, the USFWS

will honor these assurances as long as the County is properly implementing the terms and conditions of the MSCP, permit and other associated documents. As indicated in the Final No Surprises Rule at 50 C.F.R. 17.22(b)(6) and 17.32(b)(6): "Nothing in this rule will be construed to limit or constrain the Director, any Federal, State, local or Tribal government agency, or a private entity, from taking additional actions at its own expense to protect or conserve a species included in a conservation plan. This provision only applies to species "adequately covered" under the Otay Hills HCP.

6.2.1 Unforeseen Circumstances

Pursuant to the No Surprises Rule at 50 C.F.R. §17.22(b)(5)(iii)(C), the USFWS has the burden of demonstrating that unforeseen circumstances exist, using the best scientific and commercial data available. "These findings must be clearly documented and based upon reliable technical information regarding the status and habitat requirements of the affected species. The Director will consider, but not be limited to, the following factors:

- Size of the current range of the affected species.
- Percentage of range adversely affected by the amendment.
- Percentage of the range conserved by the conservation plan.
- Ecological significance of that portion of the range affected by the conservation plan.
- Level of knowledge about the affected Covered Species and the degree of specificity of the species' conservation program under the conservation plan; and
- Whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild."

If either of the Wildlife Agencies or the County becomes aware of the existence of a potential Unforeseen Circumstance, they will immediately notify the other Agencies of the existence of the potential Unforeseen Circumstance. Except where there is substantial threat of imminent, significant, adverse impacts to a Proposed Covered Species, USFWS will provide the County and CDFW written notice within 30 calendar days of a finding of Unforeseen Circumstances, during which time the Wildlife Agencies will meet with the County to discuss the proposed finding, provide the County an opportunity to submit information to rebut the proposed finding, and consider any proposed changes to the conservation strategies for the Preserve. During the time necessary to determine the nature and extent of any additional or modified mitigation, the County will avoid contributing to appreciably reducing the likelihood of the survival and recovery of the affected Proposed Covered Species in the wild.

Pursuant to the provisions of the No Surprises Rule, USFWS may impose additional mitigation or other measures on the County without its consent only to the extent allowed by and in conformance with the No Surprises Rule currently codified at 50 CFR 17.22(b)(5) (iii)(A) and 17.32(b)(5)(iii)(A).

6.2.1.1 *Effects of Unforeseen Circumstances or Jeopardy on Take Authorization*

Notwithstanding the limits on conservation and mitigation measures identified above, the Permit for this amendment may be revoked for cause under 50 C.F.R. 13.28(a)(1) through (a)(4) or if USFWS determines that continuation of the covered activities would be inconsistent with the criterion set forth in 16 U.S.C. 1539(a)(2)(B)(iv). See 50 CFR 17.22(b)(8).

6.2.2 Changed Circumstances

Changed Circumstances addressed by this amendment are limited to the following:

1. Fire
2. Climate change
3. Vandalism
4. Invasive species and diseases
5. New listings of threatened or endangered species or designation/revision of critical habitat for a listed species

Each of the defined Changed Circumstances includes an assessment of risk, a description of preventative measures (where feasible), and a summary of Planned Responses (measures to be undertaken in the case of Changed Circumstances), as provided below. Preventative measures are those measures that are, or will be, undertaken by the County to reduce the potential for occurrence of the Changed Circumstance, and/or that reduce the potential for damage to the OHCA resulting from a Changed Circumstance. Planned Responses are the specific responses that will be undertaken in the event of a Changed Circumstance.

Relationship of Changed Circumstances to Adaptive Management

Responses to Changed Circumstances are generally addressed through the adaptive management element of the RMP. The adaptive management program requires monitoring of species and habitat conditions, with a management response to observed threats. In anticipating and reacting to Changed Circumstances, adaptive management allows for revisions to the operating conservation program, thereby enhancing future strategies for the conservation of species and their habitat. Changed Circumstances allow specific triggers and management actions to be applied to foreseeable threats. The ability to carry out the planned responses (i.e., adaptive management actions) for Changed Circumstances, described below, is included in the funding calculations for the RMP.

The adaptive management program presented in the RMP allows the RMP to be revised as new information on the life history or ecology of Proposed Covered Species is gained through continuing research and/or as data regarding the effectiveness of mitigation measures (gained through the monitoring programs) is generated. As a result, revisions may be made to the land management and monitoring of Proposed Covered Species.

6.2.2.1 *Fire*

Risk assessment

Fires are natural phenomena in the Mediterranean climate of southern California. Frequent and intense fires can modify the natural landscape and pose a threat to public safety. Fire frequency and intensity influence community regeneration, composition, and extent. For the purposes of this amendment, it is assumed that a catastrophic fire could burn the entire OHCA once every 10 years (based on average fire cycle for southern California)

Impacts from fire can occur to the Proposed Covered Species from the fire itself, as well as from the fire suppression activities. If not controlled, increased erosion and weed invasion may occur following a fire due to loss of vegetation. In addition, the vegetation and species may be damaged by emergency response vehicles and personnel during the fire suppression. Increased fire risk associated with climate change is addressed in Section 6.2.

Preventative Measures

Preventative measures to reduce the likelihood of and harm from a single fire in the OHCA are included in the adaptive management provisions in the RMP. The RMP includes a comprehensive strategy for reducing risks of negative effects of wildfire, including preventative actions and planning for fire suppression activities in advance.

Planned Response

The RMP includes fire management and protection measures that will minimize the risk of damage to habitats and natural communities from fire outside the normal range of wildfires. Preventative measures include the following actions:

- Create or redesign fuel breaks to limit fire spread.
- Work with local fire agencies to improve fire suppression preparedness and strategies to protect habitat during fire response.

Should a fire take place, the preserve manager will follow protocols established in the RMP and will work closely with local fire response crews to ensure that impacts on sensitive communities and Proposed Covered Species are minimized within safety limits. In addition, landscape-level monitoring will assess changes to land cover type, and natural community–level monitoring will assess the response of exotic plants. In the event of habitat loss, land management and habitat restoration measures will be implemented within the preserve to ensure the reestablishment of native vegetation through active or passive management, as appropriate.

Within 30 days of a fire, County staff and/or the preserve manager will make a preliminary assessment of the effects of the fire within the preserve areas. Based on the extent and severity of fire damage, as determined by County staff and/or the Resource Manager with concurrence of the Wildlife Agencies, the preserve manager will develop and implement specific adaptive management tasks in accordance with the RMP. The preserve manager(s) will address monitoring

of natural regrowth within the damaged area for a period of five years and implement measures to minimize the invasion by exotic species and excessive soil erosion. Qualitative and quantitative monitoring will be required to evaluate post-fire restoration success (based on pre-fire conditions). As data are gathered, adaptive management actions will be initiated and modified as needed to reduce potential threats and their adverse impacts.

6.2.2.2 *Climate Change*

Risk assessment

Risk to the Proposed Covered Species associated with climate change include (but are not limited to):

- Drought
- Increased fire (frequency and/or area burned)

Drought

The Project site is characterized by a Mediterranean climate, with cool, wet winters and warm, dry summers. El Niño and La Niña climatic events typically cause large annual fluctuations in precipitation levels (Reever-Morghan et al. 2007). A large majority of annual rainfall occurs between October and March. Drought is a natural part of Mediterranean climates and drought conditions experienced over the term of the Project could result in the stress of native habitats. Drought conditions will be considered to exist at the time drought conditions are declared to exist at the Project site by appropriate state agency or County Agricultural Commissioner. For the purposes of this amendment, a drought consisting of seven consecutive dry years is considered a Changed Circumstance. A drought lasting longer than seven years is not foreseeable and would be considered an Unforeseen Circumstance.

The climate change model simulations indicate that San Diego will retain its strong Mediterranean climate with relatively wetter winters and dry summers. Projections of future precipitation have mixed results: three of the simulations become drier (12 to 35 percent drier than historical annual average) and three are wetter (12 to 17 percent wetter than historical annual average) overall. This reflects the reality that precipitation cannot yet be modeled with the same degree of consistency as other climate change parameters. The models vary in their projections of storminess, but none show a significant change from past patterns. One important aspect of all of the climate model projected simulations is that the high degree of variability of annual precipitation that the region has historically experienced will prevail during the next five decades.

Increases in Fire Frequency

Climate change can also influence fire frequency within the OHCA. Fire occurrence in California has been correlated with drought, moisture availability, and biomass (fuel) accumulation (Lenihan et al. 2003). Although climate change models predict different climate scenarios, many predict a dryer and warmer climate, which would result in more frequent or longer drought periods. An increase in drought frequency or longevity has the potential to increase fire frequency.

Fire is defined as any fire on conservation lands not prescribed by the preserve manager that removes a sufficient extent of vegetation such that the intended habitat functions of the conservation land for Proposed Covered Species are substantially reduced and would not naturally recover habitat functions within a sufficient time to meet goals and objectives, as determined by the County and Wildlife Agencies jointly. For purposes of this amendment, increases in fire frequency shall be considered a changed circumstance if two fire events occur within the same 25 percent of the site within any given 10-year period. If more than 80 acres of the OHCA burns three times or more within a 10-year period, it would be considered "unforeseen."

Preventative Measures

Conservation measures in the amendment are not sufficient and comprehensive enough on their own to prevent the effects of climate change on Proposed Covered Species. However, certain risks associated with climate change can be minimized with preventative measures. Preventative measures are provided for fire in Section 6.2.2.1 and in the RMP. There are no preventative measures identified for drought.

Planned Response

Drought

Drought conditions may affect the development and maintenance of species restoration sites. In the event of drought conditions, the Project Proponent will evaluate habitat restoration sites to assess the degree of effect on habitat development and functions. Following the evaluation, the County will prepare a report that documents the effects of drought on restoration sites and identify management actions that will be implemented through the adaptive management process to alleviate the effects of drought.

Increased fire frequency

Planned Responses for fire are provided in Section 6.2. It is assumed that the frequency and/or duration of Planned Responses for fire would increase as a result of climate change.

6.2.2.3 *Vandalism*

Risk Assessment

While access control is required under the RMP, vandalism is still possible. Structures in the OHCA such as gates, fences, or signs could be vandalized during the permit term. Such damage is considered reasonably likely to occur during the permit term and is therefore considered a changed circumstance. Remedial measures funded in the RMP include the repair or replacement of structures or facilities damaged by vandalism. In addition, the habitat may be impacted from intentionally damaging, destroying, or removing Proposed Covered Species. Examples include (but are not limited to) unpermitted grading, construction and use of new trails by mountain bikers,

and off-road vehicle use. Vandalism can result in permanent impacts to Proposed Covered Species and reduce ecological functions of the OHCA.

Preventative Measures

Measures to prevent vandalism include access control (installing and/or maintaining fencing and/or signage) and patrolling, which are activities that will be implemented by the Resource Manager as discussed in Chapter 5.

Planned Responses

If vandalism does occur, enhancement and/or restoration activities will be promptly implemented by the Resource Manager to restore impacted areas to pre-impact conditions. For example, seeding and/or installation of container plants may be necessary to restore impacted covered plant species. The time frame to complete enhancement and/or restoration of habitat and Proposed Covered Species populations will depend on the severity of impact from vandalism and will be determined by the County with the concurrence of the Wildlife Agencies.

6.2.2.4 *Invasive Species and Diseases*

For the purpose of defining Changed Circumstance, invasion of invasive exotic species or disease is defined as an introduction of a species or disease within the OHCA that has either (a) not previously been known to occur in the vicinity of the OHCA and has been noxious elsewhere; or (b) is a particularly noxious variety of nonnative species or disease that is resistant to typical control measures. Unforeseen Circumstances (which are not covered under this amendment) are defined as invasion within the OHCA of a species or disease not currently known to be noxious elsewhere, but that becomes so upon introduction to the Preserve.

Risk assessment

Invasive plant species are considered the greatest risk to the Proposed Covered Species. Although invasive, exotic, or pest species of plants may currently exist within the OHCA, they will be controlled through the adaptive management process. An unexpected and/or sudden increase in new invasive species may create the potential for a significant adverse effect on one or more of the Proposed Covered Species. Invasive species could increase as urban development expands and/or recreational use increases around the OHCA. Diseases could spread to the OHCA as a result of climate change, which can allow insect carriers to inhabit new areas. Mosquito-borne diseases like West Nile Virus can affect both humans and birds.

Preventative Measures

The RMP contains preventative actions to monitor and manage invasive species within the OHCA, including use of native landscaping on restored slopes adjacent to the OHCA, and invasive plant removal within the OHCA. The project would include a vector management plan to keep mosquitoes out of the materials washing pond and any ponds formed during excavation. Ponds within the OHCA would be treated to remove mosquitoes if the County and the Wildlife Agencies

determine that West Nile Virus or other mosquito-borne diseases pose a threat to the Proposed Covered Species.

Planned Response

The preserve manager will take steps to minimize or eliminate invasion of non-native species through implementation of the RMP which includes measures to detect, through the monitoring program, new infestations or a substantial increase in existing infestations of non-native animal, plant, or disease in the conservation area. If an infestation of a non-native animal, plant, or disease is discovered, the preserve manager in coordination with Wildlife Agencies and County will conduct an assessment to determine the possible threats of the species or disease to Proposed Covered Species and the OHCA ecosystems. The preserve manager, in coordination with the County and the Wildlife Agencies, will identify and implement measures to reduce and/or control the adverse effects of the species or disease on the functions provided by habitat restored and protected under this HCP (e.g., control of invasive non-native plant species in the OHCA). If the preserve manager, with concurrence from the County and Wildlife Agencies, determines that methods to adequately reduce and/or control the species or disease are not available or practicable, the preserve manager will identify alternative design, implementation, and management approaches to future habitat restoration and management actions to avoid or minimize potential adverse effects of the disease on Proposed Covered Species. If the preserve manager, with concurrence from the County and Wildlife Agencies, determines that such modifications are not practicable, the preserve manager, through the adaptive management process, will identify and implement alternative conservation measures, if practicable, that provide equivalent levels of benefit to applicable Proposed Covered Species.

6.2.2.5 *New Species Listings or Designation of Critical Habitat*

Risk Assessment

The future listing of a species that is not covered by this amendment or the designation or revision of critical habitat of a listed species is a Changed Circumstance.

Preventative Measures

There are no preventative measures for future listings or designation or revision of critical habitat.

Planned Responses

The County will evaluate the potential impacts of covered activities on the newly listed species or designated/revised critical habitat. The County (and project applicant) will avoid taking action that would result in take of or jeopardy to a newly listed species or adverse modification of critical habitat of a listed species as determined by the Wildlife Agencies in coordination with the County.

In the event that a non-covered species is proposed for listing, the County and Wildlife Agencies will jointly identify measures that the County could follow to include the newly listed species as a Proposed Covered Species under the amendment (see Section 23.2 of the IA). The County may

request that USFWS and CDFW add the species to the Section 10(a)(1)(B) permit and NCCP permit, respectively. In determining whether to seek incidental take coverage for the species, the County will consider, among other things, whether the species is present in the permit area and if otherwise lawful activities could result in incidental take of the species. If incidental take coverage is desired, the amendment and permits could be modified or amended. Alternatively, the County could apply for new and separate permits. If the County does not implement the agreed upon measures, prior to the County's issuance of any permit for land development, clearing, and/or grubbing, applicants must obtain independent incidental take authority for any listed, non-covered species through appropriate federal and/or state permit processes.

6.3 AMENDMENTS

Any party (County, USFWS, CDFW, or Project Proponent) may propose minor modifications to this HCP by providing written notice to the other parties. Such notice shall include a statement of the reason for the proposed modification and an analysis of its environmental effects, including its effects on operations under the HCP and on Proposed Covered Species. Minor amendments are permissible without amending the underlying Section 10(a)(1)(B) permit provided that the USFWS determines that the changes do not: 1) cause additional take of Proposed Covered Species that was not analyzed in connection with the original HCP; 2) result in operations under the HCP that are significantly different from those analyzed in connection with the original HCP; or 3) have adverse effects on the environment that are new or significantly different from those analyzed in connection with the original HCP.

Minor amendments to this HCP may include corrections of typographic, grammatical, and similar editing errors that do not change the intended meaning or corrections to any maps or exhibits to correct errors in mapping or to reflect previously approved changes in the permit or HCP. Any changes to the proposed mitigation (e.g., translocating the barrel cactus to an off-site location instead of the OHCA) may also be minor amendments to this HCP at the determination of the Wildlife Agencies and County.

Proposed amendments that do not qualify as minor amendments would have to go through the Major Amendment process. As stated in Section 1.6.4, Major Amendments must conform to the MSCP Sub-regional Plan, the County MSCP Subarea Plan, as well as the BMO (County 2010a). Major Amendments also must be authorized by the Wildlife Agencies and be in conformance with all applicable laws and regulations, including NEPA, CEQA, NCCP Act, and Federal Act.

6.4 SUSPENSIONS/REVOCATIONS

6.4.1 Suspension

Consistent with the County MSCP IA, in the event of any material violation of the Section 10(a) Permit or material breach of this County IA by the County, the USFWS may suspend the Section 10(a) Permit in whole or in part, provided that it may not suspend the Permit without first: 1) requesting the County take appropriate remedial actions and 2) providing the County with written notice of the facts or conduct which may warrant the suspension and an adequate and

reasonable opportunity for the County to demonstrate why suspension is not warranted or to take steps necessary to cure the violation or breach.

6.4.2 Permit Revocation or Termination

Consistent with the County MSCP IA, the USFWS agrees that it will only revoke or terminate the Section 10(a) Permit for a material violation of the Section 10(a) Permit or material breach of the County IA by the County only if: 1) the County refuses to cure the violation or breach after receiving actual notice of it from USFWS and a reasonable opportunity to cure it or 2) the USFWS determines in writing that such violation or breach cannot be effectively redressed by other remedies or enforcement action.

In the event that the USFWS and/ or CDFW revoke, terminate, or suspend the Take Authorization issued to the County pursuant to the IA, the assurances provided to the Third Party Beneficiaries under the IA and the right to take MSCP Covered Species subject to incidental take authorizations, will remain in effect for every individual Third Party Beneficiary which fulfills the mitigation obligations imposed upon it by the County in compliance with County IA.

6.5 PERMIT RENEWAL

The Section 10(a) Permit and the NCCP Authorization issued to the County shall be effective for a period of 50 years from the effective date of March 17, 1998. Any subsequent extensions of the Permit would include take authorization for the Project.

6.6 THIRD PARTY BENEFICIARY

The County may allow within the Subarea Plan the incidental take of MSCP Covered Species subject to incidental take by Third Party Beneficiaries including land owners and public and private entities undertaking land development activities in conformance with an approval granted by the County in compliance with IA Sections 9, 10, and 17.

Third Party Beneficiary status is proposed to be obtained for this Project as a whole. The creation of Third Party Beneficiary status shall occur during the County's permitting process at the point in time when: 1) review of the Project's impacts on biological resources and a determination of necessary mitigation has occurred in compliance with Section 10 of the County IA; 2) the determined mitigation includes an immediately effective requirement to maintain the biological values of the land committed for mitigation; and 3) the mitigation has been imposed through a condition of development that is recorded and runs with the land and is enforceable against and binding upon the Third Party Beneficiary and any successor in interest to the Third Party Beneficiary.

6.7 PERMIT TRANSFER

The authorization for incidental take conferred by the County to the Third Party Beneficiary shall be for the length of time and run concurrent with the specified land development approval granted by the County. However, no grading and grubbing activities may be commenced by the Third

Party Beneficiary pursuant to the County's development approval for each phase until the mitigation established pursuant to County and Wildlife Agencies agreement for each phase has been fully satisfied.

7.0 FUNDING

The Project Proponent is responsible for all RMP funding requirements, including direct funds to support the start-up management tasks as well as a non-wasting endowment, which is tied to the property to fund RMP implementation. Start-up tasks include removal of trash, and placement of signage and fencing. Long-term tasks involve monitoring, adaptive management, and maintenance of the biological resources within the OHCA in perpetuity, including habitat and species monitoring and mapping, exotic species control, access control, and reporting. The Project Proponent will be responsible for funding all management activities for each Phase until the non-wasting endowment is fully funded and three years have elapsed, as described below. The Project Proponent may, at their discretion, also elect to fund the entire endowment amount.

7.1 COSTS OF HCP IMPLEMENTATION

The HCP implementation, and therefore its cost, will be phased in over time based upon the phasing of impacts. The conservation easement and biological open space easement will be recorded over the entire OHCA up front, along with installation and maintenance of required fencing and signage; however, management and monitoring will be phased in as detailed below. As stated above, all habitat clearing is expected to be completed by year 16 and thus the RMP would be receiving complete funding and be fully implemented by that time.

Phase 1

Phase 1 will impact 15.7 acres (14 percent of the development footprint) and is anticipated to be completed within one year of project initiation. Approximately 400 San Diego goldenstar will be impacted in Phase 1. No QCB resources will be impacted in Phase 1. Prior to initiating any work on Phase 1, 14 percent of the total endowment shall be funded.

Work tasks to be completed for HCP implementation during Phase 1 include:

- Removal of any trash (Start-up task 1 from RMP)
- Installation of signage and fencing (Start-up task 2 and 3)
- Monthly patrols (Task 4.1.2)
- Collect baseline vegetation data (Task 1.1.3)
- Map non-native species (Task 1.1.6)
- Establish QCB host plant and sensitive animal baseline (Task 2.1.1 and 2.3.1)
- Establish sensitive plant baseline (Task 3.1.1 and 3.4.1)
- Coordinate with adjacent property owners and develop fire plan (Task 4.2.1 and 4.2.2)

- Translocate 400 San Diego goldenstar to the OHCA
- Prepare annual report (Task 5.1.1)

Phase 2a

Phase 2a will impact 18.2 acres (17 percent of the development footprint) and is anticipated to take approximately five years to implement. Approximately 30 Otay tarplant and 44 San Diego barrel cacti will be impacted in Phase 2a. Approximately 3,050 plantago plants and no QCB observation locations will be impacted in Phase 2a. Prior to initiating any work on Phase 2a, an additional 17 percent of the total endowment shall be funded (31 percent total).

Work tasks to be completed during Phase 2a include:

- Monthly patrols, fence repair, trash removal (Task 4.1.2, 4.1.3, 4.1.4)
- Conduct QCB/habitat surveys and sensitive animal habitat assessments (Task 2.1.1, 2.1.3, and 2.3.1)
- Weed QCB high use breeding areas (Task 2.1.2)
- Translocate 44 San Diego barrel cacti to the OHCA
- Spread Otay tarplant seed from impacted individuals within the OHCA
- Prepare annual reports (Task 5.1.1)

Phase 2b

Phase 2b will impact 25.5 acres (24 percent of the development footprint) and is anticipated to take approximately six years to implement. Approximately 813 San Diego goldenstar, 120 variegated dudleya, and 18 San Diego barrel cacti will be impacted in Phase 2b. Approximately 1,560 plantago plants and no QCB observation locations will be impacted in Phase 2b. Prior to initiating any work on Phase 2b, an additional 24 percent of the total endowment shall be funded (55 percent total).

Work tasks to be completed during Phase 2b and subsequent phases include implementation of all management tasks within the RMP. Work will be funded by the Project Proponent until the endowment is fully funded. The 813 San Diego goldenstar, 18 San Diego barrel cacti, and soil crust in the area where the 120 dudleya were observed will be translocated at the start of Phase 2b.

Phase 2c

Phase 2c will impact 48.0 acres (45 percent of the development footprint) and is anticipated to take approximately 11 years to implement. A single San Diego goldenstar and 134 San Diego barrel cacti will be impacted in Phase 2b. Approximately 1,540 plantago plants and five QCB observation locations will be impacted in Phase 2c. Prior to initiating any work on Phase 2c, the Project Proponent shall fund the remainder of the endowment, which shall be calculated as follows: the total endowment amount, adjusted for inflation according to the consumer price index, minus

the current value of the endowment including the first three phased payments and the investment returns to date. The Project Proponent shall continue to fund the annual management costs for the three years following full funding of the endowment. Once the endowment is fully funded and three years have elapsed, completion of all management tasks within the RMP will be funded by the endowment. The 134 San Diego barrel cacti and one goldenstar will be translocated at the start of Phase 2c.

An Estimate for Long-term Management (ELM) for implementation of the RMP has been prepared for the OHCA and AMA by the San Diego Habitat Conservancy and is provided in Appendix B. As shown in the ELM, the cost to implement Phases 1 through 2b of open space management is $1,166,831.03. Those costs will be paid separately by the Project Proponent. The total cost for maintenance of the AMA, which is funded by an endowment prior to Phase 1, is $107,682.29, including $13,091.94 of initial costs for the first three years, $3,638.09 of emergency and legal defense fund, and $90,952.26 of endowment. The total cost for ongoing full maintenance, which starts in Phase 2c, is $3,150,758.65, including $388,174.44 of initial costs for the first three years, $106,253.24 of emergency and legal defense fund, and $2,656,330.97 of endowment. So in total, the Project Proponent will pay $4,425,271.90 to fully implement this RMP from Phase 1 through Phase 2c and in perpetuity thereafter. Should the Project Proponent elect to pay the entire endowment up front, including the AMA, the cost of the endowment would be $2,465,301.20.

7.2 FUNDING SOURCE(S)

Funding of the RMP and endowment shall be funded entirely by the Project Proponent.

7.3 FUNDING MECHANISM AND MANAGEMENT

Funding of the RMP shall occur through the Project Proponent funding annual RMP costs for the management tasks specific to each phase per section 7.1 until three years after the endowment is fully funded. Concurrently, prior to each phase of impacts the Project Proponent shall fund the percentage of the total endowment specified in section 7.1 until the endowment is fully funded. . Upon full funding of the endowment and the first three years of management following endowment funding, the Project Proponent will no longer need to provide annual management funds. The Project Proponent shall offer evidence to the County and the Wildlife Agencies that the endowment account has been established with the San Diego Foundation or other entity acceptable to the County and Wildlife Agencies and the specified amount has been paid prior to commencement of each phase of habitat clearing. This endowment amount will be determined through the use of the PAR or similar method, and will be prepared by the preserve manager proposed to manage the land in perpetuity to the satisfaction of the County and the Wildlife Agencies.

8.0 ALTERNATIVES

8.1 SUMMARY

Section 10(a)(2)(A)(iii) of the Federal Act of 1973, as amended, [and 50 CFR 17.22(b)(1)(iii) and 17.32(b)(1)(iii)] requires that alternatives to the taking of species be considered and reasons why such alternatives are not implemented be discussed.

Initially, the Project site comprised approximately 688 acres, and the development footprint was approximately 210 acres. Concerns were expressed by County staff and the Wildlife Agencies regarding the development footprint and potential biological impacts. The Project Proponent has spent several years working with County staff and Wildlife Agencies on an adequate biological mitigation strategy to address sensitive biological habitat on the Project site. Numerous meetings have been held with County staff, Wildlife Agencies, and the Project Proponent between 2005 and 2014 to address these concerns. The Project Proponent worked with Wildlife Agency staff to reduce the Project site to 414.4 acres (409.7 on site and 4.7 acres off site) and to reduce the quarry and landfill development footprint to 102.7 acres (for a total impact area of 107.4 acres [i.e., 102.7-acre development footprint plus 4.7 acres off site that would be isolated and, therefore, considered impacted]).

8.2 REDUCED FOOTPRINT ALTERNATIVE

The Reduced Footprint Alternative would include the same operations as the Proposed Project. This alternative would consist of four phases. Phase 1 would include site preparation and the construction of the processing plant. This phase would be the same as Phase 1 of the Proposed Project. Phase 2 would consist of cutting the landform to the natural grade elevation that exists along the western perimeter of the site. The natural grade elevation of the mesa (west of the site) ranges between 580 and 650 feet above mean sea level (AMSL). Extraction would progress in a north to south direction; however, the southernmost limits of the extraction footprint would exclude the southern 900 lineal feet of the Proposed Project. The Reduced Footprint Alternative would reduce the total impact footprint from 110 acres to 65 acres. Because the size of the plant would remain the same, the area to be mined would be reduced from 94 acres to 49 acres, and the excavation would be shallower because of the constraints of a smaller footprint on the construction of a road into the pit. Phase 3 would include extraction of material that would extend to a pit floor elevation of 400 feet AMSL. Phase 4 would involve backfilling the pit with inert fill material and compacting the material to form pad areas (IDEFO). Unlike the Proposed Project, it would be difficult to backfill the pit concurrently with extraction that occurs during Phase 3 because of the smaller area within which to conduct operations.

The total anticipated production of the quarry under this alternative would be a maximum of 26 million tons, in contrast to the 89.2 million tons of production anticipated under the Proposed Project. Moreover, the top layers of excavation are typically not suitable as construction aggregates, and a smaller footprint will have a larger ratio of this low-quality material to construction quality aggregate. Annual production amounts would be the same for this alternative and the Proposed Project (i.e., between 0.6 and 1.6 million tons of aggregate per year). The life of the alternative project would thus be in a range of 16-43 years.

The Reduced Footprint Alternate would reduce impacts to biological resources by approximately 45 acres. Impacts to List A and B plant species would remain largely the same except for impacts to San Diego barrel cactus, which would be reduced. This alternative would avoid impacts to 3 of the 5 QCB locations and several patches of QCB host plants. There would be no reduction in coastal California gnatcatcher locations. The off-site open space area on the Otay Crossings Commerce Park project would no longer be isolated by this alternative.

The Further Reduced Footprint Alternative would be infeasible for a number of reasons. The size of the original Project proposed by the Applicant (210 acres) was much larger than the currently-proposed Project (105 acres). Given the potential impacts to sensitive biological resources, the original Project footprint was reduced in size several times as recommended by the County and Wildlife Agencies. In order to make the proposed Project feasible with the new smaller footprint, the Applicant was forced to propose a deeper pit design so that an acceptable volume of rock (reserve) could be achieved. While the revised design presents challenges for configuring the processing plant facilities, the deeper pit will supply a large enough reserve to make the Project feasible. Additional reductions to this reserve, which would be experienced with the Further Reduced Footprint Alternative, will not be financially feasible.

Capital costs associated with the Project are substantial. By the time the Project is approved, total permitting and mitigation costs will exceed $13 million dollars. In addition, costs for installing proposed infrastructure, road improvements, plant facilities, and equipment are also expected to exceed $30 million. In order to recover this initial expense, the operator must have a long-lasting reserve in order to be able to amortize the startup costs over the anticipated time of production. Most quarry sites have not had this significant initial permitting expense and yet a quarry of less than 100 acres is unusual. A production site must be large enough to provide a reserve base that would allow amortization of the high costs of permitting and equipping a new site. The Further Reduced Footprint Alternative, described herein, would not provide enough reserve to be economical for the Applicant.

8.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, no construction aggregate extraction operation developed by the Project Proponent would occur on the Project site. The Project site would remain as it is today, consisting of undeveloped land crossed by a series of dirt roads used primarily by the U.S. Border Patrol for domestic security purposes. Lands would not be conserved as mitigation; therefore, the lands proposed to be conserved in the OHCA would not be managed for conservation. No changes in the existing environment would be expected.

Under the No Action Alternative, a Federal Act incidental take permit through the MSCP Subarea Plan Amendment process would not be required as the site would not be developed.

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Appendix A

PROPOSED COVERED SPECIES CONSERVATION ANALYSIS

Appendix A
PROPOSED COVERED SPECIES CONSERVATION ANALYSIS

Quino checkerspot butterfly (*Euphydryas editha quino*)

Legal Status: Federal: Endangered
State: None

MSCP: Not Covered

Species Description: The adult Quino checkerspot butterfly (QCB) has a wingspan of approximately 1.5 inches. The top sides of the wings have a checkered pattern of red, black, and cream. The bottom sides of the wings are dominated by a checkered pattern of red and cream. The abdomen of the QCB has red stripes across the top (U.S. Fish and Wildlife Service [USFWS] 2003).

Habitat Characteristics/Use: Extant QCB populations primarily inhabit grassland, remnant forbland, juniper woodland, and open scrub and chaparral communities that support the primary larval host plants and a variety of adult nectar resources. These areas tend to be distributed as patches in a mosaic of vegetation communities. Microhabitat use appears to include patches of exposed soil with abundant sun exposure. The QCB has been reported over a wide elevation range from approximately 500 feet above mean sea level (amsl) to higher than 5,000 feet amsl (USFWS 2003a).

The County of San Diego (County) defines "Occupied QCB Habitat" in its Draft Multiple Species Conservation Program (MSCP) QCB Amendment Proposed Conservation Policies (County 2009). Occupied QCB habitat includes:

- All potential QCB habitat within 200 meters (656 feet) of a QCB sighting (at a minimum).
- Any additional natural habitat within 200 meters (656 feet) of a QCB sighting containing Significant Larval Host Plant Patches (defined below) with appropriate nectaring plants present.
- Any additional natural lands within 200 meters (656 feet) of Significant Larval Host Plant Patches with appropriate nectaring plants present, until no additional significant patches are encountered.
- Habitats to be excluded from extension beyond the 200-meter (656-foot) radius from Significant Larval Host Plant Patches include inappropriate QCB habitat or habitat beyond significant barriers to dispersal, including:
    - Closed canopy chaparral, upland forest, or riparian forest that do not have open areas at least two square meters (21.5 square feet) in size;
    - Dense deergrass meadows;
    - Dense non-native grassland where few host plants are present; and

- Barriers such as solid fencing/walls over two meters (6.6 feet) in height, dense vegetation (ornamental or natural) over three meters (9.8 feet) in height, or buildings.

- Hilltops or ridgelines, linked by open areas and natural vegetation to open canopy areas containing an open, woody-canopy area at least two square meters (21.5 square feet) in size, that may be used by QCB for mating or hilltopping behavior within 200 meters (656 feet) of an open area containing host and nectar plants for feeding and natural vegetation or open areas for movement and basking (e.g., are within 500 meters [1,640 feet] of Significant Larval Host Plant Patch and consist of potential QCB habitat).

As stated in the County's Draft MSCP QCB Amendment Proposed Conservation Policies:

> *Although dense-canopy chaparral is not generally considered to have the potential to support Quino, all chaparral habitats have been included as Potential Quino Habitat because available mapping does not consider vegetation density and features such as fire breaks, dirt roads, or trails, which could provide patches of suitable habitat. Many Quino observations have been in habitat largely mapped as chaparral, but which has been opened up by grazing, fire breaks, and dirt roads (e.g., on Otay Mountain).*

Dirt roads (i.e., 18.4 acres of disturbed habitat) occur throughout the Project site and traverse through some dense canopy communities, as does Otay Truck Trail in the northern portion of the Project site (mapped as 0.7 acre of developed). The only areas that could be excluded within the 200-meter radius would be mule fat scrub (0.03 acre), cismontane alkali marsh (0.34 acre), southern interior cypress forest (0.47 acre), and tamarisk scrub (0.10 acre). Based on this definition of occupied QCB habitat, 409.5 acres (99 percent) of the project site are occupied by the QCB and 4.9 acres are not occupied.

Life History: Adult QCB are typically active during a four- to six-week flight period beginning between late February and May depending on weather conditions (Emmel and Emmel 1973 *in* USFWS 2003a). Most subspecies of *Euphydryas editha* exhibit somewhat sedentary behavior, with adults remaining in the same habitat patch in which they developed as larvae (Ehrlich 1961, 1965; Boughton 1999, 2000 *in* USFWS 2003a). The QCB generally fly close to the ground in a relatively slow, meandering flight pattern, and tend to avoid flying over trees, buildings, or other objects taller than six to eight feet. Flight in densely wooded areas or closed-canopy vegetation is avoided (USFWS 2001 *in* USFWS 2003a).

It is during flight period that the QCB mate and the females lay eggs on the larval host plants. The most common host plant is dwarf plantain (*Plantago erecta*), but other species, such as purple owl's clover (*Castilleja exserta*) and white snapdragon (*Antirrhinum coulterianum*), may also act as host plants. The hatched larvae spin a web and feed in groups on the plant upon which they hatch. As the larvae grow, they shed skin (molt); the periods between molts are called instars. During the first two instars, the larvae are unable to move more than a few centimeters and are restricted to the plant upon which they hatched. During the third instar (approximately 10 days after hatching), the larvae are able to move independently to new host plants. As the season

progresses, these host plants begin to dry out and become inedible. If the larvae have accumulated enough reserves, they enter diapause, which is a resting period that enables them to maintain a low metabolic rate. During this period, they are less sensitive to temperature extremes. It is suspected that larvae spend diapause near dense grass and shrub cover (Osborne and Redak 2000 *in* USFWS 2003a).

Larvae are able to re-enter diapause several times before maturing, which may extend their life cycle for several years (Singer and Ehrlich 1979 *in* USFWS 2003a). However, last instar larvae do not appear to be able to re-enter diapause, and repeated diapause has only rarely been observed in next-to-last instar larvae (G. Pratt, pers. comm. *in* USFWS 2003a). Because QCB larvae can re-enter diapause, it is possible that a flight period may only include a portion of the original larval population as flying adults, or a flight period may not occur at all in some occupied sites under adverse conditions. Sufficient rainfall, usually during November and December, causes germination and growth of the host plants upon which the larvae feed. This rainfall seems to be the reason that larvae break diapause, rather than cold winter temperatures, since rare second flight seasons may occur following summer rains.

Status and Distribution: The QCB was historically distributed throughout the coastal slope of southern California including Los Angeles, Orange, western Riverside, San Diego, and southwestern San Bernardino counties and also northern Baja California, Mexico (Mattoni et al. 1997 in USFWS 2003a). By the mid-1980s, the QCB was thought to have disappeared, and a petition to list the species in 1988 suggested that it might be extinct (USFWS 1997a *in* USFWS 2003a). However, new populations were discovered in Riverside County, the butterfly was rediscovered in San Diego County, and it continued to survive in northern Baja California, Mexico (Parmesan 1996 *in* USFWS 2003a). It is believed that the QCB has been extirpated from Los Angeles, Orange, and San Bernardino counties (USFWS 2003a).

As part of the County's Draft MSCP QCB Amendment, five QCB Management Units (QMU) have been identified; the Project is located in the South County QMU (which is QMU 3 of the Southwest San Diego Recovery Unit identified by the USFWS in the Recovery Plan for the QCB [USFWS 2003]). The QCB have been detected at numerous locations in QMU 3, and this QMU contains a critical movement corridor in the Otay Lakes/Rancho Jamul occurrence complex area (USFWS 2003b, USFWS 2009c in San Diego Management and Monitoring Program [SDMMP] 2013) that is thought to connect occurrences between Mexico to the south, San Vicente and Alpine to the north, and Dulzura to the east (SDMMP 2013).

The total estimated QCB potential habitat in all five QMUs is 35,763 acres (23 percent) of Class A habitat, 110,566 acres (71 percent) of Class B habitat, and 9,936 acres of Class C habitat (six percent). Class A habitat includes that within one kilometer of any known QCB location (1999-2009). Class B habitat includes that with no known protocol survey during the period 1999-2001 or 2003-2009 and that is beyond one kilometer of any known QCB location. Class C habitat includes that for which protocol survey results were negative during the period 1999-2001 or 2003-2009 and that is also outside one kilometer of any known QCB location.

There have been numerous surveys in the South County QMU, and the vast majority of land where the QCB is most likely to occur will be preserved. Through preserves and goals established for

the Pre-approved Mitigation Area, 23,811 acres of Class A habitat will be preserved (County 2009; i.e., 67 percent of all Class A habitat in the five QMUs). Overall, approximately 51,792 acres of potential QCB habitat in Classes A, B, and C will be preserved in the South County QMU (County 2009; i.e., 33 percent of all Class A, B, and C habitats in the five QMUs).

Occurrences within the Project Area: One QCB was sighted during the HELIX 2000 survey on Parcel A. During the HELIX 2001 surveys, 14 QCBs were observed within Parcels B, C, E, and additional land in the immediate vicinity of the plan area on two hilltops and along two major ridgelines. Approximately 48 QCB observations occurred within Parcels A, B, C, and E during 2001 EDAW focused surveys (EDAW 2001a, 2001b). Many of these sightings are believed to be repeats of the same individuals.

The QCB was not observed within a 50-acre area of the northwestern portion of Parcel A or the access road during the HELIX 2002 survey period. Due to low rainfall levels in the 2001-2002 winter season, habitat within this area was very dry. Few flowering annual plants were observed, and larval host plant species were not present, although host plant species such as dwarf plantain had previously been observed in the northwest corner of the survey area (HELIX 2002). Potential nectar sources that were noted include deerweed (*Acmispon glaber*) and California buckwheat (*Eriogonum fasciculatum*). Very few individuals of any of these species were flowering during the survey period (HELIX 2002).

In 2003, the QCB was not observed within a 42-acre portion of Parcel A during surveys by HELIX. Although the area received average rainfall for the first time in several years in the 2000-2003 winter, flowering annual plants were sparse and present in small patches. Dwarf plantain was present but occurred sparsely. Potential nectar sources that were noted include deerweed, goldfields (*Lasthenia californica*), and California buckwheat. During surveys of Parcels B, C, E, and additional land in the immediate vicinity of the Project site in 2003, nine QCBs were observed along a dirt road just south of Otay Truck Trail. These sightings occurred within sparse chaparral containing dwarf plantain and cryptantha (*Cryptantha* spp.).

In 2016, the QCB was not observed within the proposed Otay Hills Conservation Area (OHCA) during non-protocol surveys conducted by HELIX. Two larval host plant species were mapped throughout the entire Project site and observed during each of the surveys: dwarf plantain and purple owl's clover. Dwarf plantain was the most abundant larval host plant observed and recorded within the survey area. Host plants were in good condition during the four weeks of surveys, though dwarf plantain on south facing slopes began drying up sooner than less exposed areas of the survey area. However, dwarf plantain numbers were beginning to decrease and most individuals were beginning to senesce by the fourth week of surveys. Purple owl's clover was observed in low and medium densities. Five potential nectar resources were noted within the QCB survey area: popcorn flower (*Cryptantha* and *Plagiobothrys* spp.), California buckwheat, ground pink (*Linanthus dianthiflorus*), and onion (*Allium* sp.).

Detailed larval host plant mapping of the entire Project site was conducted in 2016. Isolated plants and small populations were recorded as points, while patches larger than 250 square feet were recorded as polygons. Numbers are approximate because large populations were visually estimated rather than each plant counted individually. Using the mid-point of the estimated host plant

populations, the Project would impact approximately 13,752 individuals (one percent) of the QCB larval host plant, dwarf plantain, and would preserve approximately 1,192,307 individuals (99 percent) of dwarf plantain in the OHCA. The dwarf plantain individuals within the impact area are generally located in three clustered areas (defined as "moderate host plant locations"), with the largest of the three (approximately 9,200 individuals) occurring in the central portion of the impact footprint and the two smaller clusters (1,450 and 2,172 individuals) occurring in the southern portion of the impact footprint. All of the QCB locations occur in the southern two clusters.

The host plant distribution within the proposed open space is more difficult to differentiate because of the significantly larger number of resources: 1,192,307 individuals of dwarf plantain and 47 purple owl's clover. There is a large cluster (defined as "high host plant location"; 50,100 individuals and as many as eight QCB locations) in the northern end of the open space. There are scattered moderate host plant locations (and two QCB locations) in the west-central portion of the open space. An east-west ridgeline traverses the central portion of the open space that supports approximately 1,018,100 host plant individuals and at least nine QCB locations, and represents four high host plant locations of varying sizes. There is a smaller, disjunct habitat patch in the west-central portion of the site that contains approximately 1,500 host plants (moderate host plant location). There are two high host plant locations and one moderate host plant location in the southern portion of the open space that support approximately 57,725 host plants and 24 QCB locations. The Project would also preserve 47 individuals of purple owl's clover in the OHCA. No purple owl's clover was observed in the impact area in the 2016 habitat mapping.

The 2001 surveys had the greatest number of QCB observations within the current project boundary with 46 distinct QCB locations identified by EDAW (2001b) and six QCB locations identified by HELIX (2001) in areas not surveyed by Dudek. Surveys conducted in 2008 by HELIX (2008) identified an additional four distinct locations. Given the fact that data from four surveys were compiled and some of the observations were duplicative, this document addresses 57 unique sightings of QCB by HELIX and EDAW (2001b). No QCB were observed on the off-site Otay Crossings Commerce Park parcel (HELIX 2010).

As stated above, virtually the entire Project site (409.5 acres) is considered to be potential habitat for the QCB. Designated Critical Habitat for the QCB occurs on 402.2 acres of the Project site. The Project maintains connectivity of preserved habitats in the 304.6-acre mitigation area with off-site vacant lands to the north, south, and east that support the QCB.

Threats and Conservation Needs: The QCB is primarily threatened by urban and agricultural development, non-native plant species, off-road vehicle use, grazing, increased fire frequency, increased nitrogen deposition, and fire management practices (USFWS 1997a *in* USFWS 2003a). The QCB could be increasingly vulnerable to prolonged and intense droughts predicted by climate change models (Parmesan 1996, Preston et al. 2012 *in* SDMMP 2013). Other threats include direct mortality from roads and human use of preserves causing trampling of larvae and host plants and compaction of soils (SDMMP 2013). Essentially, any activity that fragments QCB habitat or removes host or nectar plants increases the probability of extinction of the QCB (USFWS 2003a). The survival and recovery of the QCB depends on protection, restoration, and management of habitat within the distribution of metapopulations of QCB, augmentation of extant populations of QCB, and reintroduction or discovery of new populations (USFWS 2003a).

The SDMMP (2013) outlines an overarching goal for QMU 3 and five objectives for meeting that goal. The goal for QMU 3 is to "…protect, restore, and enhance Quino checkerspot habitat within currently occupied and historically occupied sites and the landscape connections between them to create resilient occurrences and to allow for potential reintroduction to ensure persistence over the long-term (>100 years)." "Resilient occurrences" is defined as, "stable or increasing number of occupied patches over a 10- to 20-year period measured in the third of three years of favorable climate (total annual January and February precipitation within one standard error of average for those months over the past 30 years based on local or proxy climate data)" (USFWS 2003 *in* SDMMP 2013).

The five objectives for meeting that goal (SDMMP 2013) are to:

- Enhance habitat and improve connectivity between the Otay Lake/Jamul occurrence and other occurrences to the north.

- Develop and test best management techniques for QCB habitat restoration at a scale and location that would measurably improve the status of species.

- Establish a seed bank for host and larval food plants and bulk as necessary for habitat restoration to enhance QCB occurrences.

- Implement pre-fire management actions identified in the Strategic Fire Plan in order to reduce the effects of an altered fire regime on QCB occurrences on Conserved Lands.

- Implement high priority actions to manage habitat within the South West San Diego Recovery Unit to maintain landscape connectivity between the Otay Lakes/Rancho Jamul occurrence complex and occurrence complexes to the north (Proctor Valley, Jamul, Hidden Valley National Wildlife Refuge, Los Montanas National Wildlife Refuge, Rancho San Diego), south (West Otay Mountain), east (Honey Springs, Dulzura, Marron Valley, Barrett Junction), and west (Otay Valley, West Otay Mesa) using methods identified in the USFWS 2003 Recovery Plan.

The Habitat Conservation Plan (HCP) for the Project includes goals and objectives that are consistent with the goal and objectives for QMU 3 as follows:

Goal: Conserve existing populations of Proposed Covered Wildlife Species through monitoring, maintenance, and management of the OHCA.

Objective: Maintain existing population(s) of QCB within the OHCA through management and monitoring of 304.6 acres of suitable habitat that includes six high density host plant areas, two high use areas (e.g., hilltops), and adult nectar sources of sufficient density that will provide long-term persistence (> than 100 years) of the on-site QCB population.

The Applicant will conserve 304.6 acres of biological open space in a conservation easement to the County that supports the QCB and its habitat. The open space is directly connected to off-site

vacant lands to the north, south, and east in QMU 3 that support the QCB. In order to achieve this objective, the following general tasks (among others) will be part of the Resource Management Plan (RMP) implemented by a conservation entity (land manager) that has been approved by the Wildlife Agencies; and manage 61 acres of suitable habitat in the Additional Management Area (AMA) to augment onsite and offsite QCB populations in the region.

Three start-up tasks will be implemented by the Project Proponent prior to turn over to the Resource Manager:

1. All trash shall be removed from the OHCA. Currently, there is limited trash on the site. All trash removal should be monitored by a biologist to ensure sensitive resources are avoided.

2. The Project Proponent will install fencing on the eastern and southern boundary of the quarry, against the western boundary of the OHCA.

3. Permanent signage will be posted every 500 feet along the western and southern boundaries of the OHCA and along the portion of Otay Truck Trail that traverses the OHCA and AMA, and at locations of any unauthorized trails entering the OHCA. All signs will be corrosion-resistant (e.g., steel), measure at minimum 12 by 18 inches in size, posted on a metal post at least three feet above ground level, and provide notice in both Spanish and English that the area is restricted. The signs will state the following:

Sensitive Environmental Resources
Area is Restricted by Easement
Entry without express written permission
from the County of San Diego is prohibited.
To report a violation or for more information about
easement restrictions and exceptions contact:
County of San Diego, Department of Planning & Development
Services Ref. PDS2004-3300-04-004
Phone Number: (858) 694-2960

- **Task 1.1.1:** *Record Conservation Easement.* Conserve 304.6 acres of open space through recordation of a Wildlife Agency-approved Conservation Easement to the County, naming each of the Wildlife Agencies as third party beneficiaries to the easement. Fee title of the OHCA shall be held by the County, Resource Manager, or other entity acceptable to the County and Wildlife Agencies. A biological open space easement will also be recorded over the OHCA consistent with County guidelines.

- **Task 2.1.1**: *QCB Host Plant Mapping*. During the first year and every three years thereafter, map the extent and abundance of host plants within high host plant areas and adjacent moderate host plant areas on both the OHCA and AMA. For areas with dense patches of host plants, record the boundaries with a global positioning system (GPS) device, and number the location, estimate population size and density (i.e., percent cover), percent cover of invasive species, and other threats. For both the high and moderate host

plant areas, conduct a visual assessment of host plant and nectaring resources, along with non-native weed cover and threats, using a methodology similar to the SDMMP rare plant monitoring protocol. Based on this data, identify host plant enhancement areas where additional non-native plant removal and/or future seeding needs to occur, as well as monitor long-term trends of overall habitat quality for the QCB.

- **Task 2.1.2:** *QCB High Host Plant Area Weed Control.* Prioritize for treatment first the areas on the property within QCB high host plant areas and areas identified for enhancement based on QCB host plant mapping conducted under task 2.1.1. High host plant areas total approximately seven acres in size. An additional 8.9 acres of area adjacent to these high host plant areas will be treated secondarily if the high host plant areas are weeded in less time than the allotted eight crew days per year noted below. The priority for weed treatment will also be based on the level of threat posed by the plants to the habitats of sensitive species. The areas to be weeded will be identified in an annual work plan for review by the County and Wildlife Agencies. Non-native cover should be less than 10 percent cover of Cal-IPC High and Moderate category species within each of the high host plant areas, with High category species targeted for more aggressive removal. Weeding on the AMA will be limited to 40 crew hours per year.

- **Task 2.1.3:** *Conduct QCB Adult Flight Surveys.* Conduct adult QCB surveys at least once every three years starting in year three on the OHCA and AMA. Surveys will be planned to occur in years of rainfall/climatic conditions that maximize QCB observations. Population assessments will consist of three surveys conducted one to two weeks apart at the peak of the flight season and will be conducted in QCB high use areas. Surveys will occur during conditions recommended in the most current USFWS survey protocol (USFWS 2014) or most current recommendations from USFWS. The Resource Manager will coordinate with the USFWS on the appropriate timing of the surveys. The surveys will include mapping of nectar plants.

  The host plant phenology will be recorded in conjunction with larval and adult flight season in order to compare with fluctuations in QCB observations. Host plant phenology data collected will include tracking germination, inflorescence emergence, and senescence.

- **Task 2.1.4**: *QCB Larval Surveys*. Conduct larval surveys at least once every six years in high and moderate host plant areas. Up to 25 acres of high plantago areas would be surveyed twice during the optimum time for larval detection. Surveys will be planned to occur in years of rainfall/climatic conditions that maximize QCB larval observations. When larvae are detected, record number observed, map location, and note nearest food plant(s) and, if possible, preferred shelter habitat. The larval surveys will potentially document evidence of reproduction in specific areas and will inform prioritization of management actions.

- **Task 2.1.5**: *Identify Changes*. Every six years, compare the results of all QCB-related surveys and habitat assessment and identify any new or significant changes to habitat. If QCB populations and/or habitat quality have significantly decreased or appear under threat based on the adult and larval surveys, host plant mapping, and habitat assessment, initiate

discussions with QCB experts, County, and Wildlife Agencies to determine whether population fluctuation is consistent with data reported to the County and Wildlife Agencies from other sites in the region and the most likely cause(s). In consultation with the County and Wildlife Agencies, identify and implement feasible strategies to increase usage of the OHCA as needed. Such strategies might include augmentation of host plant populations through seeding, increases in weeding efforts in QCB high use areas, or other measures as appropriate. Contingency funds may be used for this purpose if deemed appropriate by the Resource Manager, County, and Wildlife Agencies.

- **Task 4.1.2:** *Monthly Patrols.* The Resource Manager will maintain at least a monthly presence in the OHCA and AMA and will conduct inspections during those visits.

- **Task 4.1.3:** *Inspect and Repair Fencing and Signage.* The Resource Manager will inspect all fencing and signs that protect the OHCA and AMA (including fencing on the east and south side of the quarry but not on the west side of the quarry) during each monthly patrol, and repair or replace damaged or missing fencing and signage within one month.

- **Task 4.1.4:** *Trash Removal.* The Resource Manager will conduct general trash removal during the regular inspections, as needed.

- **Task 4.2.2:** *Coordinate with Bureau of Land Management (BLM) and County Fire Marshall.* The Resource Manager will coordinate fire management practices with the BLM and County Fire Marshall at least annually to limit damage to natural resources by avoiding unnecessary impacts during fire suppression activities and remediating impacts from both fire and fire suppression activities.

Conservation Analysis

Direct Effects

The Project would result in impacts to five of 57 locations (8.8 percent) where QCB were observed. Based on the County's Draft MSCP QCB Amendment Proposed Conservation Policies (County 2009), almost the entire Project site (438.8 acres) is considered occupied by the QCB. As a result, implementation of the Project would directly impact 104.9 acres of QCB habitat. The Project would directly impact 97.8 acres (24.2 percent) of QCB Designated Critical Habitat and would preserve 304.4 acres (75.7 percent) of QCB Designated Critical Habitat.
The Applicant proposes preservation of 304.6 acres of biological open space/conservation area on the Project site prior to extraction activities, 304.6 acres of which is occupied QCB habitat, and 304.4 acres of which is QCB Designated Critical Habitat. A conservation easement and biological open space easement to the County would be placed over the OHCA and managed in accordance with the RMP.

Indirect Effects

Implementation of the Project would not cause off-road vehicle use, trampling, and compaction of soils in the open space; however, as explained above, the RMP would include exclusionary fencing

and monitoring to prevent unauthorized access to the OHCA. Also, while fire is not an anticipated threat from Project activities, wildfire may occur in the OHCA. Per the RMP, the land manager will coordinate fire management practices with the BLM, County Fire Marshall, San Diego Gas and Electric (SDG&E), or other adjacent landowners at least annually, and fire prevention measures from on-site activities will be implemented to ensure that project implementation is not an ignition source for wildland fire.

While not usually considered an effect on butterflies, HELIX consulted with QCB expert Dennis Murphy, Ph.D. (personal communication, 2009) regarding the potential for blasting noise and vibration to adversely affect the QCB. It was his opinion that beyond the concussion zone, which occurs below ground and is, therefore, quite limited, noise or vibration would likely not be an issue for QCB. Therefore, impacts to QCB are not anticipated from blasting.

Invasive plants have the potential to adversely affect QCB habitat quality and to displace larval host plants. However, the Project would restore slopes adjacent to proposed open space with a native plant biological buffer, and the RMP would include monitoring of invasive plant species and their removal from the OHCA twice a year. The native plant biological buffer and RMP implementation would, therefore, minimize potential impacts from invasive plant species on the QCB.

Fugitive dust from the Project could adversely affect both QCB larval host plants and adult nectar resource plants and, therefore, the QCB. As part of the Project, active construction and extraction areas as well as unpaved surfaces would be watered pursuant to County Major Use Permit requirements and a Stormwater Pollution Prevention Plan to minimize dust generation, and loaded trucks would be top-watered to prevent roadway dust. Additionally, compliance with San Diego Air Pollution Control District (APCD) permits requires the use of Best Available Control Technology (BACT; APCD 2011) with full review and monitoring by the APCD to ensure a relatively emission- and dust-free operation. With implementation of these measures, fugitive dust impacts on the QCB are expected to be minimal.

Rationale for Coverage: The preservation of 99 percent of host plants, 304.6 acres of QCB-occupied habitat, and implementation of minimization measures of the HCP are expected to achieve the biological goal and objectives for this subspecies by conserving its habitat within a large block of biological open space that is well-connected to other QCB-occupied conserved lands; monitoring and managing for the subspecies within the OHCA in accordance with the RMP; and minimizing potential indirect impacts from wildfire, unauthorized access, invasive plant species, and dust.

The QCB is not a covered species under the MSCP. However, the preservation of 304.6 acres of QCB-occupied habitat results in a mitigation ratio of 2.90:1 (104.9 acres impacted X 2.90 = 304.6 acres). The project also will provide management funding for the 61-acre AMA that provides for QCB surveys, non-native weed removal, and monthly monitoring over this parcel that currently does not have any management funding.

The HCP will provide for the conservation and management of QCB and its habitat, and ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent

practicable. As such, the HCP has been developed to meet the requirements under the Natural Community Conservation Planning Act (NCCPA) sections 2820(a) and 2821, and Endangered Species Act (ESA) section 10(a) for the issuance of permits for the QCB.

Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*)

Legal Status: Federal: None
State: Species of Special Concern

MSCP Subarea Plan: Covered

Species Description: Belding's orange-throated whiptail is a lizard of approximately two to 2.75 inches in length from snout to vent. It has a slim body with a long, slender tail; a thin snout; and large, symmetrical head plates. Its back is black, dark, brown, or somewhat gray with six or fewer pale yellow or white stripes. The throat and chest are orange; the belly is pale, blue-gray, or white with rectangular scales in eight rows. Scales on the back are small and granular; those on the tail are keeled. This lizard's tail can reach up to two times its body length (CaliforniaHerps.com 2014a).

Habitat Characteristics/Use: This subspecies inhabits low-elevation coastal scrub, chamise-redshank chaparral, mixed chaparral, and valley-foothill hardwood habitats. It prefers washes and other sandy areas with patches of brush and rocks (Stebbins 1972) and does not require permanent water (Zeiner et al. 1988). It actively forages on the surface and scratches through surface debris taking a variety of small arthropods (Stebbins 1972). During periods of inactivity, individuals seek cover under objects such as rocks, logs, decaying vegetation, and boards, or in rock crevices (Zeiner et al. 1988).

For purposes of this analysis, it is assumed that the entire plan area (except disturbed habitat and developed) is potentially suitable to support the orange-throated whiptail, even though mule fat scrub, cismontane alkali marsh, tamarisk scrub, and southern interior cypress forest may not be entirely suitable. These habitats were included because they occur as smaller patches among large areas of suitable habitat. Therefore, potentially suitable habitat in the project plan area totals approximately 423.6 acres. Table 3-5 of the 1998 Final MSCP Plan lists coastal sage scrub, coastal sage-chaparral scrub, and chaparrals as orange-throated whiptail habitats.

Life History: The orange-throated whiptail is a diurnal lizard that is active from early spring to mid or late summer. The subspecies' home range averages approximately 0.1 acre, and there is extensive home range overlap (Bostic 1965 *in* California Department of Fish and Game [CDFG] 2000), so it is probably not territorial (CDFG 2000). However, individuals may defend food or water resources (Stebbins 1972 *in* CDFG 2000).

Orange-throated whiptail breeding begins in April, and egg laying continues to mid-July. Eggs are probably deposited in loose, well-aerated soil under or near surface objects or at the base of a dense shrub. Hatchlings emerge in August and early September. Mean clutch size is 2.3 eggs, but more than one clutch may be produced per year (Bostic 1966a *in* CDFG 2000). Juveniles are active through the fall and even to December (Bostic 1966, Stebbins 1972 *in* CDFG 2000).

Orange-throated whiptails (adults, juveniles, and eggs) may be prey for a variety of snakes, birds, and mammals (particularly raccoon [*Procyon lotor*] and skunk [Family Mephitidae]; CDFG 2000).

Belding's orange-throated whiptails feed primarily on termites, which comprise 72 to 92 percent of the diet. Peak consumption of termites occurs during the swarming of reproductives in April. In late summer, when termites migrate deep into the soil to avoid high surface temperatures, alternate prey items dominate the whiptail's diet (Bostic 1966b). Predators of Belding's orange-throated whiptail may include the coachwhip snake (*Masticophis flagellum*), striped racer snake (*Coluber lateralis lateralis*), western whiptail lizard (*Aspidoscelis tigris*), American kestrel (*Falco sparverius*), and domestic cats and dogs.

Status and Distribution: The Belding's orange-throated whiptail occurs at elevations from sea level up to approximately 3,410 feet amsl (Jenning and Hayes 1994 *in* CDFG 2000) from the Santa Ana River in Orange County, California and near Colton in San Bernardino County, California, west of the Peninsular Ranges and south throughout Baja California, Mexico. In the MSCP area, the species has been documented in Jamul, Santee, Alpine, Otay Mesa, Rancho San Diego, Marine Corps Air Station Miramar, and Escondido (USFWS and California Department of Fish and Wildlife [CDFW] 1996).

In 1995, the U.S. Geological Survey (USGS) and San Diego State University began an intensive study of the diversity and autecology of the herpetofauna of the southern California portion of the California Floristic Province including much of the area within the region of San Diego County. It was concluded that the orange-throated whiptail does not currently appear at risk of extinction within the MSCP boundary; however, certain edge populations should be monitored for edge effects (USGS and San Diego State University 2001).

There is inadequate data on which to base a conclusion regarding the current status and trend of the species in the MSCP Preserve beyond an accounting of conservation of potential habitat. Within the 1998 Final MSCP Plan boundary, approximately 62 percent (88,338 acres) of the total potential orange-throated whiptail habitat in the Preserve (143,090 acres) has been conserved, which includes 43,476 acres of coastal sage scrub, 43,626 acres of chaparral, and 1,236 acres of coastal sage-chaparral scrub. Approximately 29 percent of this preserved potential habitat (25,240 acres) is located within the County MSCP Subarea, according to CDFW Habitrak Data through 2013 (CDFW 2014). An additional 15,507 acres of potential habitat (coastal sage scrub [7,132 acres], chaparral [7,715 acres], and coastal sage-chaparral scrub [660 acres]) have been conserved outside of the Preserve within the County's Subarea (CDFW 2014).

Occurrences within the Project Area: Despite an abundance of potentially suitable habitat being present in the plan area, Belding's orange-throated whiptail has not been observed during surveys conducted from 2000 through 2012. The species is assumed to be present, however, throughout the plan area where potential habitat exists (approximately 392.0 acres for purposes of this analysis; see Habitat Characteristics/Use, above).

Threats and Conservation Needs: Habitat destruction is likely the major cause of the decline of Belding's orange-throated whiptail populations. Despite what appears to be abundant suitable whiptail habitat, urban and agricultural development may serve as effective dispersal barriers

(Bostic 1966c). Argentine ants (*Linepithema humile*) are an invasive non-native species known to displace many native insects, and may influence the food base of Belding's orange-throated whiptail (Jennings and Hayes 1994). Excessive prescribed burning can lead to increased exposure to predation due to modification of the canopy profile, and can ultimately lead to type conversion from coastal sage scrub and chaparral to non-native grassland (McGurty 1981). In addition, repeated reduction of normally abundant woody fuels has a direct effect on western subterranean termite (*Reticulitermes hesperus*) presence, the nearly exclusive food prey source of Belding's orange-throated whiptails. Further threats include irreversible habitat destruction resulting from land filling or artificial channelization of natural drainage bottoms, which likely serve as foraging and dispersal areas for this species.

Conservation needs for the Belding's orange-throated whiptail include conserving large areas of suitable habitat and conserving connections between conservation areas. Conserved areas should be managed to maintain suitable habitat for the species and include control of non-native and domestic species, such as the Argentine ant, non-native grasses, and domestic cats and dogs.

As stated previously, the orange-throated whiptail does not currently appear at risk of extinction within the MSCP boundary; however, certain edge populations should be monitored for edge effects (USGS and San Diego State University 2001). Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) require that edge effects be addressed.

Goal: Conserve existing populations of Covered Wildlife Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing populations of Belding's orange-throated whiptail and coast horned lizard within the OHCA through management and monitoring of 295.7 acres of suitable habitat that includes chaparral, Diegan coastal sage scrub, and coastal sage-chaparral scrub.

The Applicant will conserve and manage approximately 295.7 acres potential orange-throated whiptail habitat within 304.6 acres of biological open space (that is, all but disturbed habitat [8.3 acres] and developed [0.7 acre]).

In order to achieve Objective 1, the following tasks will be implemented by the RMP:

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3 listed above and in the RMP.

- **Task 1.1.3:** *Baseline Vegetation Map*. Prepare baseline vegetation map of the OHCA using Holland (1986) and Oberbauer (2008) or another classification system compatible with MSCP, CDFW, and USFWS databases.

- **Task 1.1.4:** *Update Vegetation Mapping.* Update the vegetation mapping at least once every five years and evaluate the changes in terms of the total sensitive habitat acreage

target and the vegetation acreage baseline outlined in Table 1. Each mapping event will use the same classification system as the baseline (using the Vegetation Classification Manual for Western San Diego County, cross-referenced to Holland code).

As part of each mapping update, changes in vegetation community types and acreage will be compared to the Table 1 baseline and the previous update (if one exists), and an assessment will be made to determine if the Goal 1 target is being met, as well as whether the relative acreage of vegetation types has changed (e.g., whether non-native grassland acreage has increased relative to coastal sage scrub acreage). For any noted changes, the significance and likely cause(s) of the changes will be identified, as well as any remedial actions or changes to management activities that are needed.

- **Task 1.1.5:** *Assess Changes.* If changes to the native vegetation acreage targets are thought necessary, propose such changes to the County and Wildlife Agencies for concurrence as needed. The County and Wildlife Agencies must concur with any targets before a modification is made to the RMP.

- **Task 1.1.6:** *Map Non-native Species.* During the first year of RMP implementation, create a list of all invasive non-native plant species on the property using existing species lists from previous reports of the property and from on-site inspection. Map the invasive, non-native plant species (exclusive of non-native grasses) on the property by the end of the second year of RMP implementation and update the mapping every five years. Plant locations will be recorded as points or polygons using specific location data (GPS coordinates). In QCB high use areas, this mapping will occur annually.

- **Task 1.1.7:** *Annual Assessment for Rapidly Expanding Weed Populations.* The entire property will be searched for new or rapidly expanding invasive plant species locations at least once per year. These observations will be incorporated into the latest map of invasive plant species. These rapid assessments are designed to identify potentially problematic invasive plant locations before they become outbreaks. These locations will be targeted for removal during the year in which they are observed and will be included in the following year's work plan for follow-up treatment.

- **Task 1.1.8:** *General Weed Control.* Non-native plant species will be removed from the open space (outside of QCB high use areas) two times per year during the late winter and early spring in areas identified as problematic in annual weed assessments per task 1.1.7 and areas where non-native plant species identified by the most current California Invasive Plant Council (Cal-IPC) Inventory as High or Moderate category species exceed 20 percent cover based on a visual estimate, with High category species targeted for more aggressive removal. In addition, any Management Level 1 or 2 plants will be removed within two weeks of detection and any Level 3 plants will be removed in the next scheduled removal event. Management Level 4 plants will be targeted for aggressive removal in order to control their population and eradicate them if possible. Any weeding conducted within Tecate cypress forest will be sensitive to the Thorne's hairstreak butterfly (*Callophrys thornei*) breeding season in case of future occupation by the Thorne's hairstreak. Based on the existing relatively low weed cover and the overlap with the 218.6

acres of Diegan coastal sage scrub being maintained; it is anticipated that four crew days per year consisting of two crew days per weeding effort will be required: approximately one crew day for coastal sage scrub and one crew day for non-native grassland. A "crew day" is defined as a landscape crew of four individuals.

- **Task 2.2.1:** *Record Species Observations.* During all site inspection visits and surveys, record in field notes that lists of wildlife species observed or detected, and map new locations of sensitive species.

- **Task 2.2.2**: *Argentine Ant monitoring*. Personnel will be instructed to look for and map Argentine ants (that displace native ant species that are prey to the coast horned lizard) as needed during site inspection visits and surveys. Should Argentine ants be observed, the Resource Manager will consult with the County and Wildlife Agencies regarding control methods.

- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4, listed above and in the RMP.

In order to minimize the introduction of non-native ants into the preserve, the use of irrigation adjacent to the preserve will be minimized and measures will be implemented to ensure that no water from the project site runs off into the preserve.

Conservation Analysis

Direct Effects

Of the approximately 392 acres that are potentially suitable for the orange-throated whiptail, approximately 96.3 acres would be directly lost as a result of construction and operation of the project. Implementation of management and monitoring activities in the OHCA could result in minor disturbance to orange-throated whiptails and temporary loss of habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP's Conservation Measures is anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. Unavoidable impacts to suitable orange-throated whiptail habitat will be mitigated with the conservation of 320.4 acres of suitable orange-throated whiptail habitat that will be added to the MSCP Preserve. The OHCA is contiguous with a large, core block of habitat that is conserved and managed by the BLM consistent with the goals and objectives of the MSCP. The OHCA would be managed by a conservation entity (approved by the Wildlife Agencies) that will be responsible for implementing the RMP.

Indirect Effects

Assuming the orange-throated whiptail is present in the OHCA, non-native plant species and non-native ants have the potential to degrade its habitat. The conservation entity that would manage the OHCA would maintain existing native habitat through active weeding of invasive plant

species. The OHCA would be monitored annually during late winter of each year to determine when the most appropriate time would be to initiate the weeding effort and to assess species to be targeted for removal. Those species would be removed from the OHCA twice a year during the late winter and early spring. Should orange-throated whiptail be present, care would be taken to avoid directly impacting individuals. In order to minimize the introduction of non-native ants in to the preserve, the use of irrigation adjacent to the preserve will be minimized and measures will be implemented to ensure that no water from the project site runs off into the preserve.

Additionally, the RMP includes stewardship measures including, but not limited to, fencing of the OHCA and signs upkeep, trespass restriction, and debris removal to protect the OHCA from human intrusion and its potential adverse effects on wildlife and plants.

Rationale for Coverage: The conservation actions and avoidance and minimization measures of the HCP are expected to achieve the biological goals and objectives for this species by conserving its potential habitat (295.7 acres) within a large block of biological open space (304.6 acres) that is well connected to other conserved lands; monitoring and managing for the species within the OHCA; and minimizing potential indirect impacts from non-native plant and animal species and human intrusion.

The species was afforded coverage under the MSCP because 59 percent of its potential habitat and 62 percent of known point occurrences would be conserved. The conserved lands will contribute 304.6 acres to the MSCP Preserve as well as provide for the management and monitoring of those lands. Table 3-5 of the 1998 Final MSCP Plan indicates that Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) require addressing edge effects. The RMP that has been prepared for this project includes controlling public access through the maintenance of signage, fencing, and gates; cooperating with law enforcement; regular on-site presence; and frequent inspections to protect the OHCA from human intrusion. The RMP also includes weed and debris removal as described above (under Indirect Effects). Therefore, the project would be consistent with the goals of the MSCP for this Covered Species.

The conservation actions under the HCP will provide for the conservation and management of orange-throated whiptail habitat and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for the Belding's orange-throated whiptail.

Coast horned lizard (*Phrynosoma blainvillii*)

Legal Status: Federal: None
State: Species of Special Concern

MSCP Subarea Plan: Covered

Species Description: The adult coast horned lizard is 2.5 to 4.5 inches long from snout to vent. It is a flat-bodied lizard with a wide, oval-shaped body; scattered, enlarged pointed scales on the upper body and tail; and spines on the head. The two center horns are the longest. The sides of

the body have two rows of pointed, fringe scales. Its body color is reddish, brown, yellow, or gray, with dark blotches on the back and large dark spots on the sides of the neck. The belly is cream, beige, or yellow, usually with dark spots, and the belly scales are smooth (CaliforniaHerps.com 2014b).

Habitat Characteristics/Use: Coast horned lizards are found in a wide variety of habitats including coastal sage scrub, chaparral, grassland, coniferous forest, oak woodland, riparian, and the margins of the higher elevation desert where it is restricted to juniper-desert chaparral (Grinnell and Grinnell 1907, Van Denburgh 1922, Klauber 1939, Smith 1946, Dixon 1967, Stebbins 1985, Jennings and Hayes 1994, and Brattstrom 1997 *in* Hollingsworth and Beaman 2005). This species has been reported from elevations ranging from sea level to 8,000 feet amsl (Brattstrom 1997 *in* Hollingsworth and Beaman 2005).

Within each of these habitats, this species prefers areas with loose, fine soils, and an abundance of open areas for basking.

For purposes of this analysis, it is assumed that all habitats in the plan area (except disturbed habitat and developed) are suitable to support the coast horned lizard, even though cismontane alkali marsh and southern interior cypress forest may not be entirely suitable. These habitats were included because they occur as smaller patches among large areas of suitable habitat. Therefore, potential habitat for coast horned lizard in the plan area totals approximately 423.6 acres. Table 3-5 of the 1998 Final MSCP Plan lists coastal sage scrub, coastal sage-chaparral scrub, chaparrals, and riparian scrubs as coast horned lizard habitats.

Life History: The coast horned lizard is a solitary animal that relies on camouflage in open areas and is known to bury itself in fine, loose soil (Stebbins 1985 and Jennings and Hayes 1994 *in* Hollingsworth and Beaman 2005). Defensive behavior includes lowering the head to expose the head spines (Smith 1946 and Reeve 1952 *in* Hollingsworth and Beaman 2005), puffing up the body (Tollestrup 1981 and Jennings and Hayes 1994 *in* Hollingsworth and Beaman 2005), and squirting blood from the eye from rupturing a sinus vessel in the eyelid (Bryant 1911, Klauber 1939, Burleson 1942, Smith 1946, Reeve 1952, and Stebbins 1985 *in* Hollingsworth and Beaman 2005).

Sexual maturity is reached at a size of three inches, which is two to three years after hatching (Howard 1974, Pianka and Parker 1975, Goldberg 1983, Stebbins 1985, and Jennings and Hayes 1994 *in* Hollingsworth and Beaman 2005). A clutch of six to 17 eggs is laid between May and early July (Howard 1974, Goldberg 1983, Stebbins 1985, and Jennings and Hayes 1994 *in* Hollingsworth and Beaman 2005). The eggs hatch in approximately two months (Shaw 1952, Howard 1974, Goldberg, 1983, and Jennings and Hayes 1994 *in* Hollingsworth and Beaman 2005).

Seasonal activity occurs between late March and early October with hibernation beginning as early as August (Pequegnat 1951, Howard 1974, Jennings 1987, and Hager 1992 *in* Hollingsworth and Beaman 2005). Daily activity patterns are temperature dependent, and the lizards will emerge from their burial sites before sunrise to position themselves for basking in the sun (Heath 1965, Hager 1992, and Jennings and Hayes 1994 *in* Hollingsworth and Beaman 2005). It is insectivorous and primarily feeds on native harvester ants (*Pogonomyrmex* spp.) but will also feed on termites,

beetles, flies, wasps, and grasshoppers (Ingles 1929, Reeve 1952, Miller and Stebbins 1964, Dixon 1967, Pianka and Parker 1975, Stebbins 1985, and Jennings and Hayes 1994 *in* Hollingsworth and Beaman 2005). Up to 90 percent of the diet of the coast horned lizard consists of native harvester ants (Pianka and Parker 1975), and this species does not appear to eat non-native Argentine ants (Jennings and Hayes 1994) that have replaced native ants in much of southern California.

Predators of the coast horned lizard include coyote (*Canis latrans*), badgers (*Taxidea taxus*), foxes (Canidae species), American kestrel, falcons (Falconidae species), loggerhead shrike (*Lanius ludovicianus*), greater roadrunner (*Geococcyx californianus*), burrowing owl (*Athene cunicularia*), and various snakes including the southern pacific rattlesnake (*Crotalus viridis helleri*) and striped racer (Bryant 1916, Von Bloeker 1942, Klauber 1972, and Eakle 1984 *in* Hollingsworth and Beaman 2005).

Status and Distribution: No reliable data on population status and relative density of the coast horned lizard are available (Hollingsworth and Beaman 2005). The coast horned lizard is believed to be extinct in 45 percent of its original range in southern California including desert regions near the City of Palmdale in Los Angeles County and the Mojave River in San Bernardino County (Jennings and Hayes 1994 *in* Hollingsworth and Beaman 2005). At the time of evaluation for coverage under the MSCP, the species was considered locally common within areas of suitable habitat (USFWS and CDFW 1996).

There has been a marked decline in coast horned lizard numbers for several decades, although the causes are still unknown. The invasion of the non-native Argentine ant could be a cause for the decline of the coastal horned lizard in many areas in the MSCP area as Argentine ant presence is negatively correlated with native ant species diversity and is one cause of local native ant extinction (Suarez et al. 1998 *in* USGS and San Diego State University 2001). Coast horned lizards were recorded primarily in coastal sage scrub and chaparral within the MSCP, usually on ridgelines, and they appeared to prefer chamise chaparral. They also tended to occur along dirt roadsides especially near thick vegetation (USGS and San Diego State University 2001).

There is inadequate data on which to base a conclusion regarding the current status and trend of the species in the MSCP Preserve beyond an accounting of conservation of potential habitat. Within the 1998 Final MSCP Plan boundary, approximately 61 percent (90,326 acres) of the total potential coast horned lizard habitat in the Preserve (147,439 acres) has been conserved, which includes 43,476 acres of coastal sage scrub, 43,626 acres of chaparral, 1,236 acres of coastal sage-chaparral scrub, and 1,988 acres of riparian scrub. Approximately 28 percent of this preserved potential habitat (25,281 acres) is located within the County MSCP Subarea (CDFW Habitrak Data through 2013). An additional 15,575 acres of potential habitat (coastal sage scrub [7,132 acres], chaparral [7,715 acres], coastal sage-chaparral scrub [660 acres], and riparian scrub [68 acres]) have been conserved outside of the Preserve within the County's Subarea (CDFW 2014).

Occurrences within the Project Area: The San Diego horned lizard was observed in the plan area in 11 total locations during surveys conducted in 2000, 2001, 2003, and 2008. These locations were associated with Diegan coastal sage scrub, non-native grassland, and chamise chaparral. The species is assumed to be present throughout the plan area where potential habitat exists (approximately 423.6 acres for purposes of this analysis; see Habitat Characteristics/Use, above).

Threats and Conservation Needs: The USGS and San Diego State University (2001) recommend that new trails and roads be restricted where coast horned lizards are known to occur to reduce edge effects (including illegal collection). Argentine ants are another edge effect threat to the species' prey base. Argentine ant presence is negatively correlated with native ant species diversity, and is one cause of local native ant extinction (Suarez et al. 1998 *in* USGS and San Diego State University 2001). Within the MSCP region of San Diego, Argentine ants appear limited by moisture and have not widely invaded natural habitats (Suarez et al. 1998 *in* USGS and San Diego State University 2001). These ants may benefit from urban runoff from development, and increased moisture levels associated with it could play a role in their invasion (USGS and San Diego State University 2001). Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) require that specific measures be implemented to maintain native ant species, discourage the Argentine ant, and protect against the species from detrimental edge effects.

Goal: Conserve existing populations of Covered Wildlife Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing populations of Belding's orange-throated whiptail and coast horned lizard within the OHCA through management and monitoring of 329.4 acres of suitable habitat that includes chaparral, Diegan coastal sage scrub, and coastal sage-chaparral scrub.

The Applicant will conserve and manage approximately 295.7 acres of potential coast horned lizard habitat within 304.6 acres of biological open space (that is, all but disturbed habitat [8.3 acres] and developed [0.7 acre]).

In order to achieve Objective 1, the following tasks will be implemented by the RMP.

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3 listed above and in the RMP.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8 listed above and in the RMP.

- The Resource Manager will record species observations per Task 2.2.1.

- The Resource Manager will monitor Argentine ants per Task 2.2.2.

- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

In order to minimize the introduction of non-native ants in to the preserve, the use of irrigation adjacent to the preserve will be minimized and measures will be implemented to ensure that no water from the project site runs off into the preserve.

Conservation Analysis

Direct Effects

Of the approximately 392.0 acres that are potentially suitable for the coast horned lizard, approximately 96.3 acres would be directly lost as a result of construction and operation of the project, and four individual lizards would be harmed. Implementation of management and monitoring activities in the OHCA could result in minor disturbance to coast horned lizards and temporary loss of habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP's Conservation Measures is anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. Unavoidable impacts to the coast horned lizard will be mitigated with the conservation of seven of the locations where the coast horned lizard was observed (295.7 acres of potential coast horned lizard habitat) within 304.6 acres of biological open space that will be added to the MSCP Preserve. The OHCA is contiguous with a large, core block of habitat that is conserved and managed by the BLM consistent with the goals and objectives of the MSCP. The OHCA would be managed by a conservation entity (approved by the Wildlife Agencies) that will be responsible for implementing the RMP.

Indirect Effects

The RMP will include monitoring within the OHCA that will identify any adverse changes including invasion by non-native species (including ants). Should such ants be found, the land manager shall consider treatment options for eradication of the ants. Non-native plant species have the potential to degrade coast horned lizard habitat. The conservation entity that would manage the OHCA would maintain existing native habitat through active weeding of invasive plant species. The OHCA would be monitored annually during late winter of each year to determine when the most appropriate time would be to initiate the weeding effort and to assess species to be targeted for removal. Those species would be removed from the OHCA two times per year during the late winter and early spring. Should coast horned lizard be present, care would be taken to avoid directly impacting individuals. In order to minimize the introduction of non-native ants in to the preserve, the use of irrigation adjacent to the preserve will be minimized and measures will be implemented to ensure that no water from the project site runs off into the preserve.

Additionally, the RMP includes stewardship measures including, but not limited to, fencing of the OHCA, signs upkeep, trespass restriction, and debris removal to protect the OHCA from human intrusion and its potential adverse effects on wildlife and plants.

Rationale for Coverage: The species was afforded coverage under the MSCP because 60 percent of its potential habitat and 64 percent of known point occurrences would be conserved. Table 3-5 of the 1998 Final MSCP Plan indicates that Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) require specific measures be implemented to maintain native ant species, discourage the Argentine ant, and protect against the species from detrimental edge effects.

The conservation actions and avoidance and minimization measures of the HCP would preserve 76 percent of the coast horned lizard's potential habitat (295.7 acres) within a large block of biological open space (304.6 acres) that is well-connected to other conserved lands. Additionally, species and edge effects would be addressed through the RMP. The RMP that has been prepared for this project includes monitoring for non-native species; controlling public access through the maintenance of signage, fencing, and gates; cooperating with law enforcement; regular on-site presence; and frequent inspections to protect the OHCA from human intrusion. The RMP also includes weed and debris removal as described above (under Indirect Effects). Therefore, the project would be consistent with the goals of the MSCP for this Covered Species.

The conservation actions under the HCP will provide for the conservation and management of coast horned lizard habitat and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for the coast horned lizard.

Cooper's hawk (*Accipiter cooperii*)

Legal Status: Federal: None
State: Watch List

MSCP Subarea Plan: Covered

Species Description: The Cooper's hawk is a smallish hawk with rounded wings, a long, rounded tail, and long legs. The bird's length is from 14.75 to 19.25 inches with a wingspan of 35.5 to 39 inches, the female being in the upper ends of these measurements. There is some overlap in these measurements between the sexes. The weight of the male averages 12 ounces; the female averages 20 ounces. There is no overlap between the sexes in weight. Cooper's hawk has one plumage cycle, and the sexes are nearly alike (Palmer 1988a). Adults are steely blue-gray above with warm reddish bars on the underparts and thick dark bands on the tail. Juveniles are brown above and crisply streaked with brown on the upper breast, giving them a somewhat hooded look. Immature individuals have yellow eyes and a brown cap. Adults have red eyes and a black cap. The Cooper's hawk is mostly seen flying with quick, consecutive wing beats and a short glide, though they may also soar (Cornell Lab of Ornithology 2014a).

Habitat Characteristics/Use: The Cooper's hawk nests in deciduous, conifer, and mixed woodlands. In southern California, it generally favors extensive riparian bottomlands (Garrett and Dunn 1981 *in* Grindrod 2005). Most nests in a California study were in groves of six or more trees, with two or more trees close enough together that the crowns formed one continuous canopy (Asay 1987 *in* Grindrod 2005). Oaks (*Quercus* spp.) are the traditional nests tree in California (Asay 1987 *in* Unitt 2004). The range of nest height in several studies was 20 to 60 feet (Bent 1961, Meng 1951, Reynolds et al. 1982, Palmer 1988a, and Rosenfield and Bielefeldt 1993 in Grindrod 2005).

Unitt (2004) noted, however, that in the 1980s, Cooper's hawks began adapting to urban environments in San Diego County and nesting in eucalyptus (*Eucalyptus* spp.) trees and other urban trees. He stated that these open "woodlands" of planted trees may even be more attractive habitat than natural areas, particularly if an increase in prey items like rock pigeon (*Columba livia*), mourning dove (*Zenaida macroura*), western scrub jay (*Aphelocoma californica*), and California ground squirrel (*Otospermophilus beecheyi*) is supported by a steady supply of food (e.g., seed from bird feeders; Unitt 2004). By the time the San Diego County Bird Atlas period began in 1997, Cooper's hawks had colonized many small parks and school yards, and nests in suburban and rural areas proliferated. The numbers in San Diego Christmas bird counts increased from an average of 11 Cooper's hawks in 1985 to 30 in 2002 (Unitt 2004).

Winter habitat requirements are poorly quantified, but Christmas bird count data suggest that Cooper's hawks use essentially the same habitats during winter and summer (Grindrod 2005).

For purposes of this analysis, it is assumed that all habitats in the plan area except disturbed habitat and developed are suitable to support Cooper's hawk foraging. This includes all areas of coastal sage scrub, coastal sage-chaparral scrub, and chaparrals (as listed in Table 3-5 of the 1998 Final MSCP Plan), which totals approximately 395.1 acres. There are no oak woodland or oak riparian habitats (listed in Table 3-5 of the 1998 Final MSCP Plan) in the plan area.

Life History: Cooper's hawks mainly eat birds (Cornell Lab of Ornithology 2014a). They hunt their prey using the element of surprise and pursue it with extremely rapid flight over short distances with extreme aggressiveness and skilled maneuverability through dense vegetative cover (Jones 1979). Common prey species include European starling (*Sturnus vulgaris*), mourning dove, and rock pigeon along with American robin (*Turdus migratorius*), several kinds of jays, northern flicker (*Colaptes auratus*), and quail, pheasants, grouse, and chickens. Cooper's hawks sometimes rob nests and also eat chipmunks, hares, mice, squirrels, and bats. Mammals are more common in diets of Cooper's hawks in the West (Cornell Lab of Ornithology 2014a).

Cooper's hawks probably mate for life and return to the same area to nest each year (Jones 1979) for up to four consecutive years (Brown and Amadon 1968 *in* Jones 1979). The male builds the nest over a period of approximately two weeks; the female may re-line the nest if an old nest is used. The breeding season begins late February in the south to late April in the north. A pair will produce a single brood (usually four eggs are laid) and will replace a lost clutch. The female, alone, incubates the eggs for approximately 36 days. Nestlings are tended by the female only for the first three weeks. Males fledge the nest at approximately 30 days and females at 34 days, but the young return to the nest to feed for approximately 10 days. The young take approximately three weeks to learn to hunt and become independent five weeks later (Baicich and Harrison 1997). Most raptors show a much higher mortality rate in the first year of life than in subsequent years. The single most important mortality factor for Cooper's hawk is starvation associated with difficulty or inexperience in gathering food or changes in prey abundance and diversity (Snyder and Wiley 1976 *in* Jones 1979). Cooper's hawk longevity is approximately eight years (Brown and Amadon 1968 *in* Jones 1979). The oldest known Cooper's hawk was 20 years, four months old (Cornel Lab of Ornithology 2014); however, it was not disclosed if this was a wild bird or one in captivity.

Status and Distribution: The Cooper's hawk breeds throughout the contiguous 48 United States, southern Canada, and northern Mexico. In California, the species is a widespread breeder but nowhere common (Grindrod 2005). In San Diego County, breeding Cooper's hawks are widespread over the coastal slope wherever there are stands of trees and are most numerous in lowland and foothill canyons and in City of San Diego urban areas (Unitt 2004). Reported breeding localities in the MSCP area include oak woodlands or oak riparian woodlands at Lake Hodges, San Diego Wild Animal Park, Balboa Park, Sweetwater River, Dulzura Creek, and the San Ysidro Mountains (USFWS and CDFW 1996).

Cooper's hawks winter infrequently in all areas of the breeding range (some individuals may remain year-round on the breeding territory). Most individuals vacate the northern half of the species' range during winter, and Cooper's hawks commonly occur in migration across the United States. They are present coast to coast throughout most of the southern United States and Mexico. In winter, Cooper's hawks range regularly from the southern United States south to northern Central America, casually to Costa Rica, and are possibly present in Panama and Colombia (American Ornithologists' Union 1983 and Rosenfield and Bielefeldt 1993 *in* Grindrod 2005). In San Diego County in winter, Cooper's hawks are concentrated at lower elevations and in developed areas (Unitt 2004). The Cooper's hawk has been observed breeding (or possibly breeding) and/or wintering is nearly every grid square in the County's MSCP Subarea of the San Diego County Bird Atlas (Unitt 2004).

There is inadequate data on which to base a conclusion regarding the current status and trend of the species in the MSCP Preserve beyond an accounting of conservation of potential habitat. Within the 1998 Final MSCP Plan boundary, approximately 63 percent (94,552 acres) of potential foraging habitat in the Preserve (149,034 acres) has been conserved, which includes 43,476 acres of coastal sage scrub, 43,626 acres of chaparral, 1,236 acres of coastal sage-chaparral scrub, 3,053 acres of oak riparian forest, and 3,161 acres of oak woodland. Approximately 29 percent of this preserved potential habitat (27,122 acres) is located within the County MSCP Subarea (CDFW Habitrak Data through 2013). An additional 16,341 acres of potential habitat (coastal sage scrub [7,132 acres], chaparral [7,715 acres], coastal sage-chaparral scrub [660 acres], oak riparian forest [430 acres], and oak woodland [404 acres]) have been conserved outside of the Preserve within the County's Subarea (CDFW 2014).

Occurrences within the Project Area: The Cooper's hawk was observed in the plan area in 2012 during a burrowing owl survey. While the plan area does not support trees suitable for nesting, the entire plan area with the exception of disturbed habitat and developed (395.1 acres) provides potentially suitable foraging habitat for the species.

Threats and Conservation Needs: Cooper's hawk populations have been roughly stable from 1966 through 2010 according to the North American Breeding Bird Survey. The breeding population is estimated at 700,000 pairs. Cooper's hawk population trends have turned around from the mid-20th century when use of the pesticide DDT and widespread shooting greatly reduced its numbers (Cornell Lab of Ornithology 2014a). Area Specific Management Directives applicable to the plan area for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) require 300-foot impact avoidance areas around active Cooper's hawk nests.

Goal: Conserve existing populations of Covered Wildlife Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing foraging habitat for the northern harrier, burrowing owl, and Cooper's hawk, and maintain potential breeding habitat for the northern harrier and burrowing owl through management and monitoring of 0.7 acre of native grassland and 16.3 acres of non-native grassland.

The Applicant will conserve and manage approximately 296.4 acres of potential Cooper's hawk foraging habitat within 304.6 acres of biological open space (that is, all but disturbed habitat [8.3 acres] and developed [0.7 acre]).

In order to achieve Objective 1, the following tasks will be implemented by the RMP:

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- The Resource Manager will record species observations per Task 2.2.1.

The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

Conservation Analysis

Direct Effects

Of the approximately 395.1 acres that are potentially suitable for foraging Cooper's hawks, approximately 98.7 acres would be directly lost as a result of construction and operation of the project. Implementation of management and monitoring activities in the OHCA could result in minor disruptions in foraging behavior, but no direct loss of individuals is anticipated.

Implementation of the HCP's Conservation Measures is anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. Unavoidable impacts to suitable Cooper's hawk foraging habitat will be mitigated with the conservation of 296.4 acres of suitable Cooper's hawk foraging habitat that will be added to the MSCP Preserve. The OHCA is contiguous with a large, core block of habitat that is conserved and managed by the BLM consistent with the goals and objectives of the MSCP. The OHCA would be managed by a conservation entity (approved by the Wildlife Agencies) that will be responsible for implementing the RMP.

No direct impacts to individuals are anticipated because any habitat with the potential to support nesting individuals would be cleared outside of the breeding season and ongoing operation of the

quarry will not result in the direct take of individuals. In order to avoid the direct injury or mortality of eggs and nestlings, clearing of vegetation will occur outside the breeding season for the Cooper's hawk (February 1 through September 15). Some individual adults may be displaced as a result of habitat loss/degradation in association with the construction of the quarry. For birds whose use areas are destroyed or significantly reduced, the search for suitable habitat exposes them to increased predation pressure. Further, birds that are able to disperse from the area of habitat destroyed by grubbing or grading will likely have to engage in increased competition for remaining suitable habitat resulting in increased stress and energy expenditure beyond normal behavior, which can lead to death or reduced reproductive output for surviving birds. Cooper's hawks that do find suitable habitat could lose their mates and be unable to find new mates, at least initially after disturbance, again causing a decline, at least temporarily, in reproductive output. Finally, displaced birds that do not find suitable replacement habitat may starve or otherwise die from lack of shelter or predation. The lands to be conserved by the Applicant are located on site and are contiguous with the impact areas. In addition, the site is contiguous with a large block of BLM wilderness so there are areas of the habitat for the displaced birds to shift into without having to fly through developed areas.

Indirect Effects

Indirect effects would likely be limited to impacts associated with altering or eliminating foraging habitat and behavior of the Cooper's hawk, since it is not anticipated to nest within open space on site. These indirect impacts include non-native plant invasion, noise, and human activity.

The ground disturbance associated with the construction of the quarry may facilitate the spread of non-native plant species into adjacent undisturbed habitat. Invasive weedy annual plants can alter the species composition and structure of the habitat, particularly the density of vegetation, which may make it less suitable to the Cooper's hawk for foraging. Restoration of slopes adjacent to the proposed open space with an appropriate native seed mix will minimize the invasion of non-native plant species. The Applicant and land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the Cooper's hawk.

As noted above, the Cooper's hawk can occur in more urban environments, especially where nesting trees (both native and non-native) occur. Increased human activity from the project will be minimized by the manner in which the quarry operation limits impacts to a portion of the site in any given time.

Rationale for Coverage: This species was afforded coverage under the MSCP because 50 percent of potential foraging habitat, 52 percent of potential nesting habitat, and 57 percent of known localities will be conserved. Within the plan area, 98.7 acres that are assumed to be potential foraging habitat for the Cooper's hawk would be impacted, and 296.2 acres (75 percent) would be preserved as mitigation within a large block of biological open space (304.6 acres) that is well-connected to other conserved lands. The OHCA would be subject to an RMP. Therefore, the project would be consistent with the goals of the MSCP for this Covered Species.

The conservation actions under the HCP will provide for the conservation and management of Cooper's hawk foraging habitat and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for the Cooper's hawk.

Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)

Legal Status: Federal: None
State: Watch List

MSCP Subarea Plan: Covered

Species Description: The rufous-crowned sparrow (*Aimophila ruficeps*) consists of 17 recognized subspecies: five in the United States and 12 in Mexico (Collins 1999 *in* Thorngate and Parsons 2005). It is a heavy, stocky sparrow with a relatively long tail. It has a plain, gray breast; a rufous crown; and a distinct, pale malar. It is approximately six inches long with a wingspan of approximately 7.75 inches, and it weighs approximately 0.65 ounce (Sibley 2000). The subspecies, *canescens*, the southern California rufous-crowned sparrow, is darker above and below than the subspecies to the north and south, and the underparts differ from those by having a gray wash to their coloring (Unitt 2004).

Habitat Characteristics/Use: This sparrow prefers coastal sage scrub (Unitt 2004) but can also be found breeding in coastal bluff scrub, low-growing serpentine chaparral, and along the edges of tall chaparral habitats (Thorngate and Parsons 2005), as well as in open chaparral or coastal sage scrub and grasslands with scattered shrubs (Unitt 2004). Following a chaparral fire, suitable habitat may develop in the early stages of chaparral re-growth (Gallagher 1997), and rufous-crowned sparrows may stay in such open, disturbed habitats for years (Rising 1996, Collins 1999).

For purposes of this analysis, it is assumed that all coastal sage scrub and coastal sage-chaparral scrub (as listed in Table 3-5 of the 1998 Final MSCP Plan), or approximately 314.6 acres in the plan area, are potentially suitable for this sparrow. There is no maritime succulent scrub (also listed in Table 3-5) in the plan area.

Life History: The rufous-crowned sparrow forages and nests on the ground (sometimes up to 1.5 feet above the ground; Baicich and Harrison 1997), usually near low vegetation. Individuals seldom wander far from the protective cover of shrubs or grass, usually foraging for seeds and insects in vegetation close to the ground and in litter beneath shrubs (Collins 1999). During fall and winter, rufous-crowned sparrows primarily eat small grass and forb seeds, fresh grass stems, and tender plant shoots. Insects such as ants, grasshoppers, ground beetles, and scale insects make up only a small percentage of the fall/winter diet (11.6 percent). During the spring and summer, the diet remains largely the same; however, insects make up a larger percentage of the diet (21 percent) and the species taken are more diverse (Collins 1999).

Nests are constructed of dry grasses, roots, and twigs, and lined with hair or fine, dry grasses (Baicich and Harrison 1997). Most nests are carefully hidden in hollows among rocks or under

clumps of grass or low bushes. Collins (1999) found nests under California sagebrush (*Artemisia californica*), deerweed, giant rye (*Leymus condensatus*), white sage (*Salvia apiana*), manzanita (*Arctostaphylos* spp.), poison oak (*Toxicodendron diversilobum*), coastal goldenbush (*Isocoma menziesii* var. *vernonioides*), morning glory (*Calystegia macrostegia*), and bunchgrasses. Rufous-crowned sparrows stay paired and on territories year-round (Collins 1999; Morrison et al. 2004) and exhibit high nest-site fidelity, returning to the same location to nest in subsequent years (Morrison et al. 2004). Breeding begins mid-March (depending on rainfall) into August, and pairs will sometimes raise two broods (Baicich and Harrison 1997).

Males are highly territorial year-round, with an estimated average territory size of 3.7 acres in southern California chaparral. However, territory sizes vary with the condition and type of habitat. Territories may be clumped and not evenly distributed throughout appropriate habitat (Collins 1999). Lovio (1996) found that the rufous-crowned sparrow persists only in tracts of habitat that are 42 acres or larger.

Status and Distribution: The *canescens* subspecies of *Aimophila ruficeps* is a resident of southwest California on the slopes of the Transverse and Coastal ranges from Los Angeles County south to Baja California Norte. It can also be found on San Martin Island (Thorngate and Parsons 2005). Is the one subspecies that occurs in San Diego County and it is restricted to the San Diegan District of the California Floristic Province (Unitt 2004).

There is inadequate data on which to base a conclusion regarding the current status and trend of the species in the MSCP Preserve beyond an accounting of conservation of potential habitat. Within the 1998 Final MSCP Plan boundary, approximately 54 percent (44,712 acres) of the total potential rufous-crowned sparrow habitat in the Preserve (82,122 acres) has been conserved, which includes 43,476 acres of coastal sage scrub and 1,236 acres of coastal sage-chaparral scrub. Approximately 27 percent of this preserved potential habitat (11,934 acres) is located within the County MSCP Subarea (CDFW Habitrak Data through 2013). An additional 7,792 acres of potential habitat (coastal sage scrub [7,132 acres] and coastal sage-chaparral scrub [660 acres]) have been conserved outside of the Preserve within the County's Subarea (CDFW 2014).

Occurrences within the Project Area: Twenty individual southern California rufous-crowned sparrows were observed/detected in 19 locations in the plan area during surveys conducted in 2001 and 2003. Suitable habitat for the species in the plan area totals approximately 292.0 acres.

Threats and Conservation Needs: Rufous-crowned sparrows are likely susceptible to avian predators that target passerines, as well as various reptilian and mammalian predators (Collins 1999 *in* Thorngate and Parson 2005), but there is no indication that predation is a significant threat to this sparrow.

In southern California, habitat loss, degradation, and fragmentation resulting from urban and agricultural development are restricting the range of rufous-crowned sparrows (Bolger 2002 *in* Thorngate and Parson 2005). Fire suppression has also led to habitat loss as rufous-crowned sparrows abandon dense, uniform stands of chaparral and coastal sage scrub. Conservation of southern California rufous-crowned sparrow will require securing large patches of suitable habitat in order to minimize edge effects. Core habitat areas will need to be interconnected through

corridors of habitat that provide for the regular movement of dispersing juveniles. Management actions that promote the type of open scrub habitats preferred by southern California rufous-crowned sparrow include prescribed burning, limited grazing, and removal of non-native plant species (Thorngate and Parsons 2005). Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) require maintenance of dynamic processes, such as fire, to perpetuate some open phases of coastal sage scrub with herbaceous components.

Goal: Conserve existing populations of Covered Wildlife Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing populations of coastal California gnatcatcher and rufous-crowned sparrow within the OHCA through management and monitoring of 218.6 acres of Diegan coastal sage scrub and 5.4 acres of coastal sage-chaparral scrub.

The Applicant will conserve and manage approximately 225.3 acres of rufous-crowned sparrow habitat within 304.6 acres of biological open space (that is, 219.9 acres of Diegan coastal sage scrub [including –disturbed] and 5.4 acres of coastal sage chaparral scrub).

In order to achieve Objective 1, the following tasks will be implemented by the RMP:

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3 listed above and in the RMP.
- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- **Task 2.3.1:** *Evaluate Habitat Quality for Coastal California Gnatcatcher and Southern California Rufous-Crowned Sparrow.* Evaluate coastal California gnatcatcher and southern California rufous-crowned sparrow habitat annually. Monitor habitat quality annually for sensitive animal species to assess trends, overall habitat quality, and potential threats using the USGS rapid assessment protocol currently in development or another protocol acceptable to the County and the Wildlife Agencies. In addition, gnatcatchers and rufous-crowned sparrows observed opportunistically during other surveys will be noted and reported. If habitat quality declines to a level that triggers action per the assessment protocol or populations of either of these species fall noticeably based on incidental observations, initiate discussions with the County and Wildlife Agencies to identify feasible strategies to increase habitat quality in the OHCA. Such strategies might include supplemental seeding to enhance habitat or assessment of potential for non-native predator/cowbird parasitism impacts. Ponds within the OHCA would be treated to remove mosquitoes if the County and the Wildlife Agencies determine that West Nile Virus or other mosquito-borne diseases pose a threat to birds in the OHCA. Contingency funds may be used for these purposes if deemed appropriate by the Resource Manager, County, and Wildlife Agencies.

- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

- **Task 4.2.3:** *Conduct Assessments Following Fires.* Within 30 days of a fire, the Resource Manager will make a preliminary assessment of the effects of the fire within the OHCA. Based on the extent and severity of fire damage, as determined by County staff and/or the Resource Manager with concurrence of the Wildlife Agencies, the Resource Manager will develop and implement specific adaptive management tasks such as additional weeding and/or seeding. The Resource Manager will address monitoring of natural regrowth within the damaged area for a period of five years and implement measures to minimize the invasion by exotic species and excessive soil erosion. Qualitative and quantitative monitoring will be required to evaluate post-fire restoration success (based on pre-fire conditions). As data are gathered, adaptive management actions will be initiated and modified as needed to reduce potential threats and their adverse impacts.

Conservation Analysis

Direct Effects

The locations of three individual southern California rufous-crowned sparrows and 66.7 acres of approximately 292.0 acres of suitable Diegan coastal sage scrub and coastal sage-chaparral scrub habitats would be directly lost as a result of construction and operation of the project. Implementation of management and monitoring activities in the OHCA could result in minor disturbance to rufous-crowned sparrows and temporary loss of habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP's Conservation Measures is anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. Unavoidable impacts to the southern California rufous-crowned sparrow will be mitigated with the conservation of 225.3 acres of rufous-crowned sparrow habitat within 304.6 acres of biological open space that will be added to the MSCP Preserve. The OHCA is contiguous with a large, core block of habitat that is conserved and managed by the BLM consistent with the goals and objectives of the MSCP. The OHCA would be managed by a conservation entity (approved by the Wildlife Agencies) that will be responsible for implementing the RMP.

In order to avoid the direct injury or mortality of eggs and nestlings, clearing of vegetation will occur outside the breeding season for the rufous-crowned sparrow (February 1 through September 15). Some individual adults may be displaced as a result of habitat loss/degradation in association with the construction of the quarry. For birds whose use areas are destroyed or significantly reduced, the search for suitable habitat exposes them to increased predation pressure. Further, birds that are able to disperse from the area of habitat destroyed by grubbing or grading will likely have to engage in increased competition for remaining suitable habitat resulting in increased stress and energy expenditure beyond normal behavior, which can lead to death or reduced reproductive output for surviving birds. Southern California rufous-crowned sparrows that do find suitable habitat could lose their mates and be unable to find new mates, at least initially after disturbance, again causing a decline, at least temporarily, in reproductive output. Finally, displaced birds that

do not find suitable replacement habitat may starve or otherwise die from lack of shelter or predation. The lands to be conserved by the Applicant are located on site and are contiguous with the impact areas. In addition, the site is contiguous with a large block of BLM wilderness so there are areas of the habitat for the displaced birds to shift into without having to fly through developed areas.

Indirect Effects

Indirect effects of particular concern to southern California rufous-crowned sparrow include the degradation of habitat outside the footprint of the quarry as a result of increased night lighting, noise, non-native plant and animal invasion, and wildfires. Increased ambient light levels could alter bird behavior and increase the effectiveness of visually aided nocturnal predators (e.g., Rich and Longcore 2006). The southern California rufous-crowned sparrow is particularly vulnerable to predators due to its ground-nesting habit; therefore, project-associated increases in nighttime light levels may reduce the quality of southern California rufous-crowned sparrow habitat adjacent to the project footprint. In order to minimize impacts from nighttime lighting, the Applicant will adhere to Division 9 of the San Diego County Light Pollution Code. Lighting within the project impact footprint will be of the lowest illumination allowed for human safety, selectively placed, shielded, and directed away from preserved habitat.

The ground disturbance associated with the construction of the quarry may facilitate the spread of non-native plant species into adjacent undisturbed habitat. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the southern California rufous-crowned sparrow. Restoration of slopes adjacent to the proposed open space with an appropriate native seed mix will minimize the invasion of non-native plant species. The Applicant and land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the southern California rufous-crowned sparrow.

Wildfire ignition sources may increase with implementation of Covered Activities adjacent to open space areas. For example, fuel management zones and other mowed areas are readily colonized by non-native plants, making these areas more susceptible to fire, particularly in areas accessible to the public. Another potential source of wildfire is the use of vehicles, mowers, or other construction equipment in vegetated areas where catalytic converters may ignite vegetation. An increase in the number of wildfires could lead to increased fragmentation of habitat for southern California rufous-crowned sparrow. Because this species is particularly sensitive to fragmentation (Bolger et al. 1997), increases in wildfires have the potential to diminish the abundance of this species. However, wildfires may also open up some new habitat areas in chaparral stands that were previously unsuitable for southern California rufous-crowned sparrow due to the high density of shrubs, thereby offsetting to some degree the negative effects of habitat fragmentation. The Applicant will minimize ignition sources by maintaining fire suppression devices on site at all times. In addition, there is no public use anticipated within the OHCA; therefore, human-caused fires are not anticipated to increase as a result of the project.

Noise minimization measures have been incorporated into the project design to minimize noise impacts to adjacent habitats. The following conservation measures would be required as part of the facilities operation:

- No jaw crusher shall be operated closer than 350 feet from the closest property line or open space boundary.

- No screen shall be operated closer than 165 feet from the closest property line or open space boundary.

- No vertical crusher shall be operated closer than 85 feet from the closest property line or open space boundary.

- All cone crushers used in the aggregate crushing process shall be shielded with noise control barriers: the barriers shall start at ground level and extend to at least a minimum of one foot higher than the direct line of sight between any portion of the shielded equipment and any suitable habitat areas to the east of the site.

- All vertical crushers used in the aggregate crushing process shall be shielded with noise control barriers: the barriers shall extend to the ground or at least two feet below the crusher if it is an elevated unit and extend to at least a minimum of one foot higher than the direct line of sight between any portion of the shielded equipment and any suitable habitat areas to the east of the site.

- All aggregate screens shall use synthetic screen elements (note this does not apply to recycled materials which may utilize steel screens).

- All sound attenuation fence/walls should be solid and constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, with no cracks or gaps, through or below the wall. (Project Note: conveyor belting is an excellent noise shielding material to allow a flexible barrier or provide lower skirts). Any seams or cracks must be filled or caulked. If wood is used, it can be tongue-and-groove and must be at least one inch total thickness or have a surface density of at least 3.5 pounds per square foot. Any door(s) or gate(s) must be designed with overlapping closures on the bottom and sides and meet the minimum specifications of the wall materials described above. The gate(s) may be of one-inch thick or better wood, solid-sheet metal of at least 18-gauge metal, or an exterior-grade solid-core steel door with prefabricated door jambs.

- If a cone crusher is used in the Asphaltic Concrete Plant, it shall be shielded with a barrier as described in four above.

- If a portable plant is used for occasional processing of recycled materials, the unit shall only be used in the area south of the main plant. The unit shall never be positioned closer than 500 feet to the eastern or southern excavation boundary or the southern boundary of the normal equipment areas to control additional noise impacts to the east.

Rationale for Coverage: The conservation actions and avoidance and minimization measures of the Plan are expected to achieve the biological goals and objectives for this species by conserving a large block of occupied habitat (225.3 acres) that is well-connected to other conserved lands, monitoring and managing the species within the OHCA, and minimizing indirect impacts from construction and operation of the quarry.

This species was afforded coverage under the MSCP because 61 percent of potential habitat including 71 percent of mapped localities will be conserved. The conservation analysis for MSCP assumed that 70 to 100 percent of the major amendment areas would be conserved. This project is consistent with that assumption in that it is conserving 75 percent of the project site. The conserved lands on the project site will contribute 304.6 acres (including 219.9 acres of coastal sage scrub and 5.4 acres of coastal sage-chaparral scrub) to the MSCP Preserve, as well as provide for the management and monitoring of those lands. Area-specific management directives include maintenance of dynamic processes, such as fire, to perpetuate some open phases of coastal sage scrub with herbaceous components. The RMP that has been prepared for this project includes Area Specific Management Directives for the conserved lands on the project site. Therefore, the project would be consistent with the goals of the MSCP for this Covered Species.

The conservation actions under the HCP will provide for the conservation and management of southern California rufous-crowned sparrow habitat and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for the southern California rufous-crowned sparrow.

Burrowing owl (*Athene cunicularia*)

Legal Status: Federal: Bird of Conservation Concern
State: Species of Special Concern

MSCP Subarea Plan: Covered, Narrow Endemic

Species Description: The burrowing owl is a member of the Strigidae family of owls, which consists of all North American owl species except the barn owl (*Tyto alba*). Characteristics of this family include a raptor-like predatory lifestyle; large, rounded head; immobile, yellow eyes; and a feather structure that allows for almost soundless flight. Its plumage is dull brown with buff-white barring (wings and tail; undertail is white) or white-spotted (head, back, and scapula), and its legs are long and covered with short, hair-like feathers. The burrowing owl is the only North American owl that may exhibit reversed sexual size dimorphism (i.e., the male is larger than the female; Earhart and Johnson 1970; Haug et al. 1993 *in* Klute et al. 2003). However, it is also reported that the sexes are the same size (Cornell Lab of Ornithology 2014b). The average weight of male and female burrowing owls is 5.3 ounces; the average length is 7.5 to 9.8 inches; and the average wingspan is 21.7 inches (Cornell Lab of Ornithology 2014b).

Unlike other owls, burrowing owls are primarily diurnal and crepuscular (active at dawn and dusk) hunters (Thomsen 1971). The burrowing owl can often be seen standing on a fence post or near the entrance to one of its burrows. Seven different burrowing owl vocalizations were described

by Thomsen (1971) in a three-year study of a burrowing owl colony near Oakland International Airport, California, which correspond to Coulombe's (1971) study of burrowing owls in Imperial County, California.

Habitat Characteristics/Use: In general, burrowing owl habitat is composed of drier, open areas that can include prairies, grasslands, and savannas. The burrowing owl can also be found living in deserts, farmlands, pastures, cemeteries, airports, vacant lots, university campuses, golf courses, and other urban areas (Cornell Lab of Ornithology 2014b). Burrowing owls are dependent on the presence of fossorial mammals (primarily prairie dogs and ground squirrels), whose burrows are used for nesting and roosting (Klute et al. 2003). In southern California, the most commonly used rodent burrow is that of the California ground squirrel (Collins 1979).

For purposes of this analysis, it is assumed that all grassland vegetation communities (as listed in Table 3-5 of the 1998 Final MSCP Plan), or approximately 48.6 acres in the plan area (1.2 acres of native grassland and 47.4 acres of non-native grassland), are potentially suitable for the burrowing owl.

Life History: Foraging primarily occurs just prior to, and just after, sunrise and sunset. Burrowing owls are opportunistic feeders, primarily taking insects (mainly grasshoppers, crickets, moths, and beetles) and small mammals (e.g., mice, voles, shrews), but will pursue any potential prey they can physically handle including birds, ground squirrels, frogs, snakes, salamanders, earthworms, bats, scorpions, and caterpillars (Poulin et al. 2011). The prey base changes according to seasonal availability (Robinson 1954, Coulombe 1971, Marti 1974).

Non-migratory burrowing owls of California begin to form pairs in December; most pair formation is complete by February (Thomsen 1971). Thomsen's 1971 study noted that the owls did not maintain rigid pair ponds. Studies that included migratory burrowing owls suggest that they do not form permanent pairs but may retain a previous year's mate (Thomsen 1971, Martin 1973). Burrow selection begins after pair formation or upon arrival to breeding grounds. Several burrows may be selected and renovated (i.e., material is excavated from an existing burrow), but only one will be used as a nest. Egg laying occurs from late March to early May with an average clutch of seven to 9; the female incubates the eggs for approximately four weeks while the male protects the nesting territory and brings the female food (Butts 1971, Coulombe 1971, Thomsen 1971, Martin 1973). Four weeks after hatching, the fledglings can fly and forage with the adults. Nestling and fledgling mortality ranges from 19 to 35 percent with those surviving usually being the heavier of the fledglings (Thomsen 1971).

Status and Distribution: The breeding range of the North American subspecies of burrowing owl extends south from southern Canada into the western half of the United States and south into Baja California and central Mexico (Johnsgard 1988). Minimal data on migration suggest that most burrowing owls that breed in North America winter in Mexico, Arizona, New Mexico, Texas, Louisiana, and California, which is considered one of the most important wintering grounds for migrants (James and Ethier 1989 *in* Shuford et al. 2008).

Burrowing owls in California are year-round residents of the State. Numbers in the State have declined at least moderately overall, although they are greatly augmented in the Imperial Valley,

and the range has retracted in northeastern California and along the coast. During migration and in winter, the burrowing owl is more widespread in lowland areas of the State and reaches more offshore islands (Shuford et al. 2008).

Burrowing owls have declined throughout much of their range because of habitat loss due to urbanization, agricultural conversion, and destruction of ground squirrel colonies. The burrowing owl's overall breeding range in California has changed only modestly since 1945, but the local distribution of owls across the State has changed considerably. Declines and local extirpations have been mainly along the central and southern coast (DeSante et al. 1997a, 1997b, and 2007 *in* Shuford et al. 2008), which are regions that are undergoing rapid urbanization. However, large breeding populations remain in areas of the Central and Imperial valleys where the owls have adapted to modified habitats that support agriculture (Coulombe 1971 and Rosenberg and Haley 2004 *in* Shuford et al. 2008), much in the form of low-growing row crops.

In the late 1970s, San Diego County supported 250 to 300 pairs of burrowing owls. In 2007, the number of burrowing owl pairs in San Diego County was estimated to be at the most 46 (Lincer and Bloom 2007). About 25 of these pairs were in grasslands or sparse coastal sage scrub with grasslands in the East Otay Mesa area; the others were at various locations in the County, including a few in the desert, generally in groups of fewer than three pairs (County 2010).

Within the 1998 Final MSCP Plan boundary, approximately 52 percent (5,836 acres) of the total potential burrowing owl habitat in the Preserve (11,200 acres) has been conserved, which includes 5,836 acres of grassland. Approximately 18 percent of this preserved potential habitat (1,067 acres) is located within the County MSCP Subarea (CDFW Habitrak Data through 2013). An additional 960 acres of potential grassland habitat have been conserved outside of the Preserve within the County's Subarea (CDFW 2014).

Occurrences within the Project Area: A single burrowing owl was observed in 2001 in non-native grassland in the western portion of the project impact footprint. The species was not found during a focused burrowing owl survey of the plan area in 2012. In East Otay Mesa, however, all grassland habitats are considered occupied by the burrowing owl (County 2010). The plan area supports approximately 48.6 acres of potential burrowing owl habitat (1.2 acres of native grassland and 47.4 acres of non-native grassland), and this habitat could be used for foraging and/or nesting.

Threats and Conservation Needs: Although no one major factor has been implicated in the decline of this species, the cumulative effects of human activities have undoubtedly taken a major toll (Poulin et al. 2011).

Habitat loss and degradation from rapid urbanization of farmland in the core areas of the Central and Imperial valleys is the greatest threat to the species in California. Discing to control weeds in fallow fields may destroy burrows (Rosenberg and Haley 2004 *in* Shuford et al. 2008). Road and ditch maintenance in agricultural areas poses a threat to both owls and their nests, but these impacts can be minimized through management actions (Catlin and Rosenberg 2006 *in* Shuford et al. 2008). Nests have been destroyed and adults and young killed by road maintenance activities (Poulin et al. 2011). Pesticides may affect burrowing owl populations in croplands and rangelands

(James and Fox 1987 and James et al. 1990 *in* Shuford et al. 2008). The incidental poisoning of burrowing owls and the destruction of their burrows during eradication programs aimed at rodent colonies have been a large factor in their decline (Collins 1979, Remsen 1978, and Zarn 1974).

In addition to loss of nesting burrows from extermination of ground squirrels, developed environments (such as ongoing urbanization in coastal regions) pose a substantial risk to burrowing owls from mortality caused by traffic (Klute et al. 2003 and D.K. Rosenberg et al. unpubl. data *in* Shuford et al. 2008). Owls nesting along roadsides or parking lots are at greatest risk (Gervais et al. 2003 *in* Shuford et al. 2008). Other types of development can also impact burrowing owls. Wind turbines in the Altamont Pass Wind Resource Area in central California were estimated to kill more than 100 burrowing owls annually (Smallwood 2007). High-voltage electrical fences around prisons (including the Richard J. Donovan Correctional Facility on Otay Mesa) have caused mortality throughout the State.

The preservation of potential habitat and populations of burrowing mammals is critical for the conservation of burrowing owls (Klute et al. 2003). Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) require enhancement of known, historical, and potential burrowing owl habitat and management for ground squirrels. Enhancement measures may include creation of artificial burrows and vegetation management to enhance foraging habitat. Management plans must include: monitoring of burrowing owl nest sites to determine use and nesting success, predator control, and establishing a 300-foot-wide impact avoidance area (within the preserve) around occupied burrows. Table 3-5 states that eight known burrowing owl locations occur within Major Amendment Areas of the South County Segment of the County Subarea Plan, and the conservation of occupied burrowing owl habitat must be one of the primary factors for preserve design during the permit amendment process.

Goal: Conserve existing populations of Covered Wildlife Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing foraging habitat for the northern harrier, burrowing owl, and Cooper's hawk, and maintain potential breeding habitat for the northern harrier and burrowing owl through management and monitoring of 0.7 acre of native grassland and 16.3 acres of non-native grassland.

The Applicant will conserve and manage approximately 17.0 acres potential burrowing owl grassland habitat within 304.6 acres of biological open space (16.3 acres of non-native grassland and 0.7 acre of native grassland).

In order to achieve Objective 1, the following tasks will be implemented by the RMP:

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 – 3.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- The Resource Manager will record species observations per Task 2.2.1.

- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

Goal 2: Mitigate for impacts to Proposed Covered Species in conformance with the MSCP Plan and the County Subarea Plan.

Objective 1: Provide non-native grassland mitigation at a 1:1 ratio by conserving 14.8 acres of non-native grassland off site in addition to the 16.3 acres conserved on site.

Objective 2: Provide native grassland mitigation at a 2:1 ratio by conserving 0.3 acre of native grassland off site in addition to the 0.7 acre conserved on site.

HCP Conservation Measure 2. Minimize potential impacts from ongoing operations.

- Burrowing owls are known to use open pipes, culverts, excavated holes, or other burrow-like structures. Therefore, measures shall be taken to discourage burrowing owl use of such structures to prevent injury or mortality from Project activities. Deterrent measures may include, but are not limited to, ensuring that the ends of all pipes and culverts are covered when they are not being used, and covering rubble piles, dirt piles, ditches, and berms that occur within the Project impact footprint when they are not being regularly disturbed by quarry activities.

Conservation Analysis

Direct Effects

Approximately 31.6 acres of potential burrowing owl grassland habitats (0.5 acre native grassland and 31.1 acres non-native grassland) out of 48.6 acres of grassland habitats in the plan area would be directly lost as a result of construction and operation of the project. Implementation of management and monitoring activities in the OHCA could result in minor disturbance to burrowing owls and temporary loss of habitat (e.g., during the repair of fencing and weeding), but no direct loss of individuals is anticipated.

Implementation of the HCP's Conservation Measures is anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. Unavoidable impacts to 0.5 acre of native grassland would be mitigated at a 2:1 ratio through on-site preservation as well as on- or off-site restoration or off-site acquisition. Impacts to 31.1 acres of non-native grassland would be mitigated at a 1:1 ratio by preservation of 16.3 acres of non-native grassland in the plan area and 14.8 acres of grassland at an off-site location or through purchase of credits from an approved conservation bank. The on-site preservation would be biological open space contiguous with a large, core block of habitat that is conserved and managed by the BLM consistent with the goals and objectives of the MSCP. The OHCA would be managed by a conservation entity (approved by the Wildlife Agencies) that will be responsible for implementing the RMP.

In order to avoid the direct injury to individuals, surveys for burrowing owls will be conducted consistent with the Strategy for Mitigating Impacts to Burrowing Owls in the Unincorporated County ("Burrowing Owl Strategy," County 2010). If a burrowing owl(s) is sighted within the development footprint, the Wildlife Agencies and County shall immediately be notified to determine the appropriate steps to take. If, for example, an active burrow is present, impacts to this species may be minimized by the passive translocation of the owl to a suitable area on the Project site that supports nesting and foraging habitat. A Burrowing Owl Translocation Plan, which may include installation of a minimum of two artificial burrows for every burrow impacted, would be prepared and submitted to the Wildlife Agencies and County for review and approval in accordance with the CDFG Staff Report on Burrowing Owl Mitigation (2012). Approval and implementation of the Burrowing Owl Translocation Plan shall be required prior to clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations.

Indirect Effects

Burrowing owls appear to tolerate human activity and noise better than many species and are often found in high noise and high night lighting environments such as airports. Indirect effects of particular concern to burrowing owl include increases in non-native plant species, especially those that could increase density of vegetation that precludes its use as foraging habitat for the owl, as well as potential for the quarry operation to provide nesting sites within the quarry that could be detrimental to the owl.

The ground disturbance associated with the construction of the quarry may facilitate the spread of non-native plant species into adjacent undisturbed habitat. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the burrowing owl. Restoration of slopes adjacent to the proposed open space with an appropriate native seed mix will minimize the invasion of non-native plant species. The Applicant and land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the burrowing owl.

Burrowing owls may utilize man-made structures such as water pipes, rubble/rock piles, or other areas that create openings large enough for owl occupation. To ensure that these types of areas do not become occupied within the project footprint, deterrent measures may include, but are not limited to, ensuring that the ends of all pipes and culverts are covered when they are not being used, and covering rubble piles, dirt piles, ditches, and berms that occur within the project impact footprint when they are not being regularly disturbed by quarry activities.

Rationale for Coverage: This species was afforded coverage under the MSCP because 5,770± acres of potential and 4,000± acres of known suitable habitat (grassland) will be conserved including portions of Spring Canyon, San Pasqual Valley, Lake Hodges, Otay Mesa northeast of Brown Field, Otay Ranch, Otay River Valley, and Future Urbanizing Area 4. However, with the exception of Otay Mesa, burrowing owls no longer thrive in any of these locations. The MSCP also requires that "conservation of occupied burrowing owl habitat must be one of the primary

factors in preserve design during the permit amendment process." The Biological Mitigation Ordinance (BMO), which implements the MSCP, requires that impacts to burrowing owl habitat be avoided to the maximum extent practicable.

In accordance with the Burrowing Owl Strategy (County 2010), the County and the Wildlife Agencies require that, to the extent practicable, mitigation for impacts to grasslands and burrowing owls in East Otay Mesa occur in East Otay Mesa. If impacts are unavoidable, the BMO requires mitigation to be through the conservation of occupied burrowing owl habitat or lands appropriate for restoration, management, and enhancement of burrowing owl nesting and foraging requirements at a ratio of no less than 1:1 (County 2010).

One of the objectives for burrowing owl preservation in East Otay Mesa is to preserve grasslands—first through avoidance, then through in-kind mitigation with grasslands or suitable disturbed or agricultural lands in East Otay Mesa (County 2010). The project would mitigate for impacts to 0.5 acre of native grassland at a 2:1 ratio through on-site preservation as well as on- or off-site restoration or off-site acquisition. Impacts to 31.1 acres of non-native grassland would be mitigated at a 1:1 ratio by preservation of 16.3 acres of non-native grassland in the plan area and 14.8 acres of grassland at an off-site location or through purchase of credits from an approved conservation bank consistent with the BMO and the Burrowing Owl Strategy.

Mitigation for burrowing owl grassland habitat would be provided on site and at an off-site location (or purchase of credits at an approved conservation bank) at a minimum ratio of 1:1. Finally, active or passive translocation of the owl(s) to preserved habitat in the plan area with the creation of artificial burrows would occur in accordance with an approved Burrowing Owl Translocation Plan, if necessary. Therefore, the project would be consistent with the goals of the MSCP for this Covered Species.

The conservation actions under the HCP will provide for the conservation and management of potential burrowing owl habitat and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for the burrowing owl.

Northern harrier (*Circus cyaneus*)

Legal Status: Federal: None
State: Species of Special Concern

MSCP Subarea Plan: Covered

Species Description: The northern harrier is a medium-sized, slender hawk with long wings, legs, and tail. It has a conspicuous, white rump. The male is mostly gray above and white below; the female is brown above and buff or tawny below (Palmer 1988a). On average, it is 18 inches long with a wingspan of 43 inches, and it weighs 15 ounces. The female is larger than the male (Sibley 2000).

Habitat Characteristics/Use: Northern harrier wintering habitat in California includes fresh and saltwater wetlands, coastal dunes, grasslands, deserts, meadows, and crop lands. Breeding habitat includes freshwater wetlands, coastal brackish wetlands, open wet meadows and grasslands, shrub-steppe communities, desert sinks, areas along rivers and lakes, and agricultural fields (Grinnel and Miller 1944, Martin 1987, and MacWhirter and Bildstein 1996 *in* Cripe undated). The northern harrier can be found from sea level up to 10,000 feet (Cripe undated).

For purposes of this analysis, it is assumed that all salt marsh and grassland vegetation communities (as listed in Table 3-5 of the 1998 Final MSCP Plan), or approximately 49.0 acres in the plan area (0.34 acre of cismontane alkali marsh, 1.2 acres of native grassland, and 47.4 acres of non-native grassland), are potentially suitable for the northern harrier.

Life History: The northern harrier hunts on the wing, patrolling low over the ground (Ehrlich et al. 1988 *in* Cripe undated). Harriers predominantly feed on small mammals, mainly species of voles (*Microtus* spp.). The northern harrier is also a generalist; its diet has been reported to include reptiles, amphibians, birds, and invertebrates (Cripe undated).

Territory size varies according to habitat type and prey availability (Martin 1987 and Temeles 1987 *in* Cripe undated). Female harriers defend territories and exclude non-territorial males from preferred habitat. Wintering females occupy mean territory size of approximately 83 acres (Temeles 1987 *in* Cripe undated). Breeding home ranges average approximately 279 acres for females and approximately 3,879 acres for males (Martin 1987 *in* Cripe undated).

Breeding begins mid-March in the south to mid-May in the north (Baicich and Harrison 1997). Nests are built on the ground, except where built higher up in wet sites. Nest sites have no canopy cover (Cripe undated). Harriers are single brooded (typically four to six eggs), although replacement clutches may be laid (Baicich and Harrison 1997). Incubation is by the female only (for 29 to 39 days). The nestlings are fed by the female for approximately two weeks. The male brings the food to the female and passes it to her in the air, then she brings it to the nest. Approximately 35 days after hatching, the young leave the nest and hide nearby returning to the nest when food arrives. The young become independent at approximately 45 to 66 days after hatching. Some northern harrier males occasionally have two or three mates, which forces the females to do some of the hunting for food when the nestlings are young. This creates an increased likelihood of nest loss (Baicich and Harrison 1997).

Status and Distribution: Northern harriers breed throughout most of Alaska, Canada, and the northern United States. They winter in the midwestern to southern United States and southward into Mexico (National Park Service 2000). Historically, harriers were considered abundant during winter and fall migration throughout their range (Grinnel and Miller 1944 *in* Cripe undated). In California, the harriers' breeding range includes coastal areas, the Central Valley, northeastern California, and the Sierra Nevada region up to 3,600 feet, although extensive local population declines continue to occur as habitat is lost (Ramsen 1978, Martin 1989, and MacWhirter and Bildstein 1996 *in* Cripe undated).
In San Diego County, the northern harrier is found year-round but is more numerous and widespread as a winter visitor than a breeding bird (Unitt 2004). It is an uncommon to fairly common winter visitor and a rare and local summer resident in the coastal lowlands of San Diego

County (Unitt 2004). Northern harriers are disappearing as a breeding resident from the county (Unitt 2004). Since the mid-1970s, documented nesting locations in San Diego County have included Camp Pendleton and Sweetwater River estuary, Otay Ranch (Ogden Environmental and Energy Services 1992), and Proctor Valley (Unitt 2004). In the MSCP area, it has been reported that the northern harrier breeds in marshes and grasslands in the Sweetwater River estuary, Otay River, Proctor Valley, Otay Mesa, Tijuana River estuary, Sorrento Valley, northeast Lake Hodges, and south of San Marcos (USFWS and CDFW 1996).

There is inadequate data on which to base a conclusion regarding the current status and trend of the species in the MSCP Preserve beyond an accounting of conservation of potential habitat. Within the 1998 Final MSCP Plan boundary, approximately 52 percent (6,752 acres) of the total potential northern harrier habitat in the Preserve (12,895 acres) has been conserved, which includes 916 acres of salt marsh and 5,836 acres of grassland. Approximately 16 percent of this preserved potential habitat (1,067 acres of grassland) is located within the County MSCP Subarea. There is no southern coastal salt marsh in the County MSCP Subarea's portion of the Preserve (CDFW Habitrak Data through 2013). An additional 960 acres of potential grassland habitat have been conserved outside of the Preserve within the County's Subarea (CDFW 2014).

Occurrences within the Project Area: One northern harrier was observed flying over the plan area. For purposes of this analysis, it is assumed, however, that all salt marsh and grassland vegetation communities (as listed in Table 3-5 of the 1998 Final MSCP Plan), or approximately 48.9 acres in the plan area (0.34 acre of cismontane alkali marsh, 1.2 acres of native grassland, and 47.4 acres of non-native grassland), are potentially suitable for the northern harrier, primarily for foraging and possibly for nesting.

Threats and Conservation Needs: As stated previously, northern harriers are disappearing as a breeding resident from the county (Unitt 2004), and extensive local population declines continue to occur as habitat is lost (Ramsen 1978, Martin 1989, and MacWhirter and Bildstein 1996 *in* Cripe undated). Other documented threats to the species include nest destruction by agricultural practices (MacWhirter and Bildstein 1996 *in* Cripe undated), possible effects of repeated exposure to agrochemicals (Martin 1997 *in* Cripe undated), and predation (primarily to eggs and nestlings) from a variety of native mammalian, avian, and reptilian predators (MacWhirter and Bildstein, LBWA *in* Cripe undated).

Conservation needs for the species include: 1) protecting remaining habitat, addressing threats of continued habitat loss, and reclaiming and restoring habitat when possible; 2) maintaining high prey base in available habitats (density of prey base is highly correlated with density and success of harriers); and 3) providing adequate nesting habitat (Cripe undated). Area Specific Management Directives for this MSCP Covered Species applicable to the project and plan area (Table 3-5 of the 1998 Final MSCP Plan) require management of agricultural and disturbed lands (that become part of the MSCP Preserve) within four miles of nesting habitat to provide foraging habitat, including an impact avoidance area (900-foot or maximum possible within the Preserve) around active nests and coordination of efforts to manage for wintering foraging habitat within the Preserve.

Goal: Conserve existing populations of Covered Wildlife Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing foraging habitat for the northern harrier, burrowing owl, and Cooper's hawk, and maintain potential breeding habitat for the northern harrier and burrowing owl through management and monitoring of 0.7 acre of native grassland and 16.3 acres of non-native grassland.

The Applicant will conserve and manage approximately 17.1 acres of northern harrier habitat within 304.6 acres of biological open space (that is, 0.07 acre of cismontane alkali marsh, 16.3 acres of non-native grassland, and 0.7 acre of native grassland).

In order to achieve Objective 1, the following tasks will be implemented by the RMP.

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- The Resource Manager will record species observations per Task 2.2.1.

- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

Conservation Analysis

Direct Effects

Of the approximately 49 acres that are potentially suitable for the northern harrier, approximately 31.9 acres (0.27 acre of cismontane alkali marsh, 31.1 acres of non-native grassland, and 0.5 acre of native grassland) would be directly lost as a result of construction and operation of the project. Implementation of management and monitoring activities in the OHCA could result in disturbance to northern harriers (if nesting) and temporary loss of habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP's Conservation Measures is anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. Unavoidable impacts to northern harrier habitat will be mitigated with the conservation of 17.1 acres of suitable northern harrier habitat that will be added to the MSCP Preserve. The OHCA is contiguous with a large, core block of habitat that is conserved and managed by the BLM consistent with the goals and objectives of the MSCP. The OHCA would be managed by a conservation entity (approved by the Wildlife Agencies) that will be responsible for implementing the RMP.

No direct impacts to individuals are anticipated because northern harriers have not been observed nesting on site.

Indirect Effects

Indirect effects of particular concern to northern harrier include increases in non-native plant species, especially those that could increase density of vegetation that precludes its use as foraging habitat for the northern harrier.

The ground disturbance associated with the construction of the quarry may facilitate the spread of non-native plant species into adjacent undisturbed habitat. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the northern harrier. Restoration of slopes adjacent to the proposed open space with an appropriate native seed mix will minimize the invasion of non-native plant species. The Applicant and land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the northern harrier.

Rationale for Coverage: This species was afforded coverage under the MSCP because 42 percent of potential nesting habitat and 85,000± acres of its potential foraging habitat will be conserved. Additionally, "conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas." Within the existing major amendment area that is within the project impact footprint, most of grassland habitat is patchy and interspersed with Diegan coastal sage scrub. There are no great expanses of grasslands in the plan area like there are on Otay Mesa. The project would mitigate the losses of native and non-native grasslands in accordance with the BMO (2:1 for native grassland and 1:1 for non-native grassland). Additionally 0.27 acre of cismontane alkali marsh impacts would be mitigated at a 3:1 ratio through on- or off-site creation, restoration, and/or enhancement of 0.81 acre of cismontane alkali marsh, which may benefit this species. Therefore, the project would be consistent with the goals of the MSCP for this Covered Species.

The conservation actions under the HCP will provide for the conservation and management of northern harrier habitat and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for the northern harrier.

Coastal California gnatcatcher (*Polioptila californica californica*)

Legal Status: Federal: Threatened
State: Species of Special Concern

MSCP Subarea Plan: Covered

Species Description: The coastal California gnatcatcher is a small, non-migratory songbird with a long tail that is mostly black above and below. Its plumage is dark blue-gray above and grayish-white below. Both sexes have a white eye ring, and the male has a black cap during the breeding

season. Vocalizations of the subspecies include a call of a kitten-like mew (National Geographic Society 1983 *in* USFWS 1991).

Critical Habitat Description: There are 11 designated critical habitat units for the coastal California gnatcatcher that include 197,303 acres of federal, state, local, and private land in Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties (72 FR 72010). Designated critical habitat includes habitat throughout the species' range in a variety of climatic zones and vegetation types to preserve the genetic and behavioral diversity that currently exists within the species. The individual units contain essential habitat for the coastal California gnatcatcher and help to identify special management considerations for the species.

Primary Constituent Elements (PCEs) for the coastal California gnatcatcher are those habitat components that are essential for the primary biological needs of foraging, nesting, rearing of young, intra-specific communication, roosting, dispersal, genetic exchange, or sheltering (72 FR 72010). These include: 1) dynamic and successional sage scrub habitats (i.e., Venturan coastal sage scrub, Diegan coastal sage scrub, Riversidean sage scrub, maritime succulent scrub, Riversidean alluvial fan scrub, southern coastal bluff scrub, and coastal sage-chaparral scrub) that provide space for individual and population growth, normal behavior, breeding, reproduction, nesting, dispersal, and foraging; and 2) non-sage scrub habitats such as chaparral, grassland, and riparian areas, in proximity to sage scrub habitats that provide space for dispersal, foraging, and nesting.

Habitat Characteristics/Use: The coastal California gnatcatcher is closely associated with coastal sage scrub vegetation, and it utilizes this community for foraging and nesting. In San Diego and Orange counties, the coastal California gnatcatcher occurs most commonly in coastal sage scrub with high proportions of coastal sagebrush (*Artemisia californica*) and California buckwheat, and less commonly in sub-associations dominated by black sage (*Salvia mellifera*) or lemonadeberry (*Rhus integrifolia*; Atwood 1980, 1990; Mock et al. 1990; Bontrager 1991; Weaver 1998; USFWS 2010). The birds remain on their territory throughout the year and expand their home range during non-breeding season. They will forage with neighboring individuals in habitats not defended (Preston et al. 1998, Grishaver et al. 1998 *in* Mock 2004).

For purposes of this analysis, it is assumed that all Diegan coastal sage scrub (including disturbed) in the plan area is suitable habitat for the coastal California gnatcatcher. Table 3-5 of the 1998 Final MSCP Plan lists coastal sage scrub as gnatcatcher habitat. Therefore, potentially suitable habitat in the project plan area totals approximately 309.2 acres.

The territory size of coastal California gnatcatcher varies. Mean territory size during the breeding season ranges from approximately 12 to 27 acres per pair, while mean territory size during the non-breeding season ranges from approximately 12 to 42 acres per pair (Preston et al. 1998). During the non-breeding season, coastal California gnatcatchers have been observed in adjacent territories and unoccupied habitat, thus increasing their home range size to approximately 78 percent larger than their breeding territory (Preston et al. 1998).

Life History: The coastal California gnatcatcher is a ground- and shrub-foraging insectivore (Mock 2004). The subspecies is monogamous. The breeding season of the coastal California

gnatcatcher generally extends from late February through July, and sometimes later. The coastal California gnatcatcher becomes highly territorial by late February or early March (the beginning of the breeding season), and males become more vocal during this period (Mock et al. 1990). An open cup nest of grasses, bark, leaves, spider webs, down, and other materials is often located approximately three feet above the ground, typically in California sagebrush, California buckwheat, California sunflower (*Encelia californica*), broom baccharis (*Baccharis sarothroides*), or laurel sumac (*Malosma laurina*). A clutch of typically three or four eggs is laid and is incubated by both sexes for approximately 14 days. The young are fed by both parents and fledge in approximately 10 to 15 days; they remain in the territory for three to four weeks before dispersing (Mock 2004). The coastal California gnatcatcher is known to rapidly and repeatedly re-nest following the loss of eggs or nestlings to predators.

Juveniles disperse between late May and November (USFWS 2001). They generally require a corridor of native vegetation that provides foraging habitat and shelter and that connects to larger patches of coastal sage scrub vegetation (Galvin 1998). Most juvenile coastal California gnatcatchers disperse less than 1.2 miles from their natal territory (Atwood and Bontrager 2001), but these distances can vary from 0.7 to 2.0 miles (Atwood and Bontrager 2001, Bailey and Mock 1998, Galvin 1998, Mock and Bolger 1992). Bailey and Mock (1998) reported that juvenile coastal California gnatcatchers are apparently able to traverse altered landscapes for short distances. Other researchers have found that coastal California gnatcatchers can disperse up to 14 miles across fragmented and highly disturbed sage scrub habitat (for example, along highway corridors or across remnant patches of habitat adjacent to developed lands; Bailey and Mock 1998; Famolaro and Newman 1998; Galvin 1998). Adult coastal California gnatcatchers rarely disperse once they have formed a pair bond and established a territory (Atwood and Bontrager 2001).

Status and Distribution: The northern and eastern limits of the coastal sage scrub used by the coastal California gnatcatcher are largely bound by mountains; the southern limit is defined by the transition to the Vizcaíno desert about 30 degrees north latitude in Baja California, Mexico (USFWS 2010). In the MSCP area, "the majority of the population is concentrated in a narrow, broken, north-south oriented band of remnant habitat at middle elevations" (USFWS and CDFW 1996).

Coastal California gnatcatchers are restricted to relatively low elevations. Ninety-four percent of a sample of coastal California gnatcatcher localities in coastal southern California was at or below elevations of 820 feet amsl, and 80 percent of inland localities in Riverside County occurred at elevations of 400 to 820 feet amsl (Atwood 1990). This restriction appears to be due to an inability for the subspecies to tolerate areas where the January mean minimum temperature is less than 36 degrees Fahrenheit (Mock 1998). This constraint also appears to affect the eastern limit of the subspecies' distribution (Mock 1998).

The USFWS estimated that approximately 2,562 pairs of coastal California gnatcatchers were in the United States in 1993 (1,514 in San Diego County) and 2,899 pairs in 1996. However, the latter number may have been due to an increased sampling effort since the amount of sage scrub available between 1993 and 1996 is believed to have decreased (USFWS 2004b). Both of these estimates were based on additive observations made over the span of several years without the benefit of a consistent, probability-based sampling design (Winchell and Doherty 2008). A more

recent study using rigorous sampling techniques estimated that between 976 and 1,673 pairs occurred on 111,006 acres of public and quasi-public lands in Orange and San Diego counties (Winchell and Doherty 2008).

There is inadequate data on which to base a conclusion regarding the current status and trend of the species in the MSCP Preserve beyond an accounting of conservation of potential habitat. Within the 1998 Final MSCP Plan boundary, approximately 54 percent (43,476 acres) of the total potential gnatcatcher habitat in the Preserve (80,372 acres) has been conserved, which includes 43,476 acres of coastal sage scrub. Approximately 26 percent of this preserved potential habitat (11,155 acres) is located within the County MSCP Subarea (CDFW Habitrak Data through 2013). An additional 7,132 acres of potential coastal sage scrub habitat have been conserved outside of the Preserve within the County's Subarea (CDFW 2014).

Occurrences within the Project Area: Five pairs of coastal California gnatcatchers were based on 2011 surveys, and approximately 286.6 acres of coastal sage scrub habitat occur in the plan area. An additional 5.4 acres of coastal sage-chaparral scrub also occur in the plan area.

Threats and Conservation Needs: The primary cause of the coastal California gnatcatcher's decline is the cumulative loss and fragmentation of coastal sage scrub by urban and agricultural development (Atwood 1990; ERC Environmental and Energy Services Company 1990). Up to 90 percent of coastal sage scrub vegetation was estimated to have been lost before 1981 (Westman 1981a, 1981b), and since the listing of this subspecies, the amount of coastal sage scrub has continued to decrease (USFWS 2001). Furthermore, air pollution, increases in fire frequency, and introduction of invasive non-native plants have all adversely affected coastal sage scrub (USFWS 2001).

Wildland fires, particularly those in 2003 and 2007, have burned thousands of acres of coastal California gnatcatcher habitat, including preserved habitat. Data indicate that more than one-third of the habitat in the southern California range of the subspecies has burned since 2003, and the overall fire frequency has been increasing over time as urbanization encroaches farther into wildlands (USFWS 2010). The burned areas are at risk of being overtaken by non-native grasses and forbs that can convert coastal sage scrub to other habitat types (USFWS 2009). Therefore, the threat from wildland fire is high and is anticipated to stay high for the foreseeable future (USFWS 2010), particularly if drought conditions continue. Drought can alter the number and frequency of fires, which can affect the numbers and distribution of the coastal California gnatcatcher. Prolonged drought, by itself, can also threaten coastal California gnatcatchers by adversely affecting the range and quality of coastal sage scrub.

Predation is thought to be the primary cause of reproductive failure for the coastal California gnatcatcher, and they are subject to predation by a variety of vertebrate predators (Sockman 1997; Braden et al. 1997), including human subsidized predators (e.g., house cats, raccoons, ground squirrels, and scrub jays). Brown-headed cowbirds also parasitize gnatcatcher nests (USFWS 1991; Ogden Environmental and Energy Services 1993; Braden et al. 1997), but predation and nest abandonment may be the cause of most losses (Braden et al. 1997).

Management measures that could be taken to benefit the gnatcatcher include removing exotic plant species from its shrubland habitats, avoiding disturbances that eliminate shrubby vegetation, managing fire frequency to maintain a semi-open shrub structure in coastal sage scrub, and creating/maintaining a network of habitat reserves linked by habitat linkages (Mock 2004).

Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) must include measures to reduce edge effects and minimize disturbance during the nesting period, fire protection measures to reduce the potential for habitat degradation due to unplanned fire, and management measures to maintain or improve habitat quality including vegetation structure. No clearing of occupied habitat within the County's Biological Resource Core Areas may occur between March 1 and August 15 (the project plan area is in a County Biological Resource Core Area).

Goal: Conserve existing populations of Covered Wildlife Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing populations of coastal California gnatcatcher and rufous-crowned sparrow within the OHCA through management and monitoring of 219.9 acres of Diegan coastal sage scrub and 5.4 acres of coastal sage-chaparral scrub.

The Applicant will conserve and manage approximately 225.3 acres coastal sage scrub gnatcatcher habitat within 304.6 acres of biological open space.

In order to achieve Objective 1, the following tasks will be implemented by the RMP:

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- The Resource Manager will evaluate habitat quality for coastal California gnatcatcher and southern California rufous-crowned sparrow per Task 2.3.1.

- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

- The Resource Manager will conduct assessments following fires per Task 4.2.3.

Conservation Analysis

Direct Effects

One pair of gnatcatchers and approximately 66.7 acres of its coastal sage scrub habitat (out of 292.0 acres in the plan area) would be directly lost as a result of construction and operation of the

project. Implementation of management and monitoring activities in the OHCA could result in minor disturbance to coastal California gnatcatchers and temporary loss of habitat (e.g., during the repair of fencing and weeding), but no direct loss of individuals is anticipated.

Implementation of the HCP's Conservation Measures is anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. Unavoidable impacts to the gnatcatcher and its habitat will be mitigated with the conservation of 225.3 acres of habitat and four pairs of gnatcatchers that will be added to the MSCP Preserve. The OHCA is contiguous with a large, core block of habitat that is conserved and managed by the BLM consistent with the goals and objectives of the MSCP. The OHCA would be managed by a conservation entity (approved by the Wildlife Agencies) that will be responsible for implementing the RMP.

In order to avoid the direct injury or mortality of eggs and nestlings, clearing of vegetation will occur outside the breeding season for the California gnatcatcher (March 1 through August 15). Some individual adults may be displaced as a result of habitat loss/degradation in association with the construction of Quarry. For birds whose use areas are destroyed or significantly reduced, the search for suitable habitat exposes them to increased predation pressure. Further, birds that are able to disperse from the area of habitat destroyed by grubbing or grading will likely have to engage in increased competition for remaining suitable habitat resulting in increased stress and energy expenditure beyond normal behavior, which can lead to death or reduced reproductive output for surviving birds. California gnatcatchers that do find suitable habitat could lose their mates and be unable to find new mates, at least initially after disturbance, again causing a decline, at least temporarily, in reproductive output. Finally, displaced birds that do not find suitable replacement habitat may starve or otherwise die from lack of shelter or predation. The lands to be conserved by the Applicant are located on site and are contiguous with the impact areas. In addition, the site is contiguous with a large block of BLM wilderness so there are areas of the habitat for the displaced birds to shift into without having to fly through developed areas.

Indirect Effects

Indirect effects that could impact the coastal California gnatcatcher include the degradation of habitat outside the footprint of the quarry as a result of increased night lighting, noise, non-native plant and animal invasion, and wildfires. Increased ambient light levels could alter bird behavior and increase the effectiveness of visually aided nocturnal predators (e.g., Rich and Longcore 2006). In order to minimize impacts from nighttime lighting, the Applicant will adhere to Division 9 of the San Diego County Light Pollution Code. Lighting within the project impact footprint will be of the lowest illumination allowed for human safety, selectively placed, shielded, and directed away from preserved habitat.

Noise minimization measures have been incorporated into the project design to reduce noise impacts to adjacent habitat (see noise minimization measures for Southern California rufous-crowned sparrow above). A noise analysis, prepared by HELIX (2013), determined that even with these noise minimization measures, the 60 dB L_{eq} noise level resulting from the processing plant operations and extraction activities would extend out past the ultimate project impact footprint at distances of between 12 and 875 feet. The biological technical report analyzed the worst-case

scenario that 20.6 acres of Diegan coastal sage scrub would be impacted. These indirect effects are being offset by preserving 20.6 acres of additional sage scrub habitat on site.

The ground disturbance associated with the construction of the quarry may facilitate the spread of non-native plant species into adjacent undisturbed habitat. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the coastal California gnatcatcher. Restoration of slopes adjacent to the proposed open space with an appropriate native seed mix will minimize the invasion of non-native plant species. The Applicant and land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the southern coastal California gnatcatcher.

Wildfire ignition sources may increase with implementation of Covered Activities adjacent to open space areas. For example, fuel management zones and other mowed areas are readily colonized by non-native plants, making these areas more susceptible to fire, particularly in areas accessible to the public. Another potential source of wildfire is the use of vehicles, mowers, or other construction equipment in vegetated areas where catalytic converters may ignite vegetation. The Applicant will minimize ignition sources by maintaining fire suppression devices on site at all times.

Effects to Critical Habitat: The plan area includes approximately 262.1.0 acres of designated critical habitat for the gnatcatcher within Unit 1 (South San Diego County). Unit 1 provides for connectivity and genetic interchange among core populations and contains large blocks of high-quality habitat capable of supporting persistent populations of coastal California gnatcatchers.

The PCEs for the coastal California gnatcatcher in the Plan Area include coastal sage scrub and non-sage scrub vegetation communities that provide space for individual and population growth, normal behavior, breeding, reproduction, nesting, dispersal, and foraging (72 FR 72010). The PCEs contained within Unit 1 may require special management considerations or protection to minimize impacts associated with habitat type conversion and degradation occurring in conjunction with urban and agricultural development (72 FR 72040).

The project will impact 77.1 acres of critical habitat that contain PCE's for the coastal California gnatcatcher. Conservation of 185.0 acres within the on-site open space will offset impacts.

Rationale for Coverage: This species was afforded coverage under the MSCP because over 73,300 acres of existing and potential gnatcatcher habitat will be conserved and linked together; over 81 percent of the core areas where the species occurs (Otay, San Miguel, Mission Trails, Santee, Kearny Mesa, Poway, San Pasqual, and Lake Hodges) will be conserved; and 65 percent (1,819 of 2,814) of the known locations will be conserved. Approximately 68 percent (57,874 acres) of habitat supporting core populations, 70 percent (30,273 acres) of very high value, and 62 percent (4,609 acres) high value coastal sage scrub habitat will be conserved. Critical habitat linkages between core areas will be conserved in a functional manner, with a minimum of 75 percent of the habitat within identified linkages conserved.

Area Specific Management Directives must include measures to reduce edge effects and minimize disturbance during the nesting period, fire protection measures to reduce the potential for habitat degradation due to unplanned fire, and management measures to maintain or improve habitat quality including vegetation structure. These measures would be addressed via implementation of an RMP. No clearing of occupied habitat within the County's BRCAs may occur between March 1 and August 15.

The project would preserve 185.0 acres (70.6 percent; assumes long-term conservation of 20.6 acres impacted by noise during the life of the project) of Diegan coastal sage scrub and coastal sage-chaparral scrub within the plan area and four of the five current (2011) pair sightings (80 percent) of this species in the 304.6-acre biological open space that would be subject to the RMP. In addition, the project would preserve 185.0 acres of Proposed Critical Habitat within the OHCA, compared to 77.1 acres of Critical Habitat impacted by the project. Therefore, the project would be consistent with the goals of the MSCP for this Covered Species.

The conservation actions under the HCP will provide for the conservation and management of coastal California gnatcatcher habitat and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for the coastal California gnatcatcher.

Mountain lion (*Puma concolor*)

Legal Status: Federal: None
State: Specially Protected Mammal

MSCP Subarea Plan: Covered

Species Description: The mountain lion is a large cat of the family Felidae native to the Americas (Iriarte et al. 1990). Males are larger than females and with an average weight ranging between 100 and 158 pounds; females range between 54 and 89 pounds. Body length ranges between 79 and 89 inches in males and 68 and 81 inches in females. The color of their fur ranges in color from tawny gray, tawny red, and several shades of brown. The back of the ears have black patches; the fronts of the ears are white. White fur can also be found around the mouth, underparts of the neck, chest, abdomen, legs and tail (Balanced Ecology, Inc. 2013).

Habitat Characteristics/Use: Mountain lions are habitat generalists, inhabiting a variety of habitats throughout California from deserts to the humid Coast Ranges (Dixon 1982). Mountain lions typically inhabit remote hilly or mountainous areas in forest and shrub habitats. Dickson and Beier (2005) found that mountain lions preferred riparian habitats and avoided human-dominated habitats, and that grasslands were the most avoided natural vegetation type. They are most abundant in areas that support a large population of deer, their primary prey. Within these habitat types, mountain lions tend to prefer areas that provide cover, for example rocky cliffs (Dixon 1982). They require open water for drinking, large foraging areas, and areas within which to den like rocky shelters or caves.

For purposes of this analysis, it is assumed that the entire plan area is potentially suitable to support the mountain lion. This includes a total of approximately 414.4 acres.

Life History: Home ranges for mountain lions can be 25 to 96 square miles for males and three to 12 square miles for females, with a typical minimum home range of 15 square miles per individual (Russell 1978, Hornocker 1970). In areas where habitat is limited, population densities can reach 10 adults per 100 square miles. Mountain lions are chiefly nocturnal, but may also be active during the day if undisturbed. These cats are active year-round and may travel up to 25 miles per night in search of food.

The primary prey of mountain lions includes mule deer (up to 60 to 80 percent of the diet), and mountain lions follow deer migration routes (Dixon 1982). Bauer et al. (2005) found that mountain lions also scavenged dead mule deer carcasses and at least one individual scavenged dead domestic livestock. Other prey includes rabbit, rodents, coyotes, snakes, and occasionally livestock. As mountain lion densities increase in a given area or as habitat is removed, individuals likely disperse in search of new home ranges. Siblings sometimes disperse as a group and may remain together for three months or more (McCarthy and Williams 1995).

Status and Distribution: The mountain lion ranges from the Canadian Yukon to the southern Andes of South America. It has the greatest range of any large, wild, terrestrial mammal in the Western Hemisphere (Iriarte et al. 1990), but it is restricted primarily to unpopulated regions in western North America (Hall and Kelson 1959).

Historically, mountain lions occurred throughout most of North America and from coast to coast in the United States, but its current distribution is much reduced. In the United States today, mountain lions occur west of the Rocky Mountains and in small, scattered populations to the east (Currier 1983). In California, mountain lions are found at elevations from sea level to about 10,000 feet except in the Central Valley and extreme southeast deserts. Based on data for 43,000 locations of mountain lion sightings in southern California, most locations were found on public land (65 percent), undeveloped private land (14 percent), and rural land (14 percent; Burdett et al. 2008). It was also discovered that mountain lions selected against areas with housing densities that had less than 40 acres per unit (Burdett et al. 2008). Approximately nine percent of the locations occurred in areas projected to become suburban or urban by 2030, indicating that more suitable habitat for the mountain lion will be disappearing.

Recent California population estimates range from 2,500 to 5,000 individuals with an increasing population trend. The CDFW (2007) provides a rough estimate of between 4,000 and 6,000 mountain lions statewide. In coastal San Diego County, mountain lions are known from Camp Pendleton, Palomar, Carlsbad, San Marcos, Escondido, Laguna Indian Reservation, Los Peñasquitos Canyon Reserve, Del Mar, Torrey Pines State Park, Marine Corps Air Station Miramar, Poway, Sweetwater River, and Otay Lakes.

There have been an increased number of mountain lion sightings in areas where they were not previously documented. This could be attributed to loss of habitat, shifting prey base, dispersing young, and/or an expanding suburban interface that increases the likelihood of human/mountain lion encounters. The loss of suitable habitat from expanding suburban development is likely a

factor driving mountain lions into marginal areas around these residential centers. Another possible explanation is that the mountain lion population is expanding, and areas of suitable habitat are already occupied. Therefore, young mountain lions must disperse in search of new territories (Torres et al. 1996) resulting in a greater number of human/mountain lion encounters. This may be the case for areas such as Inyo, Lassen, Modoc, and Mono counties where the human population has not greatly increased, and the landscape has changed little in more than 50 years (Torres et al. 1996).

A genetic study of mountain lions in California indicates that the southern California populations may function as a metapopulation, and human developments threaten to eliminate habitat and movement corridors that support this metapopulation (Ernest et al. 2003).

There is inadequate data on which to base a conclusion regarding the current status and trend of the species in the MSCP Preserve beyond an accounting of conservation of potential habitat. The species was afforded coverage under the MSCP because 81 percent of the Biological Resource Core Areas that support its habitat will be conserved. While CDFW's Habitrak keeps an accounting of habitats conserved in the MSCP Preserve, it does not identify whether or not those habitats are in Biological Resource Core Areas. The OHCA will also be conserved and managed consistent with the goals and objectives of the MSCP.

Occurrences within the Project Area: Neither the mountain lion, nor sign of mountain lion (e.g., scat or tracks) was observed in the project plan area. Tracks were observed in the vicinity, however, and a mule deer was observed in the habitat that will be biological open space. It is assumed that the entire plan area (approximately 414.4 acres) is suitable mountain lion habitat.

Threats and Conservation Needs: The primary threats to the mountain lion are loss and fragmentation of large expanses of suitable habitats and human/mountain lion interactions that typically result in the death of the individual mountain lion involved. Roadkill is a frequent factor in more urbanized areas (Beier 1993).

Large-scale, intense, wildland fires have the potential to remove protective cover and the mountain lions' prey base, which may displace mountain lions for a period of time. However, fire plays an important role in determining the suitability of habitat for mountain lions. Fires that reduce canopy closure, increase vigor and accessibility, and improve palatability of shrub species preferred by deer benefit mountain lion populations. In California chaparral, mountain lions were attracted to the edges of recent burns where deer tended to congregate. Fire exclusion, on the other hand, has the potential to allow vegetation to mature to a level where it is less suitable for deer, which can adversely affect mountain lions (Quinn 1990).

Mountain lion hunting has not been allowed in California since 1972 (Torres et al. 1996) and in 1990, a State ballot initiative (Proposition 117) was passed into law, establishing the California Wildlife Protection Act of 1990 and designating the mountain lion as a "specially protected mammal." This designation generally prohibits the "taking" (hunting or killing), injury, possession, or sale of mountain lions in California. However, provisions of the Act allow for the issuance of depredation permits when a mountain lion: (1) is perceived as an imminent threat to public health or safety, (2) damages livestock or other property, or (3) is attacking people.

The linkage at Coal Canyon from the Santa Ana Mountains to the Chino Hills State Park has been identified as important to maintaining lions in the Santa Ana Mountains and Chino Hills. Landscape linkages from the Santa Monica Mountains to the San Gabriel Mountains to the San Bernardino Mountains to the San Jacinto Mountains to Palomar Mountain to the San Diego Mountains and Santa Ana Mountains are very important for long-term viability of the mountain lion in southern California. Linkages to the Central Coast, Sierras and Baja California are also very important (U.S. Forest Service [USFS] 2005).

Goal: Conserve existing populations of Covered Wildlife Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain habitat to help support the regional mountain lion and southern mule deer population through management and monitoring of 304.6 acres of suitable habitat.

The Applicant will conserve and manage approximately 304.6 acres of biological open space, which would contribute to the preservation of mountain lion habitat in the MSCP Preserve.

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- The Resource Manager will record species observations per Task 2.2.1.

- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

Conservation Analysis

Direct Effects

Of the approximately 414.4 acres of potentially suitable habitat for the mountain lion in the plan area, approximately 107.4 acres (not including disturbed habitat and developed) would be directly lost as a result of construction and operation of the project. Implementation of management and monitoring activities in the OHCA could result in temporary disruptions in habitat usage, but no direct loss of individuals is anticipated.

Implementation of the HCP's Conservation Measures is anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. Unavoidable impacts to the mountain lion will be mitigated with the conservation of 304.6 acres of biological open space that will be added to the MSCP Preserve. The OHCA is contiguous with a large, core block of habitat that is conserved and managed by the BLM consistent with the goals and objectives of the MSCP.

The OHCA would be managed by a conservation entity (approved by the Wildlife Agencies) that will be responsible for implementing the RMP.

No direct impacts to individuals are anticipated because mountain lions are anticipated to avoid the impact area during initial clearing, and because the impact footprint will be fenced to keep mountain lions out of the quarry operation.

Indirect Effects

Indirect effects to the mountain lion would include a potential for reduction of its primary prey base, mule deer, through habitat modification, increased night lighting, and noise.

The ground disturbance associated with the construction of the quarry may facilitate the spread of non-native plant species into adjacent undisturbed habitat. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the mule deer, which would in turn reduce the prey base for the mountain lion. Restoration of slopes adjacent to the proposed open space with an appropriate native seed mix will minimize the invasion of non-native plant species. The Applicant and land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the mule deer, which will in turn improve the prey base for the mountain lion.

Night lighting and noise could affect use patterns of the mountain lion in the area immediately adjacent to the quarry operation. In order to minimize impacts from nighttime lighting, the Applicant will adhere to Division 9 of the San Diego County Light Pollution Code. Lighting within the project impact footprint will be of the lowest illumination allowed for human safety, selectively placed, shielded, and directed away from preserved habitat.

Noise minimization measures have been incorporated into the project design to minimize noise impacts to adjacent habitats, as noted in the Southern California rufous-crowned sparrow section above.

Southern mule deer (*Odocoileus hemionus fuliginata*)

Legal Status: Federal: None
State: None

MSCP Subarea Plan: Covered

Species Description: The southern mule deer is one of seven subspecies of the genus *Odocoileus*. It is an herbivore and an ungulate, which roughly means that it has hooves. Mule deer vary in size depending on region, and males are typically larger than females. Carcass weight in males ranges from 99 to 550 pounds and in females from 97 to 165 pounds (Wallmo 1981 *in* Misuraca 1999). The pelage ranges from dark brown-gray, dark and light ash-gray to brown and even reddish. The rump patch may be white or yellow; the throat patch is white (Geist 1981 *in* Misuraca 1999).

Habitat Characteristics/Use: Mule deer require cover for security, thermal protection, and snow interception (Biswell 1961, Bunnell 1990, Dorrance 1967, Geist 1981, Mackie et al. 2003, and Wallmo 1981 *in* Innes 2013). According to a review, concealment cover is provided by vegetation within seven feet of the ground. Olson (1992 *in* Innes 2013) described patches of concealment cover as "any vegetation capable of hiding 90 percent of a mule deer from human view at a distance ≤200 feet." Mature chaparral stands provide essential cover and forage for mule deer during parts of the year (Wallmo 1981 *in* Innes 2013). Mule deer summer foraging sites in California chaparral include riparian areas, seeps, springs, streams, and ponds. In fall, foraging sites include stream bottoms, ridge tops, and northern slopes. In winter, mule deer forage on south slopes and sheltered ridges (Ashcraft 1979 *in* Innes 2013).

Mule deer forage-site selection is based in part on forage quantity and nutritional quality, which are influenced by plant species composition, plant phenology and related changes in nutrition, site characteristics (soil, shade, and topography), successional stage, grazing and browsing pressure, and weather. Mule deer forage-site selection is also affected by predation risk and proximity of foraging sites to drinking water and habitats providing cover. Edge habitat is generally considered important to deer because of high habitat diversity within ecotones and easy access to more than one habitat type (Bendell 1974 and Kucera 1991 *in* Innes 2013). Mule deer commonly use edges between burned and unburned habitats (Innes 2013).

In the southwestern United States, mule deer occur in a range of habitats including desert shrublands at the lowest elevations; semidesert shrubland-grassland communities, chaparral, mountain shrub, and woodlands at middle elevations; and some forests at high elevations (Wallmo 1981 *in* Innes 2013). Desert grasslands without shrubs do not have mule deer unless they contain rugged topography or riparian areas. Dry washes are important to mule deer in semidesert grasslands because they provide food as well as resting, escape, and travel cover throughout the year (Severson and Medina 1983 *in* Innes 2013).

For purposes of this analysis, it is assumed that the entire plan area is potentially suitable to support the mule deer. This includes a total of approximately 414.4 acres.

Life History: According to reviews, mule deer are most active in early morning, late afternoon, and early evening (Dorrance 1967 and Olson 1992 *in* Innes 2013). Mule deer are classified as intermediate or mixed feeders and can switch from a diet composed primarily of grasses and forbs to one primarily of browse (Anderson and Wallmo 1984, Geist 1981, and Mackie 1981 *in* Innes 2013).

Social structure in mule deer is organized around family groups consisting of ≥ two generations of related females and their male and female offspring (Mackie et al. 2003 *in* Innes 2013). Adult bucks may form groups, although they often remain solitary (deVos et al. 1967 and Dorrance 1967 *in* Innes 2013).

The breeding season (rut) begins as early as September and ends as late as March, depending upon location (Anderson and Wallmo 1984 and Mackie et al. 2003 *in* Innes 2013). Within a given location, however, breeding tends to occur within a short period (Anderson and Wallmo 1984 *in* Innes 2013), for example, between 21 November and 1 December in eastern Montana (Hamlin

and Mackie 1989 *in* Innes 2013). A single buck may breed many females, and a single doe may breed several times during a single estrous period (Bunnell 1990 and Mackie et al. 2003 *in* Innes 2013).

Gestation ranges from 183 to 218 days (Anderson and Wallmo 1984, Bunnell 1990, and Mackie et al. 2003 *in* Innes 2013). In the south, birthing occurs primarily in July and August (Mackie et al. 2003 and Severson and Medina 1983 *in* Innes 2013). Like the rut, fawning periods tend to occur within a short period but may last longer in arid areas. Fawns begin to consume green vegetation at two weeks old and are weaned in fall, when their mothers breed again (Anderson and Wallmo 1983, Ashcraft 1979, Dorrance 1967, and Mackie et al. 2003 *in* Innes 2013). Young remain with their mothers until the following spring (Mackie et al. 2003 *in* Innes 2013).

Mule deer may inhabit the same range throughout the year or migrate to separate summer-fall and winter ranges (Hygnstrom et al. 2008 and Mackie et al. 2003 *in* Innes 2013). Non-migratory individuals tend to occur at low elevations year-round (Hanley 1984 *in* Innes 2013). According to reviews, mean annual home range sizes for mule deer vary from 74 to 34,220 acres. Fidelity to traditional home ranges can be so great that deer will "starve to death" rather than travel "a few kilometers" to abundant forage (Dasmann and Taber 1956 cited in Hanley 1984 *in* Innes 2013). During a fire, mule deer may not leave their home ranges even as their home ranges burn (Shantz 1947 *in* Innes 2013).

Status and Distribution: Mule deer occur in all of the biomes of western North America north of central Mexico except the arctic tundra (Anderson and Wallmo 1984 and Wallmo and Regelin 1981 *in* Innes 2013). There are gaps in mule deer distribution in the Mojave and Sonoran deserts; high-elevation or cold deserts and plains grasslands; the Central Valley of California; and probably the Great Salt Lake desert region. They have been introduced in Hawaii and several islands in Prince William Sound (Mackie et al. 2003 *in* Innes 2013).

There is inadequate data on which to base a conclusion regarding the current status and trend of the species in the MSCP Preserve beyond an accounting of conservation of potential habitat. The species was afforded coverage under the MSCP because 81 percent of the Biological Resource Core Areas that support its habitat will be conserved. While CDFW's Habitrak keeps an accounting of habitats conserved in the MSCP Preserve, it does not identify whether or not those habitats are in Biological Resource Core Areas. The project impact footprint is in Core Area 4, which is not part of the 81 percent conservation. The project's biological open space, however, is in Core Area 5, as is all of the contiguous lands to the north and east that are conserved and managed by the BLM consistent with the goals and objectives of the MSCP. The OHCA will also be conserved and managed consistent with the goals and objectives of the MSCP.

Occurrences within the Project Area: Mule deer were observed in the plan area during surveys that occurred from 2000 to 2003 and in 2012 during a burrowing owl survey. It is assumed that the entire plan area (approximately 414.4 acres) is suitable mule deer habitat.

Threats and Conservation Needs: Threats to mule deer populations include overharvesting, increased human disturbance, and non-native invasive plants. Human development generally reduces mule deer use of developed areas (Mackie et al. 2003 and Wallmo 1981 *in* Innes 2013).

Some sources suggested that the carrying capacity of rangeland for mule deer may be reduced by non-native invasive plants that displace more palatable native grasses and forbs (Bodurtha et al. 1989, Duncan 2005, Lym and Duncan 2005, and Rice 2005 *in* Innes 2013).

Major predators of mule deer include coyotes, mountain lions (*Puma concolor*), gray wolves (*Canis lupus*), bobcats (*Lynx rufus*), brown bears (*Ursus arctos*), American black bears (*Ursus americanus*), and humans (Anderson and Wallmo 1984, Connolly 1981, Geist 1998, and Mackie et al. 2003 *in* Innes 2013). Golden eagles are common predators of young (Anderson and Wallmo 1984, Connolly 1981, and Mackie et al. 2003 *in* Innes 2013). Numerous bacterial diseases and parasites infest mule deer and may cause mortality. Occasional epizootics in wild populations have been responsible for high mortality (Hibler 1981 *in* Innes 2013).

The generalization that fire benefits mule deer is supported by some but not all empirical studies. In general, the literature regarding fire effects on mule deer habitats indicates that fire sets back plant development and succession and removes accumulated litter, often increasing mule deer forage quality and/or quantity in the short term. Fire also tends to increase habitat patchiness, providing mule deer with abundant edge habitat and diverse vegetation. However, because mule deer depend on vegetation for forage, snow interception cover, hiding cover, and thermal protection, fire is likely to be detrimental to mule deer in the short term if it removes too much vegetation (Bendell 1974, Higgins et al. 1989, Severson and Medina 1983, and Shantz 1947 *in* Innes 2013). Fire may also facilitate establishment of unpalatable or invasive plants, which may reduce mule deer forage (Innes 2013).

Disturbance can produce habitat for mule deer by favoring forage growth and by creating ecotones between areas of dense cover and more open feeding areas. Conversely, loss of cover over large areas can be detrimental to mule deer (Hanley 1984 and Mackie et al. 2003 *in* Innes 2013). Several researchers suggested that resource managers may need to consider proximity of food, cover, and water before implementing actions that may impact mule deer habitats (Holechek 1982, Mackie et al. 2003, and Mackie 1981 *in* Innes 2013).

Goal: Conserve existing populations of Covered Wildlife Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain habitat to help support the regional mountain lion and southern mule deer population through management and monitoring of 304.6 acres of suitable habitat.

The Applicant will conserve and manage approximately 304.6 acres of biological open space, which would contribute to the preservation of mule deer habitat in the MSCP Preserve.

In order to achieve Objective 1, the following tasks will be implemented by the RMP:

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- The Resource Manager will record species observations per Task 2.2.1.

- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

Conservation Analysis

Direct Effects

Of the approximately 414.4 acres of potentially suitable habitat for the mule deer in the plan area, approximately 107.4 acres would be directly lost as a result of construction and operation of the project. Implementation of management and monitoring activities in the OHCA could result in short term disruption of use of the OHCA in the area where habitat management/monitoring is occurring, but no direct loss of individuals is anticipated.

Implementation of the HCP's Conservation Measures is anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. Unavoidable impacts to the mule deer will be mitigated with the conservation of 304.6 acres of biological open space that will be added to the MSCP Preserve. The OHCA is contiguous with a large, core block of habitat that is conserved and managed by the BLM consistent with the goals and objectives of the MSCP. The OHCA would be managed by a conservation entity (approved by the Wildlife Agencies) that will be responsible for implementing the RMP.

Indirect Effects

Increased night lighting, noise, non-native plant invasion, and wildfires are indirect effects that could impact the mule deer. Increased ambient light levels could increase the mule deer's susceptibility to predation by mountain lion. In order to minimize impacts from nighttime lighting, the Applicant will adhere to Division 9 of the San Diego County Light Pollution Code. Lighting within the project impact footprint will be of the lowest illumination allowed for human safety, selectively placed, shielded, and directed away from preserved habitat.

The ground disturbance associated with the construction of the quarry may facilitate the spread of non-native plant species into adjacent undisturbed habitat. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the mule deer. Restoration of slopes adjacent to the proposed open space with an appropriate native seed mix will minimize the invasion of non-native plant species. The Applicant and land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the mule deer.

As noted above, wildfire may have a positive and/or negative impact on mule deer, depending on the size of the fire, fire frequency and other factors. An increase in the number of wildfires could lead to increased non-native vegetative cover that is less palatable for mule deer. As noted above,

weeding of the OHCA will reduce this potential impact. The Applicant will minimize ignition sources by maintaining fire suppression devices on site at all times.

Rationale for Coverage: This species was afforded coverage under the MSCP because 81 percent of Biological Core Areas 5, 6, 7, 8, 9, 11, and 12 will be conserved. The project would impact 111.4 acres of potential mule deer habitat but would preserve 304.6 acres as biological open space subject to an RMP. Therefore, the project would be consistent with the goals of the MSCP for this Covered Species.

The conservation actions under the HCP will provide for the conservation and management of mule deer habitat and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for the mule deer.

San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*)

Legal Status: Federal: None
State: CNPS RPR 1B.1

MSCP Subarea Plan: Covered

Species Description: San Diego goldenstar is a perennial, bulbiferous herb with a yellow flower that is a member of the Themidaceae (Brodiaea) family (California Native Plant [CNPS] 2014, Pires 2013).

Habitat Characteristics/Use: San Diego goldenstar occurs in clay soils or cobbly loams on dry grassland mesas, hillsides, and around vernal pools (Reiser 1994). It is associated with coastal sage scrub, chaparral, valley grassland, freshwater wetland habitats, and openings in shrubby habitats (Smith and Berg 1988) and occurs at elevations from 50 to 465 meters amsl (CNPS 2014). Table 3-5 of the 1998 Final MSCP Plan lists grassland as San Diego goldenstar habitat.

Life History: San Diego goldenstar, as a perennial species, lives more than two years (Imes 1990). It blooms during the period of April to May (CNPS 2014).

Status and Distribution: This native species may be found from southwestern San Diego County to northwestern Baja California, Mexico. A survey of San Diego Natural History Museum for this plant collected over the past century indicates that few locations still exist in a natural state or that may support populations of this plant. In San Diego County, the species occurs in Carlsbad, Escondido Creek, Julian, Rancho Santa Fe, the vicinity of Lake Hodges, Del Mar Mesa, Carmel Mountain, Poway, Fernbrook, Marine Corps Air Station Miramar, Mira Mesa, Tierrasanta, Santee, Sweetwater River, Dehesa Mountain, Proctor Valley, Otay Mesa, and Marron Valley (Ogden Environmental and Energy Services 1995).

In the MSCP area, the species is restricted to coastal mesas and rarely occurs outside the MSCP area (Carlsbad). At the time of MSCP evaluation, there were 11 major populations in the MSCP

area. 4S Ranch contained the northern-most population. The largest populations were in Otay Mesa, Proctor Valley, and Santee (USFWS and CDFW 1996).

Baseline special status plant species surveys were carried out in 2001 and 2002 as part of biological monitoring of Covered Species required by the MSCP. The surveys were conducted on approximately 12,500 acres of land in the County that are currently within the boundary of the County's portion of the MSCP Preserve (County 2002). San Diego goldenstar was reported to be present in three of the eight areas surveyed. Four populations were recorded in the southwestern corner of 4S Ranch South and in the western portion of Otay Lakes South. The areas surveyed, however, only covered approximately 12,500 acres of the 57,354 acres of land within the boundary of the County's portion of the MSCP Preserve (CDFW Habitrak Data). Therefore, there is still inadequate data on which to base a conclusion regarding the current status and trend of the species in the MSCP Preserve.

Occurrences within the Project Area: San Diego goldenstar was found in Diegan coastal sage scrub, southern mixed chaparral, non-native grassland, and native grassland habitats in the plan area. An estimate of San Diego goldenstar numbers using several years of survey data resulted in a total population estimate of 12,388 individuals in the plan area, although it is likely that not all of the corms sprouted each year. Most of these plants occur within four primary populations. Virtually all of the plants occur on north- and west-facing slopes in the plan area. The Likely Limits of Occurrence (suitable habitat) for this species in the plan area totals 82.52 acres.

Threats and Conservation Needs: Threats to this species include urbanization, road construction, vehicles, non-native plant species, and illegal dumping (CNPS 2014). This species was afforded coverage under the MSCP because eight of 11 major populations, 125 of 144 occurrences, and 38 percent of grassland will be conserved. Presently, there are 11,200 acres of grassland within the MSCP Preserve boundary, and 5,836 acres (52 percent) have been conserved (CDFW Habitrak Data through 2013). Within the County's Subarea, there are 2,145 acres of grassland within the MSCP boundary, and 1,067 acres (44 percent) have been conserved (CDFW Habitrak Data through 2013).

Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) require monitoring of transplanted populations and specific measures to protect against detrimental edge effects.

Goal: Conserve existing and transplanted occurrences of Covered Plant Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing population(s) of San Diego goldenstar within the OHCA through management and monitoring of 69.46 acres of suitable habitat that includes five populations totaling 11,174 individuals (and an additional 1,214 translocated individuals) that will provide long-term persistence (> than 100 years) of the on-site San Diego goldenstar population.

The Applicant will conserve and manage three populations (more than 11,174 individuals) of San Diego goldenstar and 69.46 acres of suitable habitat in 304.6 acres of biological open space.

In order to achieve Objective 1, the following tasks will be implemented by the RMP.

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- The Resource Manager will record species observations per Task 2.2.1.

- **Task 3.1.1:** *Conduct High Priority Rare Plant Surveys*. Evaluate San Diego goldenstar, Orcutt's birds-beak, and variegated dudleya populations every year per SDMMP requirements. Surveys shall be conducted at the appropriate time of year for these species.

  If San Diego goldenstar, Orcutt's birds-beak, or variegated dudleya populations show a significant decline in numbers, area, or health, and the reduction cannot be attributed to a lack of rainfall, the Resource Manager will identify potentially causative agents such as non-native plant invasions and initiate discussions with the County and Wildlife Agencies to identify feasible strategies to increase population numbers in the OHCA. Such strategies might include supplemental weed control in higher density plant areas and seed collection and establishing nursery stock for population augmentation. Contingency funds may be used for this purpose if deemed appropriate by the Resource Manager, County, and Wildlife Agencies. Management and monitoring of suitable habitat is included in tasks 1.1.4 through 1.1.8.
- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

Goal 2: Mitigate for impacts to Proposed Covered Species in conformance with the MSCP Plan and the County Subarea Plan.

Objective 1: Provide San Diego goldenstar mitigation at a 1:1 ratio by translocating corms located within the impact area, which are expected to support at least 1,214 individuals, into the OHCA.

Conservation Analysis

Direct Effects

Two smaller populations (representing 1,124 individuals) occur within the development footprint and would be directly lost as a result of construction and operation of the project, along with 13.06 acres of suitable habitat. Implementation of management and monitoring activities in the OHCA could result in minor disturbance to San Diego goldenstar (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP's Conservation Measures is anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. Unavoidable impacts to San

Diego goldenstar will be mitigated with the conservation of three populations (more than 11,174 individuals) that will be added to the MSCP Preserve. The OHCA is contiguous with a large, core block of habitat that is conserved and managed by the BLM consistent with the goals and objectives of the MSCP. The OHCA would be managed by a conservation entity (approved by the Wildlife Agencies) that will be responsible for implementing the RMP.

Indirect Effects

Increased fire frequency and increases in non-native plant species could indirectly impact this species. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the San Diego goldenstar. The Applicant and land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the San Diego goldenstar.

Increased fire frequency could result in an increase in non-native cover. Wildfire ignition sources may increase with implementation of Covered Activities adjacent to open space areas. The Applicant will minimize ignition sources by maintaining fire suppression devices on site at all times.

Rationale for Coverage: This species was found on north-facing slopes in the plan area with a total estimate of 12,388 individuals. Of those, 1,214 individuals would be directly impacted by the project. This species was afforded coverage under the MSCP because eight of 11 major populations, 125 of 144 occurrences, 84 percent of suitable habitat, and 38 percent of grasslands will be conserved. The MSCP 1995 and 1996 Species Evaluations (USFWS and CDFW 1996) states that "the major population in the 70 percent zone in the SE Otay Mesa area should be protected at 100 percent" in the 1995 analysis. The 1996 analysis simply identifies the population as occurring within a Major Amendment area. Area-specific management directives will include monitoring of the transplanted populations(s) and specific measures to protect against detrimental edge effects to this species.

Section 86.507 of the BMO requires that impacts to sensitive plants be avoided to the maximum extent practicable. Where complete avoidance is infeasible, encroachment may be authorized depending on the sensitivity of the individual species and the size of the population except that encroachment shall not exceed 20 percent of the population on site. Impacts to 1,214 of 12,388 individuals (9.8 percent) of San Diego goldenstar do not exceed the 20 percent encroachment limit. The project would preserve 11,174 individuals (90.2 percent of the population within the plan area and five of the six primary populations) of San Diego goldenstar. The BMO requires mitigation for impacts to this species. Mitigation shall include the preservation of the 69.46 acres of suitable habitat supporting 11,174 individuals on the Project site in the OHCA in addition to the translocation of corms located within the impact area.

Mitigation for San Diego goldenstar shall be mitigated by phase as follows:

- All San Diego goldenstar corms that are located within each phase shall be translocated according to Appendix C prior to implementation of mining activities within that phase.

Phase 1 – at least 400
Phase 2a – at least 813
Phase 2b – at least 1

Given the significant population conserved (11,174 individuals), transplantation of impacted bulbs would be appropriate mitigation to meet overall mitigation obligations for this species. The Applicant also would fund implementation of an RMP that includes measures to protect and enhance the preserved and created populations. Therefore, the project would be consistent with the goals of the MSCP for this Covered Species.

The conservation actions under the HCP will provide for the conservation and management of San Diego goldenstar and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for the San Diego goldenstar.

Dunn's mariposa lily (*Calochortus dunnii*)

Legal Status: Federal: None
State: CNPS RPR 1B.2

MSCP Subarea Plan: Covered, Narrow Endemic

Species Description: Dunn's mariposa lily is a perennial, bulbiferous herb of the Liliaceae (Lily) family.

Habitat Characteristics/Use: This species occurs in rocky openings in chaparral, grassland/ chaparral ecotone, and closed-cone coniferous forest. It appears to be restricted to metavolcanic-and gabbroic-derived soils (CNPS 2014).

Life History: Dunn's mariposa lily is a perennial species. It blooms during the period of February to June (CNPS 2014).

Status and Distribution: This species occurs in San Diego County, California and Baja California, Mexico at elevations from 185 to 1,830 meters amsl (CNPS 2014). In San Diego County, Reiser (2001) reports it as uncommon on San Miguel Mountain and the western face of the Jamul Mountains. It has also been reported on Otay Mountain extending at higher elevations to the Cuyamaca Mountains and near Guatay Mountain (Reiser 2001).

Occurrences within the Project Area: Two individuals were observed in 2004 and eight were observed in 2011 in association with chamise chaparral in the plan area; however, it is likely that not all of the bulbs sprouted each year. All known occurrences of Dunn's mariposa lily are located in habitat that will be conserved in biological open space.

Threats and Conservation Needs: Threats to Dunn's mariposa lily include development, non-native plant species, and vehicles (CNPS 2014). This species was afforded coverage under the MSCP because 100 percent of the major populations will be conserved.

Goal: Conserve existing and transplanted occurrences of Covered Plant Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing population(s) of Dunn's mariposa lily, Orcutt's bird's beak, Tecate cypress, San Diego barrel cactus, and Gander's pitcher sage within the OHCA through management and monitoring of suitable habitat.

The Applicant will conserve and manage all known Dunn's mariposa lilies in the plan area in 304.6 acres of biological open space.

In order to achieve Objective 1, the following tasks will be implemented by the RMP.

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- The Resource Manager will record species observations per Task 2.2.1.

- **Task 3.4.1:** *Other Sensitive Plant Species.* Evaluate Dunn's mariposa lily, Otay tarplant, Tecate cypress, San Diego barrel cactus, and Gander's pitcher sage populations every five years using the SDMMP sampling protocol. Surveys shall be conducted at the appropriate time of year for these species, as necessary. Several of these species, including Dunn's mariposa lily, Orcutt's bird's beak, and Tecate cypress, have very small populations on site and population trends for these species will be difficult to track. For San Diego barrel cactus and Gander's pitcher sage, if populations of any of these species show a significant decline in numbers, area, or health for two consecutive survey periods, the Resource Manager will identify potentially causative agents such as non-native plant invasions and initiate discussions with the County and Wildlife Agencies to identify feasible strategies to increase population numbers in the OHCA. Such strategies might include supplemental weed control in higher density plant areas and seed collection and establishing nursery stock for population augmentation. Contingency funds may be used for this purpose if deemed appropriate by the Resource Manager, County, and Wildlife Agencies.

- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

Conservation Analysis

Direct Effects

There would be no direct effects to all known locations of Dunn's mariposa lily as a result of construction and operation of the project; all known locations of individuals will be conserved in biological open space.

Indirect Effects

Increased fire frequency and increases in non-native plant species could indirectly impact this species. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the Dunn's mariposa lily. The Applicant and land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the Dunn's mariposa lily.
Increased fire frequency could result in type conversion from chaparral to grassland habitat and increase in non-native cover. Wildfire ignition sources may increase with implementation of Covered Activities adjacent to open space areas. For example, fuel management zones and other mowed areas are readily colonized by non-native plants, making these areas more susceptible to fire, particularly in areas accessible to the public. The Applicant will minimize ignition sources by maintaining fire suppression devices on site at all times.

Rationale for Coverage: Ten individuals of Dunn's mariposa lily were found in habitat that would be preserved. Zero individuals would be directly impacted. The MSCP 1995 and 1996 Species Evaluations (USFWS and CDFW 1996) assumed 100 percent conservation of major populations outside of Major Amendment areas, and assumed that 100 percent conservation would be conserved within the Major Amendment area, although a protection mechanism had not been identified at that time. The MSCP assumes 100 percent conservation. The project is consistent with the goals of the MSCP for this Covered Species.

The conservation actions under the HCP will provide for the conservation and management of Dunn's mariposa lily and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for Dunn's mariposa lily.

Orcutt's bird's beak (*Cordylanthus orcuttianus*)

Legal Status: Federal: None
State: CNPS RPR 2.1

MSCP Subarea Plan: Covered

Species Description: Orcutt's bird's beak is a hemiparasitic, annual, herb that is a member of the Orobanchaceae (Broomrape) family.

Habitat Characteristics/Use: The preferred habitat of this species is seasonally dry drainages and uplands adjacent to riparian habitats (Reiser 2001). The CNPS (2014) lists its habitat as coastal scrub at elevations from 10 to 350 meters amsl.

Life History: Orcutt's bird's beak, as a hemiparasitic plant, derives some of its nutritional requirements from another living plant as well as from photosynthesis to some degree. As an annual species, it completes its life cycle in one growing season. Orcutt's bird's beak blooms during the period March to September (CNPS 2014).

Status and Distribution: Orcutt's bird's beak is known from six occurrences in southwestern San Diego County and Baja California, Mexico. It may be present in other areas where conditions are favorable (CNPS 2014). Its distribution in the MSCP consists of highly disjunct, local populations in extreme southwestern San Diego County including coastal canyons from the vicinity of Chula Vista south to the border with Mexico and inland as far as the lower Jamul Creek drainage. The largest local population is on the Otay River west of Interstate 805 (USFWS and CDFW 1996).

Occurrences within the Project Area: Twenty-one individuals of this species were observed in the plan area in 2001 (one in southern mixed chaparral and 20 in Diegan coastal sage scrub). All of these individuals are located in habitat that will be conserved in biological open space.

Threats and Conservation Needs: Orcutt's bird's beak is threatened by urbanization, trail widening, and non-native plant species (CNPS 2014). This species was afforded coverage under the MSCP because 75 percent of the major populations will be conserved.

Goal: Conserve existing and transplanted occurrences of Covered Plant Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing population(s) of Dunn's mariposa lily, Orcutt's bird's beak, Tecate cypress, San Diego barrel cactus, and Gander's pitcher sage within the OHCA through management and monitoring of suitable habitat.

The Applicant will conserve and manage all Orcutt's bird's beak in the plan area in 304.6 acres of biological open space.

In order to achieve Objective 1, the following tasks will be implemented by the RMP.

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- The Resource Manager will record species observations per Task 2.2.1.

- The Resource Manager will conduct high priority rare plant surveys per Task 3.1.1.

- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

Conservation Analysis

Direct Effects

There would be no direct effects to Orcutt's bird's beak as a result of construction and operation of the project; all individuals will be conserved in biological open space.

Indirect Effects

Increased fire frequency and increases in non-native plant species could indirectly impact this species. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the Orcutt's bird's beak. The Applicant and land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the Orcutt's bird's beak.

Increased fire frequency could result in an increase in non-native cover and type conversion from sage scrub to grassland habitat. Wildfire ignition sources may increase with implementation of Covered Activities adjacent to open space areas.

Rationale for Coverage: Twenty-one individuals of Orcutt's bird's beak were found in habitat that would be preserved. Zero individuals would be directly impacted. The MSCP assumes 100 percent conservation of major populations for the species. The project is consistent with the goals of the MSCP for this Covered Species.

The conservation actions under the HCP will provide for the conservation and management of Orcutt's bird's beak and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for Orcutt's bird's beak.

Tecate cypress (*Hesperocyparis* [*Cupressus*] *forbesii*)

Legal Status: Federal: None
State: CNPS RPR 1B.1

MSCP Subarea Plan: Covered

Species Description: Tecate cypress is a perennial, evergreen, cone-bearing small shrub or tree (CNPS 2014, Bartel 2013).

Habitat Characteristics/Use: This plant is found in association with closed cone coniferous forest and chaparral with clay, gabbroic, or metavolcanic soil (CNPS 2014). This species prefers well-drained, north-facing slopes (Reiser 2001). Table 3-5 of the 1998 Final MSCP Plan lists Tecate cypress forest as Tecate cypress habitat.

Life History: Tecate cypress is a perennial species. To germinate, the seed typically requires bare mineral soil such as occurs after a fire (Reiser 2001).

Status and Distribution: Tecate cypress is known to occur from fewer than five locations in Orange and San Diego counties, California (County 2002). This species' distribution in the MSCP area is limited to Otay Mountain and its lower drainages in the southeast corner of the area. This is the largest population in the county; smaller stands occur in scattered locations east of Otay Mountain and at higher elevations in the foothills (USFWS and CDFG 1996).

There is inadequate current data on which to base a conclusion regarding the current status and trend of the species in the MSCP Preserve beyond an accounting of conservation of potential habitat. Within the 1998 Final MSCP Plan boundary, approximately 99 percent (5,601 acres) of the total area of Tecate cypress forest in the MSCP Preserve (5,641 acres) has been conserved. None of this habitat is located within the County MSCP Subarea's portion of the Preserve (CDFW Habitrak Data through 2013; County 2013). According to Table 3-5 of the 1998 Final MSCP Plan, most conserved Tecate cypress forest is on BLM-managed lands.

Occurrences within the Project Area: Seventy-eight individual Tecate cypress occur within southern interior cypress forest and in other scattered locations in the plan area.

Threats and Conservation Needs: Threats to this species include alteration of fire regimes and mining (CNPS 2014). Area Specific Management Directives for protected Tecate cypress (Table 3-5 of the 1998 Final MSCP Plan) require specific measures to maintain or increase populations. Such measures must include addressing the autecology and natural history of the species and to reduce the risk of catastrophic fire. Management measures to accomplish this may include prescribed fire.

Goal: Conserve existing and transplanted occurrences of Covered Plant Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing population(s) of Dunn's mariposa lily, Orcutt's bird's beak, Tecate cypress, San Diego barrel cactus, and Gander's pitcher sage within the OHCA through management and monitoring of suitable habitat.

In order to achieve Objective 1, the following tasks will be implemented by the RMP.

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- The Resource Manager will record species observations per Task 2.2.1.

- The Resource Manager will conduct rare plant surveys per Task 3.4.1.

- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

- **Task 4.2.4**: *Conduct Assessments of the Status of Tecate Cypress Following Fires.* Following fires that burn areas supporting Tecate cypress, conduct assessments to determine if there is excessive mortality with no recruitment of new individuals. Additional seeding or planting of container stock may be required at the discretion of the Resource Manager.

Conservation Analysis

Direct Effects

There would be no direct effects to Tecate cypress as a result of construction and operation of the project; all individuals will be conserved in biological open space.

Indirect Effects

Increased fire frequency and increases in non-native plant species could indirectly impact this species. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the Tecate cypress. The land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the Tecate cypress.

Increased fire frequency could kill Tecate cypress trees prior to them producing seed and result in type conversion of chaparral habitat to scrub or grassland habitat, and can increase non-native cover. Wildfire ignition sources may increase with implementation of Covered Activities adjacent to open space areas. The Applicant will minimize ignition sources by maintaining fire suppression devices on site at all times.

Rationale for Coverage: This species was afforded coverage under the MSCP because 98 percent of Tecate cypress forest (98 percent of major populations) will be conserved, primarily on BLM-managed lands. Area Specific Management Directives for protected Tecate cypress require measures to maintain or increase populations.

The conservation actions under the HCP will provide for the conservation and management of Tecate cypress and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the

requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for Tecate cypress.

Otay tarplant (*Deinandra conjugens*)

Legal Status: Federal: Endangered
State: Endangered; CNPS RPR 1B.1

MSCP Subarea Plan: Covered, Narrow Endemic

Species Description: Otay tarplant is an annual herb that is a member of the Asteraceae (Sunflower) family.

Critical Habitat Description: Three critical habitat units have been designated for Otay tarplant on 6,330 acres in San Diego County, California. Designated critical habitat includes sufficient habitat to maintain self-sustaining populations of Otay tarplant throughout its range. The individual units contain essential habitat for Otay tarplant and help to identify special management considerations for the species. The proposed project includes portions of Unit 3 (Otay Valley/Big Murphy's Unit) of the final critical habitat designation. Unit 3 encompasses approximately 2,250 acres and contains populations in the southern and eastern extent of the species' historical distribution. Unit 3 was designated because it contains multiple large Otay tarplant populations that are capable of producing large numbers of individuals in good years, which is important for this species to survive through a variety of natural and environmental changes, as well as stochastic (random) events (67 FR 76042).

Primary Constituent Elements (PCEs) are the physical and biological features essential to the conservation of the species that may require special management considerations or protection. The PCEs for Otay tarplant critical habitat are soils with a high clay content (generally greater than 25 percent) or clay intrusions or lenses that are associated with grasslands, open coastal sage scrub, or maritime succulent scrub communities between 80 and 1,000 feet elevation (67 FR 76040).

Please refer to the final critical habitat rule (67 FR 76030) for detailed information on the units, including their sizes, locations, and special management considerations.

Habitat Characteristics/Use: This species can be found in coastal scrub and valley and foothill grassland habitats with clay soils (CNPS 2014). Reiser (2001) states that the preferred habitat of this species is fractured clay soils in grasslands or lightly vegetated Diegan coastal sage scrub. The distribution of Otay tarplant is strongly correlated with clayey soils, subsoils, or lenses (isolated area of clay soil) (Bauder et al. 2002 *in* USFWS 2002). Such soils typically support grasslands, but may support some woody vegetation (USFWS 2002)

Life History: As an annual species, Otay tarplant completes its life cycle in one growing season. It blooms during the period of May to June (CNPS 2014) and requires cross-pollination with other individuals to produce viable seed. Major fluctuations may occur in the numbers of individuals appearing in populations based on the conditions (e.g., rainfall) for growth and reproduction in any given year (USFWS 2002).

Status and Distribution: Otay tarplant occurs in southwestern San Diego County and Baja California, Mexico at elevations from 25 to 300 meters amsl (CNPS 2014). The species has a limited distribution consisting of at least 25 historical populations near Otay Mesa in southern San Diego County and one population in Estado de Baja California, Mexico, near the U.S. border (CDFG 1994, Roberts 1997, CNDDB 2002, Reiser 1996, herbarium records at the SDNHM, S. Morey, in litt. 1994 *in* USFWS 2002). In the MSCP area, it is reported in the vicinities of Otay Mesa, the Otay River valley, and San Miguel Mountain (USFWS and CDFW 1996).

A population in excess of 730,000 individuals occurs within and adjacent to Johnson Canyon located within the Lonestar Ridge project site approximately two miles west of the plan area north of Brown Field (HELIX 2006). This large population represents the second largest known Otay tarplant population in California and is proposed for preservation under the City of San Diego's MSCP Subarea Plan (City of San Diego 1997). In addition, Otay tarplant (estimated at 97 individuals) occurs immediately south of the plan area according to the California Natural Diversity Data Base (CNDDB; CDFW 2006), and a second population of approximately 800 individuals occurs in six locations within grasslands southeast of the plan area (EDAW 2001a).

Occurrences within the Project Area: A total of 540 individuals of this species were reported in the plan area within three primary populations, the largest of which contained 400 individuals. The largest number recorded in the plan area in any given year was 540 individuals. A fourth population of 10 individuals occurs just outside the plan area at the entrance to the project. It is likely, however, that not all of the seeds germinate each year from the seed bank in the soil, so the potential population in any given year may fluctuate. Two of the populations in the plan area (510 individuals) occur in habitat to be preserved east of the development footprint. The third population (30 individuals) occurs in the western portion of the project impact footprint. This species is endemic to clay soils; however, San Miguel-Exchequer rocky silt loams, nine to 70 percent slopes (Bowman 1973) occur where these plants were found. The lower soil horizon of this mapped soil type does consist of clay, indicating that the species is likely occurring in areas where the upper soil horizon has been removed by erosion or other disturbance, or in small inclusions of clay within the upper soil horizon. Suitable habitat for this species within the plan area, based on slope orientation and vegetation type, is 23.27 acres. The plan area does not meet the MSCP threshold for major populations (1,000 individuals) as the species was not evaluated in the MSCP 1995 and 1996 Species Evaluations (USFWS and CDFW 1996).

Otay tarplant was also seeded as part of a restoration effort within the impact neutral area along the southern property boundary. Because this is not part of a natural population, it is not included in this assessment.

Threats and Conservation Needs: Urban development and agricultural activities, invasion of non-native plant species, and habitat fragmentation and degradation have resulted in the loss of suitable habitat across the species' range. Its annual growth habit and requirement for cross pollination to produce viable seeds puts the species at risk of population fluctuations and a decline in genetic variation due to variable weather conditions and the abundance of pollinators. Maintenance of the genetic variability within the species, through cross pollination, may be critical

to long-term survival. The extensive fragmentation of remaining populations may exacerbate these threats by reducing population connectivity (USFWS 2004a).

Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) must include specific measures for monitoring populations and adaptive management of preserves (taking into account extreme population fluctuations from year to year) and specific measures to protect this species from detrimental edge effects.

Goal: Conserve existing and transplanted occurrences of Covered Plant Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing population(s) of Otay tarplant within the OHCA through management and monitoring of 6.58 acres of suitable habitat that includes two populations totaling 510 individuals that will provide long-term persistence (> than 100 years) of the on-site Otay tarplant population.

The Applicant will conserve and manage two populations (representing 500 individual plants) and 6.58 acres of suitable habitat within 304.6 acres of biological open space.

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- The Resource Manager will record species observations per Task 2.2.1.

- The Resource Manager will conduct rare plant surveys per Task 3.4.1.

- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

Conservation Analysis

Direct Effects

Of the 540 individuals of Otay tarplant found in the plan area, 30 individuals and 16.69 acres of suitable habitat would be directly lost as a result of construction and operation of the project. Implementation of management and monitoring activities in the OHCA could result in minor disturbance to Otay tarplant (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP's Conservation Measures is anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. Unavoidable impacts to Otay tarplant will be mitigated with the conservation of two populations (500 individuals) that will be

added to the MSCP Preserve. The OHCA is contiguous with a large, core block of habitat that is conserved and managed by the BLM consistent with the goals and objectives of the MSCP. The OHCA would be managed by a conservation entity (approved by the Wildlife Agencies) that will be responsible for implementing the RMP.

Indirect Effects

Increased fire frequency and increases in non-native plant species could indirectly impact this species. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the Otay tarplant. The Applicant and land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the Otay tarplant.

Increased fire frequency could result in an increase in non-native cover. Wildfire ignition sources may increase with implementation of Covered Activities adjacent to open space areas. The Applicant will minimize ignition sources by maintaining fire suppression devices on site at all times.

Effects to Critical Habitat

Designated Critical Habitat for Otay tarplant occurs on 199.3 acres of the Project site. Impacts to 105.5 acres of Otay tarplant Designated Critical Habitat would occur on site (an additional 2.3 acres would be impact neutral), and 93.8 acres would be preserved. Otay tarplant was not observed on the off-site 4.7-acre parcel, however, and is not expected to occur there because of inappropriate soils.

Rationale for Coverage: Of the 540 individuals of Otay tarplant found in the plan area, 30 individuals, 16.69 acres of suitable habitat, and 105.5 acres of critical habitat would be directly impacted by the project. The project site does not meet the MSCP threshold for major populations (1,000 individuals) for this species and this population was not discussed in the MSCP 1995 and 1996 Species Evaluations (USFWS and CDFW 1996).

A population in excess of 730,000 individuals occurs within and adjacent to Johnson Canyon located within the Lonestar Ridge project site approximately two miles west of the plan area north of Brown Field (HELIX 2006). This large population represents the second largest known Otay tarplant population in California and is proposed for preservation under the City of San Diego's MSCP Subarea Plan. In addition, Otay tarplant (estimated at 97 individuals) occurs immediately south of the plan area according to the CNDDB (CDFW 2006), and a second population of approximately 800 individuals occurs in six locations within grasslands southeast of the plan area (EDAW 2001a).

This species was afforded coverage under the MSCP because 66 percent of major populations will be conserved. According to the MSCP, coverage of this species requires avoidance of populations in the Otay River Valley through sensitive design and development of the active recreation areas described in the Otay Ranch RMP and General Development Plan. One of the seven major populations occurs within the Proctor Valley amendment area. At the time permit amendments

are proposed, strategies to provide protection for this species within the amendment area must be included. Area-specific management directives must include specific measures for monitoring of populations, adaptive management of preserved populations (taking into consideration the extreme population fluctuations and from year to year), and specific measures to protect against detrimental edge effects to this species.

According to the BMO, List A and B species should be avoided when possible. Where complete avoidance is infeasible, encroachment may be authorized depending on the sensitivity of the individual species and the size of the population except that encroachment shall not exceed 20 percent of the population on site. The project would preserve 510 individuals (94.5 percent of the population within the plan area) of Otay tarplant. Because the project will not exceed the 20 percent impact, it is consistent with the BMO. The BMO requires mitigation for impacts to this species for unavoidable impacts to the 30 individuals. The applicant proposes to preserve 93.8 acres of Otay tarplant designated critical habitat and 6.58 acres of suitable habitat supporting 510 individuals of Otay tarplant (94.4 percent of the population on site including three primary populations). In addition, seeds will be collected from the Otay tarplant in the impact area and spread within suitable habitat in the OHCA prior to Phase 2a (Appendix C). The Applicant also would fund implementation of an RMP that includes measures to protect and enhance the preserved populations. Therefore, the project would be consistent with the goals of the MSCP for this Covered Species.

The conservation actions under the HCP will provide for the conservation and management of Otay tarplant and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for Otay tarplant.

Variegated dudleya (*Dudleya variegata*)

Legal Status: Federal: None
State: CNPS RPR 1B.2

MSCP Subarea Plan: Covered, Narrow Endemic

Species Description: Variegated dudleya is a member of the Crassulaceae (Stonecrop) family. It is a small, perennial herb with succulent leaves in one to three rosettes that are two to six centimeters wide. Its stems are one to three centimeters tall, and the plant has a yellow inflorescence on a five- to 20-centimeter tall stalk (Boyd 2013).

Habitat Characteristics/Use: This species can be found on clay soils in association with chaparral, cismontane woodland, coastal scrub, valley and foothill grassland, and vernal pools (CNPS 2014).

Life History: Variegated dudleya is a perennial species. It blooms during the period of April to June (CNPS 2014) and is deciduous in summer (Boyd 2013). The species is bisexual, or "perfect,"

meaning that each flower has everything needed to produce seed (i.e., anthers that produce pollen and ovules that develop in the ovary; Boyd 2013 and Plant and Soil Sciences eLibrary 2014).

Status and Distribution: Variegated dudleya occurs in San Diego County and Baja, California, Mexico at elevations from three to 580 meters amsl (CNPS 2014). The northern MSCP populations of this species are few in number and isolated. The densest populations are from Santee south (USFWS and CDFW 1996).

Baseline special status plant species surveys were carried out in 2001 and 2002 as part of biological monitoring of Covered Species required by the MSCP. The surveys were conducted on approximately 12,500 acres of land in the County that are currently within the boundary of the County's portion of the MSCP Preserve. Variegated dudleya was reported to be present in three of the eight areas surveyed consisting of 14 populations of approximately 2,029 individuals. This species was found in Santa Fe Valley (six populations of 295 individuals), Lusardi Creek (five populations of 1,694 individuals), and 4S Ranch South (three populations of 40 individuals, but the actual number is larger than reported). The investigators also report that the species is likely to occur on the Otay Lakes South parcel (County 2002). The areas surveyed, however, only covered approximately 12,500 acres of the 57,354 acres of land within the boundary of the County's portion of the MSCP Preserve (CDFW Habitrak Data). Therefore, there is still inadequate data on which to base a conclusion regarding the current status and trend of the species in the MSCP Preserve.

Occurrences within the Project Area: A total of approximately 4,987 individuals of this species were found on north-facing slopes throughout the plan area, with a maximum of 3,100 individuals observed in a single year (2001). The MSCP defines major populations as areas supporting greater than 500 individuals; two areas within the plan area meet that criterion. Four populations of variegated dudleya are present in the plan area: one in the development footprint (120 individuals) and three in habitat to be preserved east of the development footprint (two of these are MSCP major populations with greater than 500 individuals each). Suitable habitat for this species within the plan area totals 61.71 acres.

Threats and Conservation Needs:

Goal: Conserve existing and transplanted occurrences of Covered Plant Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing population(s) of variegated dudleya within the OHCA through management and monitoring of 48.65 acres of suitable habitat that includes four populations totaling 4,867 individuals that will provide long-term persistence (> than 100 years) of the on-site variegated dudleya population.

The Applicant will conserve and manage three populations (4,867 individuals) of variegated dudleya and 48.65 acres of suitable habitat in 304.6 acres of biological open space.

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- The Resource Manager will record species observations per Task 2.2.1.

- The Resource Manager will conduct high priority rare plant surveys per Task 3.1.1.

- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

Conservation Analysis

Direct Effects

Of the 4,987 individuals of variegated dudleya found in the plan area, 120 individuals and 13.06 acres of suitable habitat would be directly lost as a result of construction and operation of the project. Implementation of management and monitoring activities in the OHCA could result in minor disturbance to variegated dudleya (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP's Conservation Measures is anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. Unavoidable impacts to variegated dudleya will be mitigated with the conservation of 4,867 individuals of variegated dudleya (97.6 percent of the population within the plan area) that will be added to the MSCP Preserve. The OHCA is contiguous with a large, core block of habitat that is conserved and managed by the BLM consistent with the goals and objectives of the MSCP. The OHCA would be managed by a conservation entity (approved by the Wildlife Agencies) that will be responsible for implementing the RMP.

Indirect Effects

Increased fire frequency and increases in non-native plant species could indirectly impact this species. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the variegated dudleya. The Applicant and land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the variegated dudleya.

Increased fire frequency could result in an increase in non-native cover. Wildfire ignition sources may increase with implementation of Covered Activities adjacent to open space areas. The Applicant will minimize ignition sources by maintaining fire suppression devices on site at all times.

Rationale for Coverage: This species was afforded coverage under the MSCP because 56 percent of major populations and 75 percent of known localities will be conserved. The MSCP 1995 and 1996 Species Evaluations (USFWS and CDFW 1996) assumed 56 percent conservation of major populations outside of Major Amendment areas. No specific conservation assumption was identified for Major Amendment areas. Area-specific management directives must include species-specific monitoring and specific measures to protect against detrimental edge effects to this species, including effects caused by recreational activities. Some populations now occur within a Major Amendment Area (Otay Mountain), and at the time permit amendments are proposed, strategies to provide protection for this species within the Amendment Area must be included.
Section 86.507 of the BMO requires that impacts to List A and B sensitive plants be avoided to the maximum extent practicable. Where complete avoidance is infeasible, encroachment may be authorized depending on the sensitivity of the individual species and the size of the population except that encroachment shall not exceed 20 percent of the population on-site. Impacts to 120 of 4,987 individuals (2.4 percent) of variegated dudleya do not exceed the 20 percent encroachment limit. The BMO requires mitigation for impacts to this species. The project would preserve 4,867 individuals of variegated dudleya (97.6 percent of the population within the plan area), including 48.65 acres of potential variegated dudleya habitat. Additionally, the variegated dudleya in the impact area will be salvaged by collecting the soil crust in the area where the 120 dudleya were observed and translocating to the OHCA prior to phase 2b. The Applicant also would fund implementation of an RMP that includes measures to protect and enhance the preserved populations. Therefore, the project would be consistent with the goals of the MSCP for this Covered Species.

The conservation actions under the HCP will provide for the conservation and management of variegated dudleya and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for variegated dudleya.

San Diego barrel cactus (*Ferocactus viridescens*)

Legal Status: Federal: None
State: CNPS RPR 2.1

MSCP Subarea Plan: Covered

Species Description: San Diego barrel cactus is a perennial stem succulent that is a member of the Cactaceae (Cactus) family.

Habitat Characteristics/Use: San Diego barrel cactus prefers dry slopes in coastal sage scrub.

Life History: San Diego barrel cactus is a perennial species. It is also a stem succulent, which means that it has a fleshy, water-storing stem instead of leaves. It employs a special form of photosynthesis, called Crassulacean acid metabolism, as an adaptation to arid conditions.

Status and Distribution: San Diego barrel cactus occurs in San Diego County and Baja California, Mexico. In the MSCP area, it occurs primarily from Carmel Mountain to Otay Mesa, east to Marron Valley, and in scattered populations north to San Pasqual Valley (USFWS and CDFW 1996).

Occurrences within the Project Area: Three-hundred sixty two individuals were found on south-facing slopes throughout the plan area. The MSCP defines major populations of this species as areas supporting greater than 200 individuals.

Threats and Conservation Needs: San Diego barrel cactus is threatened by urbanization, vehicles, collecting, agriculture, and non-native plant species (CNPS 2014).

This species was afforded coverage under the MSCP because 81 percent of major populations will be conserved. This is an abundant species that would be protected at varying levels in several subareas: Carmel Mountain (64 percent), East Elliot (64 percent), Marron Valley (90 percent), Mission Trails Regional Park (94 percent), Otay Mesa (70 percent), Otay River Valley (100 percent), Sweetwater Reservoir (100 percent), and Sycamore Canyon/Fanita Ranch (50 percent). Area-Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) must include measures to protect this species from edge effects and unauthorized collection. Directives should also include appropriate fire management/control practices to protect against a too frequent fire cycle.

Goal: Conserve existing and transplanted occurrences of Covered Plant Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing population(s) of Dunn's mariposa lily, Orcutt's bird's beak, Tecate cypress, San Diego barrel cactus, and Gander's pitcher sage within the OHCA through management and monitoring of suitable habitat.

The project would avoid and preserve 166 barrel cacti (49 percent of the population in the plan area) in 304.6 acres of biological open space.

In order to achieve Objective 1, the following tasks will be implemented by the RMP:

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- The Resource Manager will record species observations per Task 2.2.1.

- The Resource Manager will conduct rare plant surveys per Task 3.4.1.

- The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

Goal 2: Mitigate for impacts to Proposed Covered Species in conformance with the MSCP Plan and the County Subarea Plan.

Objective 1: Provide San Diego barrel cactus mitigation at a 2:1 ratio through the salvage of the 196 San Diego barrel cacti from the development footprint and translocation of these individuals to areas of appropriate habitat in the OHCA, as well as plant an additional 196 San Diego barrel cacti in the OHCA for a total of 392 individual cacti planted.

Conservation Analysis

Direct Effects

Of the 362 barrel cacti found in the plan area, 196 individuals (54 percent) would be directly impacted as a result of construction and operation of the project. Implementation of management and monitoring activities in the OHCA could result in minor disturbance to San Diego barrel cactus (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP's Conservation Measures is anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. One-hundred sixty-six barrel cacti would be conserved in biological open space. The OHCA is contiguous with a large, core block of habitat that is conserved and managed by the BLM consistent with the goals and objectives of the MSCP. The OHCA would be managed by a conservation entity (approved by the Wildlife Agencies) that will be responsible for implementing the RMP. Unavoidable impacts to 196 individuals of barrel cactus will be mitigated by salvage and translocation of individuals and planting additional barrel cacti.

Indirect Effects

Increased fire frequency and increases in non-native plant species could indirectly impact this species. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the San Diego barrel cactus. The Applicant and land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the San Diego barrel cactus.

Increased fire frequency could result in an increase in non-native cover. Wildfire ignition sources may increase with implementation of Covered Activities adjacent to open space areas. The Applicant will minimize ignition sources by maintaining fire suppression devices on site at all times.

Rationale for Coverage: The MSCP Species Evaluations (USFWS and CDFW 1996) assumed 81 percent conservation of major populations outside of Major Amendment areas. An overall assumption of 70 percent conservation was identified for the East Otay Mesa area. Area-specific management directives must include measures to protect this species from edge effects and

unauthorized collection. Directives should also include appropriate fire management/control practices to protect against a too frequent fire cycle. These measures would be included in an RMP funded by the Applicant.

The project's 46 percent conservation of this species in the plan area is not consistent with the avoidance criterion of the BMO. According to the BMO, where complete avoidance is infeasible, encroachment may be authorized depending on the sensitivity of the individual species and the size of the population, except that encroachment shall not exceed 20 percent of the population on a site. Where impacts are allowed, the BMO requires mitigation for impacts at a 1:1 to 3:1 ratio. Because the project encroaches on 51 percent of the population in the plan area, a mitigation ratio of 2:1 is appropriate.

Mitigation would consist of salvage of the 196 San Diego barrel cacti within the project impact footprint and translocation of these individuals to areas of appropriate habitat within the plan area, as well as planting an additional 196 San Diego barrel cacti in the plan area. The cacti translocation would occur in accordance with a County-approved Barrel Cactus Translocation Plan. The Applicant also would fund implementation of an RMP that includes measures to protect and enhance the preserved and translocated populations of San Diego barrel cactus. Therefore, the project with the mitigation would be consistent with the goals of the MSCP for this Covered Species.

The conservation actions under the HCP will provide for the conservation and management of San Diego barrel cactus and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for the San Diego barrel cactus.

Gander's pitcher sage (*Lepechinia ganderi*)

Legal Status: Federal: None
State: CNPS 1B.3

MSCP Subarea Plan: Covered, Narrow Endemic

Species Description: Gander's pitcher sage is a perennial shrub that is a member of the Lamiaceae (Mint) family.

Habitat Characteristics/Use: This species is apparently restricted to gabbroic or metavolcanic soils in closed-cone coniferous forest, chaparral, coastal scrub, and valley and foothill grassland (CNPS 2014, Reiser 2001).

Life History: Gander's pitcher sage is a perennial species. It blooms during the period of June to July (CNPS 2014).

Status and Distribution: Gander's pitcher sage occurs in southern San Diego County and Baja California, Mexico. The species is known in California from fewer than 20 occurrences (CNPS

2014). Five major populations of Gander's pitcher sage occur in the MSCP Preserve; one of which occurs within the Otay Mountain Major Amendment Area (Table 3-5 of the MSCP).

Occurrences within the Project Area: Ninety-two individuals of this species were found in the plan area. These individuals are part of the major population that occurs within the Otay Mountain Major Amendment Area (Table 3-5 of the MSCP).

Threats and Conservation Needs: Gander's pitcher sage is threatened by development (CNPS 2014). Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) must include: 1) specific measures to protect the species from detrimental edge effects and uncontrolled access; 2) measures to promote the increase in populations; and 3) specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire (management measures to accomplish this may include prescribed fire). At the time permit amendments are proposed, strategies to provide protection for this species within the amendment area must be included.

Goal: Conserve existing and transplanted occurrences of Covered Plant Species through monitoring, maintenance, and management of the OHCA.

Objective 1: Maintain existing population(s) of Dunn's mariposa lily, Orcutt's bird's beak, Tecate cypress, San Diego barrel cactus, and Gander's pitcher sage within the OHCA through management and monitoring of suitable habitat.

The Applicant will conserve and manage all Gander's pitcher sage in the plan area in 304.6 acres of biological open space.

- Prior to initiating any work on the Superior Ready Mix Otay Hills Project, the Project Proponent shall remove trash and install fencing and signage at access points to preclude unauthorized access to the OHCA per start up tasks 1 through 3.

- The Resource Manager will map vegetation and non-native species and remove weeds per tasks 1.1.3 through 1.1.8.

- The Resource Manager will record species observations per Task 2.2.1.

- The Resource Manager will conduct rare plant surveys per Task 3.4.1.

The Resource Manager will conduct monthly inspections, repair fencing and signage, and remove trash per tasks 4.1.2 through 4.1.4.

Conservation Analysis

Direct Effects

There would be no direct effects to Gander's pitcher sage as a result of construction and operation of the project; all individuals will be conserved in biological open space.

Indirect Effects

Increased fire frequency and increases in non-native plant species could indirectly impact this species. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the Gander's pitcher sage. The Applicant and land manager will monitor the encroachment of non-native plant species into adjacent habitat, and perform weed abatement as needed to improve and maintain the habitat within the OHCA for the Gander's pitcher sage.
Increased fire frequency could result in an increase in non-native cover. Wildfire ignition sources may increase with implementation of Covered Activities adjacent to open space areas. The Applicant will minimize ignition sources by maintaining fire suppression devices on site at all times.

Rationale for Coverage: A total of 92 individuals were found in habitat that would be preserved. Zero individuals would be directly impacted. This population was identified as one of five major populations within the MSCP, and was assumed to be 100 percent conserved (USFWS and CDFG 1996). The project is consistent with this assumption.

The conservation actions under the HCP will provide for the conservation and management of Gander's pitcher sage and will ensure that the impacts from the Covered Activities are minimized and mitigated to the maximum extent practicable. As such, the HCP has been developed to meet the requirements under NCCPA sections 2820(a) and 2821, and ESA section 10(a) for the issuance of permits for Gander's pitcher sage.

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Appendix B

RESOURCE MANAGEMENT PLAN

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Appendix C

SENSITIVE PLANT TRANSLOCATION PLAN

Otay Hills Project
Translocation Plan

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LIST OF ACRONYMS

AMA	Additional Management Area
Baja	Baja California, Mexico
BMO	Biological Mitigation Ordinance
CNPS	California Native Plant Society
County	County of San Diego
EOMSP	East Otay Mesa Specific Plan
GPS	Global Positioning System
HELIX	HELIX Environmental Planning, Inc.
LLO	Likely Limits of Occurrence
MSCP	Multiple Species Conservation Program
NE	Narrow Endemic
OHCA	Otay Hills Conservation Area
RMP	Resource Management Plan
RPO	Resource Protection Ordinance
RS	Restoration Specialist
USGS	United States Geologic Survey

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1.0 INTRODUCTION

This report provides the translocation plan for direct impacts to San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*), variegated dudleya (*Dudleya variegata*), San Diego barrel cactus (*Ferocactus viridescens*), Otay tarplant (*Deinandra conjugens*), and San Diego marsh elder (*Iva hayesiana*) resulting from the implementation of the Otay Hills Construction Aggregate and Inert Debris Engineered Fill Operation Project (project). Please note that translocation in this report is used to include translocation of San Diego goldenstar, variegated dudleya, and San Diego barrel cactus, and seeding of Otay tarplant. This plan also provides for the establishment of San Diego marsh elder. These will be installed in an alkali marsh setting and be derived from regional stock.

The mitigation measures identified herein are based on those contained in the Habitat Conservation Plan for the Otay Hills Project (HELIX Environmental Planning, Inc. [HELIX] 2018b) and the Resource Management Plan for the project (HELIX 2018c). The proposed mitigation is intended to meet the requirements of the County of San Diego's (County's) Resource Protection Ordinance (RPO; County 2007) and Biological Mitigation Ordinance (BMO).

This plan provides the framework for mitigation that would occur on site within biological open space at the Otay Hills Conservation Area (OHCA) and would consist of the translocation and establishment of the sensitive plant species listed above combined with the long-term management of surrounding upland habitat. Additional mitigation for the proposed project is also planned and would include habitat preservation and the purchase of wetland mitigation credits. The details of the wetland mitigation for the site are not included in this report.

2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The approximately 443.1-acre project site (all or portions of Assessor Parcel Numbers 648-050-12, 648-050-17, 648-050-14, 648-040-39, 648-050-13, 648-040-40, 648-080-13, 648-080-14, 648-080-25, and 648-090-04) is located in southwestern San Diego County at the western toe of Otay Mountain, approximately one mile north of the border with Baja California, Mexico (Baja), one mile east of the Otay Mesa border crossing (Figure 1). It is east of the intersection of Otay Mesa and Alta Roads. The project site is located in Township 18 South, Range 1 East, Sections 29, 30, 31, and 32 on the San Bernardino Base and Meridian U.S. Geological Survey (USGS) 7.5-minute Otay Mesa quadrangle map (Figure 2). It is located within the South County Segment of the County's Multiple Species Conservation Program (MSCP) Subarea Plan (County 1997). The site is undeveloped and has five County MSCP Subarea Plan designations: Major Amendment Area, Minor Amendment Area, Minor Amendment Area Subject to Special Consideration, Take Authorized Area, and Hardline Preserve.

2.2 PROJECT SUMMARY

The project includes development of a mineral resource recovery and processing operation and associated infrastructure on approximately 102.7 acres of the 414.4-acre site. The total on-site and

off-site impact footprint is 107.4 acres. In the eastern portion of the proposed project site, 304.6 acres are proposed to be dedicated to open space, including 137.8 acres as mitigation for direct and indirect impacts associated with the proposed project. An additional 61-acre Additional Management Area (AMA) has an existing conservation easement in favor of the California Department of Fish and Wildlife but lacks management funding and the Project is providing funding for management of this area.

During and after mineral resource recovery operations, the open pit resulting from mineral recovery would serve as a receiver site for inert debris such as concrete, asphalt, rock, and soil. Approximately 858.4 million tons of mineral resources would be extracted from the development footprint area and over 31 million cubic yards of inert debris would be received over an approximately 120-year period. The aggregate extraction operation would occur within the 105.1-acre Major Use Permit area while most of the processing activities would take place within this area on a 16.1-acre pad in the northern portion of the development footprint. Following completion of resource recovery operations, the development footprint would be reclaimed for a beneficial land use, consistent with underlying land use regulations. Slopes abutting the proposed open space would be revegetated with native upland habitat.

Mineral resource recovery operations would be conducted by drilling and blasting to fracture rock, on a weekly basis. Following blasting, the rock resource is fractured and can be moved with conventional earthmoving equipment. The bulk of the processing activities would take place on a 16.1-acre pad. Required equipment, including the recycling plant and primary crusher, is portable and would eventually be relocated to the quarry floor as excavation progresses below grade.

The primary plant is the area where raw material is processed and crushed to a size suitable for further processing and screening. The primary plant will crush the rock, screen out unusable fines, and deposit the crushed rock in a surge pile for use by the secondary plant. It is anticipated that the primary plant would consist of a jaw crusher, a screen, and a primary crusher.

The secondary plant would consist of two to four rock crushers to further reduce the size of the rock, three or four screens to sort the material by size, and a washer to clean dirt from certain types of material to meet product specifications. Materials washing would require construction of a pond to recycle and store water. Finished aggregate would be stockpiled and/or stored in overhead loading bins. The aggregate would be loaded onto trucks either with a front-end loader or by gates on the bottom of overhead loading bins.

Additionally, a concrete batch plant, asphaltic concrete batch plant, and cement-treated base plant would be located within the development footprint. Recycling of construction and demolition materials would also occur.

Buildings associated with the aggregate plant within the development footprint would likely include an office building, a small-scale office, and a small maintenance shop.

Operations would produce approximately 0.6 to 1.6 million tons of aggregate annually during the most active phase of activity.

The proposed mineral resource recovery phase of the proposed project would consist of site preparation for the processing plant equipment and a phased extraction and backfilling operation. Ongoing backfilling of the site during the open pit extraction phase would allow reclamation to progress concurrently with the extraction operation. The project would occur in phases including, Phase 1: Site Preparation, Phase 2: Extraction to Natural Grade Elevation, Phase 3: Open Pit Extraction, and Phase 4: Inert Debris Engineered Fill Operation.

2.3 PLANT SPECIES IMPACTED

The project will impact 10 sensitive plant species, including four sensitive plant species that require translocation as part of the mitigation. The mitigation for these species includes their translocation from the impact area to the open space area. One additional species will also be included in the sensitive species plant mitigation but is not required to be translocated. The biology and conservation status of these five species are detailed in this section.

San Diego Goldenstar

San Diego goldenstar is listed as a California Native Plant Society (CNPS) Rare Plant Rank 1B.1 species, County List A, and County MSCP Covered. It is found from southwestern San Diego County to northwestern Baja. It prefers clay soils on dry mesas and hillsides in coastal sage scrub or chaparral. San Diego goldenstar is a perennial geophyte and a member of the Brodiaea family (Themidaceae).

San Diego goldenstar

On the project site the species was observed on north-facing slopes by Ogden Environmental and Energy Services Company, Inc. (Ogden; 1991), EDAW, Inc. (EDAW; 2001), and HELIX in 2000/2001, 2004, and 2011 (HELIX 2018a). It is estimated that there are 12,388 individuals on site. Most individuals occur within four primary populations. Three populations represent 11,174 individuals in the proposed open space area. Two smaller populations (1,214 individuals) occur within the impact footprint. The site contains 85.54 acres of potential habitat for this species (HELIX 2016).

Variegated Dudleya

Variegated dudleya

Variegated dudleya is a CNPS Rare Plant Rank 1B.2, County List A, and County MSCP Narrow Endemic (NE). It is found from San Diego County to Baja and generally grows on dry hillsides and mesas in both foothill and coastal areas. It is a perennial herb and a member of the Stonecrop family (Crassulaceae).

Approximately 1,887 individuals were observed on the project site by HELIX in 2000. None were observed during the 2011 surveys (HELIX 2018a). Approximately 6,100 individuals of variegated dudleya, in six locations, within grasslands in the southeastern portion of the East Otay Mesa Specific Plan (EOMSP) area and within sage scrub in the eastern portion of the EOMSP, were mapped during surveys conducted by EDAW (EDAW 2001). Of these 6,100 individuals of variegated dudleya, approximately 3,100 individuals occur on the project site that are not duplicative with HELIX data. As such, 4,987 individuals are estimated to occur within the project site representing six primary populations: one in the impact footprint (120 individuals) and five in proposed open space (4,867 individuals). The site contains 62.17 acres of potential habitat for this species (HELIX 2016).

San Diego Barrel Cactus

San Diego barrel cactus is CNPS Rare Plant Rank 2.1, County List B, and County MSCP Covered. It is found in San Diego County and Baja. This species occurs in a variety of coastal habitats. It is a stem succulent and a member of the cactus family (Cactaceae).

San Diego barrel cactus

The species was observed in the project area by Ogden (1991). San Diego barrel cactus is scattered throughout much of the project site, predominantly on south-facing slopes. Approximately 700 San Diego barrel cacti occur throughout the sage scrub and chaparral communities in the eastern portions of the EOMSP area, which includes the project site (EDAW 2001). Approximately 635 individuals were observed by HELIX during the 2000 and 2004 sensitive plant surveys. Approximately 109 individuals were observed during 2006 sensitive plant surveys. Approximately 337 individuals were observed by HELIX in 2011; locations of previous observations were visited, and some were found to be no longer extant. Given that this is a readily observable perennial species, only the 337 individuals observed by HELIX in 2011 are addressed in this document (HELIX 2018a). Of these, 196 individuals are within the impact footprint.

Otay Tarplant

Otay tarplant

Otay tarplant is federally threatened, state endangered, CNPS Rare Plant Rank 1B.1, County List A, and County MSCP NE. It is found in San Diego County to Baja. This species occurs on clay soils in coastal sage scrub and grasslands. It is an annual herb in the sunflower family (Asteraceae)

Approximately 10 individuals were observed on-site by HELIX (HELIX 2018a). According to the Botanical Technical Report for the EOMSP Amendment Area (EDAW 2001) approximately 800 individuals in six locations within grasslands in the southeastern portion of the EOMSP area were mapped during surveys conducted by EDAW. Three of these locations occur on the project site and they include 530 individuals. Data from EDAW (2001) and HELIX are cumulative, not duplicative for this species. As such, a total of 540 individuals occur within four primary populations. The largest population contains 400 individuals. Three of these populations (510 individuals) occur in the proposed open space; the fourth population (30 individuals) occurs in the impact footprint. This species is endemic to clay soils, which are not mapped as occurring on site. The specific soil type on which the plant occurs is San Miguel-Exchequer rocky silt loams, nine to 70 percent slopes (Bowman 1973). The "B" soil horizon of San Miguel consists of clay, indicating that the species is likely occurring in areas where the upper soil horizon has been removed by erosion or other disturbance, or in small inclusions of clay within the upper soil horizon. A Likely Limits of Occurrence (LLO) analysis by HELIX (2016) determined that the site contains 23.27 acres of potential Otay tarplant habitat based on soil, slope orientation and vegetation type.

San Diego Marsh Elder

San Diego Marsh Elder is CNPS Rare Plant Rank 2B.2 and County List B. It is found in San Diego County to Baja. It prefers moist or alkaline places areas along the coast, typically along drainages. It is a perennial or subshrub in the sunflower family (Asteraceae).

A population of approximately 290 individuals occurs along a drainage in the northwestern portion of Parcel A and land west of Parcel A, based on HELIX surveys in 2010/2011.

San Diego marsh elder

2.4 PROJECT IMPACTS

Impacts to sensitive plant species found on site will occur in different phases of the project, as summarized in Table 1 and described below.

Table 1
DIRECT IMPACTS TO COVERED PLANT SPECIES BY PHASE
(individual plants)

PLANT SPECIES	PHASE 1	PHASE 2A	PHASE 2B	PHASE 2C[1]	TOTAL
San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*)	400	--	813	1	1214
Variegated dudleya (*Dudleya variegata*)	--	--	120	--	120
San Diego barrel cactus (*Ferocactus viridescens*)	--	44	18	134	196
Otay tarplant (*Deinandra conjugens*)	--	30	--	--	30
San Diego marsh elder (*Iva hayesiana*)	142	0	0	0	142
TOTAL	**542**	**74**	**951**	**135**	**1702**

[1] Phase 2c includes off-site impacts to 25 individuals of San Diego barrel cactus on the Otay Crossings Commerce Park open space parcel.

San Diego Goldenstar

The population of San Diego goldenstar on site totals 12,388 individuals. Of those, 1,214 individuals, or an estimated 9.8 percent, would be directly impacted by the project: 400 in Phase 1, 813 in Phase 2b, and one in Phase 2c. Section 86.507 of the BMO requires that impacts to Lists A and B sensitive plants be avoided to the maximum extent practicable. Where complete avoidance is infeasible, encroachment may be authorized depending on the sensitivity of the individual species and the size of the population except that encroachment shall not exceed 20 percent of the population on site. With impacts to this species estimated at 9.8 percent, the impact to San Diego goldenstar are within the acceptable limits of the BMO.

Variegated Dudleya

Of the 4,987 individuals of variegated dudleya found on the project site, 120 individuals, or approximately 2.4 percent, would be directly impacted by Phase 2b of the project. Invasive plants and fugitive dust could indirectly impact variegated dudleya in the OHCA, but effects are expected to be minimal. With impacts to this species estimated at 2.4 percent, the impact to variegated dudleya are within the acceptable limits of the BMO.

San Diego Barrel Cactus

Of the 362 barrel cacti found on the Project site, 196 individuals, or an estimated 54 percent, would be directly impacted by the Project: 44 in Phase 2a, 18 in Phase 2b, and 134 in Phase 2c. Invasive

plants and fugitive dust could indirectly impact San Diego barrel cactus in the OHCA, but the effects are expected to be minimal. Barrel cacti have also been recorded in the AMA. Because impacts to this species exceed 20 percent, the project needs an exception to the BMO, and San Diego barrel cactus has a higher mitigation ratio than the other species.

Otay Tarplant

Of the 540 individuals of Otay tarplant found on the project site, 30 individuals, an estimated 5.6 percent, and 105.5 acres of critical habitat would be directly impacted by the project. The largest number recorded on the project site in any given year was 530 individuals. It is likely, however, that not all the seeds germinate each year from the seed bank in the soil as evidenced by the data collected on the project site over several years. Based on this, approximately 16.69 acres of habitat may be lost supporting at least 30 individuals. Invasive plants and fugitive dust could indirectly impact Otay tarplant in the OHCA, but the effects are expected to be minimal. With impacts to this species estimated at 5.6 percent, the impact to Otay tarplant are within the acceptable limits of the BMO.

San Diego Marsh Elder

Of the 290 individuals of San Diego marsh elder found on the project site, 142 individuals, or an estimated 49 percent of the existing plants on the Project site will be impacted. Because impacts to this species exceed 20 percent, the project needs an exception to the BMO.

3.0 MITIGATION REQUIREMENTS

Mitigation requirements are discussed below by plant species.

San Diego Goldenstar

Mitigation for impacts to 1,214 individuals of San Diego goldenstar in compliance with the BMO will include the preservation of the 69.46 acres of suitable habitat supporting 11,174 individuals on the project site in the OHCA in addition to the translocation of corms located within the impact area.

All San Diego goldenstar corms located within each phase shall be translocated prior to implementation of mining activities within that phase. Phase 1 will include at least 400 corms, Phase 2 at least 813 corms, and Phase 2b will include at least one corm. Based on the LLO Analysis (HELIX 2016), approximately 69.46 acres (81 percent) will be preserved, providing ample space for transplantation of 1,214 individuals. The Project Proponent will also fund implementation of the Resource Management Plan (RMP) that includes measures to protect and enhance the preserved and transplanted populations of San Diego goldenstar.

Variegated Dudleya

Mitigation for impacts to 120 individuals of variegated dudleya in compliance with the BMO will include the preservation of 4,867 individuals (97.6 percent of the population on the Project site) of

variegated dudleya in the OHCA, including 48.65 acres of suitable variegated dudleya habitat. Additionally, the variegated dudleya in the impact area will be salvaged by collecting the soil crust in the area where the 120 dudleya were observed and translocating to the OHCA prior to Phase 2b. Based on the LLO Analysis (HELIX 2016), approximately 48.65 acres (78 percent) will be preserved, providing ample space for transplantation of 120 individuals. The Project Proponent will also fund implementation of the RMP that includes measures to protect and enhance the preserved and transplanted populations of variegated dudleya.

San Diego Barrel Cactus

Mitigation for impacts to 196 San Diego barrel cacti in compliance with the BMO will consist of the salvage of the 196 San Diego barrel cacti impacted on and off site, and the relocation of these individuals to appropriate habitat on the OHCA, as well as planting an additional 196 San Diego barrel cacti within the OHCA, for a total of 392 individual cacti planted. All San Diego barrel cacti located within each phase shall be translocated prior to implementation of mining activities within that phase. Phase 2a will include at least 44, Phase 2b will include at least 18, and Phase 2c will include at least 134. The Project Proponent will also fund implementation of the RMP that includes measures to protect and enhance the preserved and transplanted populations of San Diego barrel cactus.

Otay Tarplant

Mitigation for impacts to 30 individuals of Otay tarplant in compliance with the BMO will consist of the preservation of 93.8 acres of Otay tarplant designated critical habitat and 6.58 acres of suitable habitat supporting 510 individuals of Otay tarplant (94.4 percent of the population on site including three primary populations). In addition, seeds will be collected from the Otay tarplant in the impact area and spread within suitable habitat in the OHCA prior to Phase 2a. The Project Proponent will also fund implementation of the RMP that includes measures to monitor, protect, and enhance the preserved populations of Otay tarplant.

The mitigation for these sensitive species, which includes substantial preservation and long-term management, is not primarily reliant on translocation to mitigate for the impacts to these species. Therefore, maintenance following their translocation is limited to overall maintenance as required under the RMP.

San Diego Marsh Elder

Mitigation for the impacts to 142 individuals of San Diego marsh elder, in compliance with the BMO, will be mitigation by replacing the impacted plants at a 2:1 ratio: 284 San Diego marsh elder individuals will be established in appropriate habitat in the OHCA. The Project Proponent will also fund implementation of the RMP that includes measures to protect and enhance the preserved and transplanted populations of San Diego marsh elder. The timing of their installation will be at the same time the other Phase 1 sensitive plant species mitigation occurs.

4.0 MITIGATION SUMMARY

4.1 LOCATION AND SIZE OF MITIGATION AREA

The translocation receptor sites will be within 304.6 acres that would be dedicated to open space as Hardline Preserve and is called the OHCA. The OHCA is located immediately to the east of the impact footprint (Figure 3).

4.2 MITIGATION DESCRIPTION

The translocation of San Diego goldenstar, Otay tarplant, variegated dudleya, and San Diego barrel cactus will occur from the project impact area into the OHCA (Figure 4). Details of the translation are described below by species. The translocation for goldenstar, dudleya, and barrel cactus is planned for areas of the OHCA that contain soils mapped as San Miguel-Exchequer rocky silt loams, 9 to 70 percent slopes (Figure 5). These are the same soils mapped for the impact area and are therefore considered suitable for this translocation project. The tarplant mitigation may occur in either San Miguel-Exchequer rocky silt loams, 9 to 70 percent slopes or Huerhuero loam, 9 to 15 percent. Either of these soil types are considered suitable for the tarplant mitigation as it occurs in both soils on site.

The measures described below may be modified over time based on the level of success from the translocation results from previous phases. The County and resource agencies will be notified of any modifications to the methods described below.

San Diego Goldenstar

Impacts to San Diego goldenstar will occur in Phases 1 and 2b. Corms will be salvaged from the impacted population. This can be completed any time of year but will ideally occur in the fall when the corms are dormant. Areas with goldenstar corms to be salvaged should be flagged in the spring prior to their salvage. All goldenstar corms turned up in the impact area will be salvaged and translocated. Corms will be hand dug or a bobcat may be used to collect corms in areas with high population densities. The collected soils will be sifted to separate the corms. Soil clumps will be broken up as necessary to facilitate sifting. Once separated, the corms will be placed in woven nylon bags (e.g., sand bags) and stored in a dark, cool, dry, and rodent free location.

Goldenstar will be translocated into the OHCA (Figure 6). Receptor sites will be selected based on the goldenstar LLO, and in areas adjacent to existing populations. The precise locations within this area will be defined by the soils with highest clay content without other sensitive species. Extant plants in the receptor site will be marked with pin flags in the spring prior to planting. Plants will be installed by drilling a hole in the soil that is approximately eight inches deep and just large enough in diameter to accommodate each corm. The corms will be placed root end down in the hole. Tweezers, to lower the corms into the holes, may be necessary to get the proper orientation for the corms when placing in the holes. Each plant will be marked with an aluminum tag. Seed from the plants in the preserve area can also be collected and grown in the nursery for use should the translocation not progress as expected. Plants will be planted during the rainy season in

December to February after at least a quarter inch of rain has fallen. Corms will be watered in after planting and the location will be recorded with a Global Positioning System (GPS) unit.

Otay Tarplant

The Otay tarplant impacts will occur with Phase 2a. The receptor site will be weeded in the spring and summer prior to planting. All Otay tarplant seed will be collected from plants in the impact area. If possible, two seasons of seed collection will be done. Seeds will be stored in a cool, dry, rodent-free location. Seeding will occur in mid-November to take advantage of the rainy season and minimize seed predation. Seeding will be done by hand. Seeding will be done adjacent to existing Otay tarplant stands within the LLO, as the presence of naturally occurring Otay tarplant indicates areas of likely suitable habitat for the species (Figure 7), provided the seeding occurs in clay soils. If there is sufficient seed available (i.e., over 1,000 seeds), more of the site will also be seeded. Additional Otay tarplant seeding may take place in the second year of the monitoring period depending on the first year's success and seed availability.

Variegated Dudleya

The impacts to variegated dudleya will occur in Phase 2b. Plants in the impact area will be mapped with a GPS with submeter accuracy in the spring when the foliage/flowers are visible, prior to their scheduled salvage. The ground will also be marked with pin flags, surveyor's feathers, or aluminum tags. The seed heads will be collected after the flowering period (May to June) in the summer between mapping and salvage. The salvaged dudleya corms will be placed in woven nylon bags (e.g., sand bags) and stored in a dark, cool, dry, and rodent free location.

The salvaged dudleya will be planted in the OHCA (Figure 8). Receptor sites will be selected based on the dudleya LLO, and in areas adjacent to existing populations. The precise locations within this area will be defined by the soils with highest clay content areas without other sensitive species. Extant dudleya plants in the receptor site will be marked with pin flags in the spring prior to planting. Plants will be installed by digging a shallow hole with a hand trowel that is just large enough to accommodate each corm. The corms will be planted during the rainy season in December to February after at least a quarter inch of rain has fallen. Corms will be watered once they are planted and the location will be mapped using a GPS unit and marked with an aluminum tag. The previously collected seed will be sown in appropriate habitat in the OHCA.

San Diego Barrel Cactus

San Diego barrel cactus impacts will occur in Phase 2a, Phase 2b, and Phase 2c. Mitigation for impacts to barrel cactus require two replacement plants for each individual impacted: 196 translocated and an additional 196 planted. The mitigation requirement is broken down by phase, as follows:

- Prior to Phase 2a, 44 individuals of San Diego barrel cactus shall be translocated to the open space and an additional 44 individuals shall be planted.

- Prior to Phase 2b, 18 individuals of San Diego barrel cactus shall be translocated to the open space and an additional 18 individuals shall be planted.

- Prior to Phase 2c, 134 individuals of San Diego barrel cactus shall be translocated to the open space and an additional 134 individuals shall be planted.

For the additional 196 cacti to be planted, seed will be collected from the cacti in the impact area and grown out in containers for planting in the OHCA. If there is insufficient seed available in the impact area, seed may be collected from the OHCA or from nearby sites in the Otay Mesa area. Seed collection should begin as early as possible, and planting may be done ahead of schedule at the Project Proponent's discretion. Barrel cacti will be planted in open areas within coastal sage scrub (Figure 9).

For the 196 barrel cacti to be salvaged, the salvage should take place in the early fall. The cacti and their roots will be excavated as deeply as possible. The compass orientation will be marked on each salvaged barrel cacti on the north-facing side of the plant with a white grease pencil.

The plants will be directly transported to the spot in the OHCA where they will be planted and placed roots up. If the shape of the cacti does not allow that, they will be laid on their sides. A piece of shade cloth will be secured over the cacti. The cacti will remain covered with shade cloth on the soil surface for two to three weeks to allow the roots to callous over. This process is important to minimize fungal infection of the cacti after planting.
The plants will be planted within one month of their salvage. The grease pencil mark will be used to plant the cacti with the same compass orientation they had at the donor site. If possible, the depth of the planting hole should match the length of the root. A small piece of shade cloth will be secured over each planting to facilitate the adaption of the cacti to its new location, including the slope percentage. Each transplanted cactus will be mapped using a GPS unit and marked with an aluminum tag. To facilitate watering, a small basin (approximately one-half gallon) will be constructed for each cactus when they are planted. Plants will not be watered until two weeks after planting, and then again at four and six weeks after planting. The shade cloths will be removed four weeks after planting.

San Diego Marsh Elder

San Diego marsh elder impacts will occur in Phase 1. Mitigation for impacts to marsh elder require two replacement plants for each individual impacted: 284 plants will be installed.

Container stock for the 284 plants will be grown from coastal, south San Diego County populations and planted in the OHCA. Container stock growth should begin as early as possible, and planting may be done ahead of schedule at the Project Proponent's discretion. Marsh elder will be planted in the areas of the OHCA that are currently occupied by tamarisk scrub and in the bottom of the breached reservoir (Figure 10).

To facilitate watering, a basin (approximately one gallon) will be constructed for each marsh elder when they are planted. Plants will be watered weekly for two months, and then every other week for two months, and then at least monthly for the next 8 months. If one inch of rain falls in the

week before the periods of weekly and every other week watering, no irrigation is required. Similarly, if one inch of rain falls in the two weeks prior to the monthly watering, no irrigation is required.

4.3 EXISTING FUNCTIONS AND SERVICES OF MITIGATION AREA

Designated public lands and private open space on Otay Mountain occur beyond the development footprint and the OHCA, to the north and east. Animal species can use most habitats on the project site and can access habitats off site without restriction at this time. The project site is not part of a regional corridor, but the Project site is part of a large contiguous block of open space that can support wide-ranging species and may act as a core wildlife area. The project's development footprint would consist of haul roads and mining-related structures and appurtenances that would create a barrier on the land surface for local wildlife movement across the western portion of the project site, but would not restrict regional wildlife movement likely occurring to the north and east of the development footprint in the OHCA and connecting to the adjacent public lands and private open space farther to the north and east. Construction activity and extraction operations are expected to impede local wildlife movement slightly given that extraction operations would occur over many years, but the project is designed to maintain connectivity of preserved habitats in the 304.6-acre OHCA with off-site vacant lands to the north, south, and east. Therefore, the project site would continue to provide regional landscape level conservation function.

The proposed mitigation area is part of a large area of open space on Otay Mountain that is known to support numerous sensitive species and habitats, including burrowing owls, non-native grassland, vernal pools, road pools with San Diego fairy shrimp, Diegan coastal sage scrub, Quino checkerspot butterfly (QCB; HELIX 2018a), and many others.

4.4 TARGET FUNCTIONS AND SERVICES OF MITIGATION AREA

The goal of this translocation plan is to improve habitat quality by enhancing existing populations of San Diego goldenstar, Otay tarplant, variegated dudleya, San Diego barrel cactus, and San Diego marsh elder in the long term. With the completed translocation, it is expected that functions and services (nectar resources, sensitive wildlife habitat, etc.) of the impacted areas would be enhanced by the end of the two-year mitigation effort.

4.5 RATIONALE FOR EXPECTING MITIGATION SUCCESS

The OHCA is also surrounded by existing conservation to the north and east, and the project will preclude public access from the west. Due to the large size of the OHCA, appropriate soils that occur on site, and the mosaic of high-quality habitat, the OHCA is expected to provide all of the components necessary for long-term persistence of these species. The RMP will provide for management and monitoring in perpetuity that will allow for preservation and enhancement of these plant resources, funded by a non-wasting endowment. Combined, these measures will maintain the function of the MSCP Preserve and assist in recovery of the San Diego goldenstar. Otay tarplant, variegated dudleya, San Diego barrel cactus, and San Diego marsh elder.

Prior to project implementation, the underlying soils and disturbed soil surface and vegetation of the impact site were essentially the same as those occurring within the proposed mitigation site.

4.6 RESPONSIBLE PARTIES

4.6.1 Project Proponent

Otay Hills, LLC will be responsible for financing the installation and monitoring of this mitigation effort. Contact information is provided below.

Otay Hills, LLC
1508 W. Mission Road
Escondido, CA 92029
(760) 690-5749
Contact: Arnold Veldkamp

4.6.2 Restoration Specialist

Overall supervision of the salvage, storage, installation, maintenance, and monitoring of this translocation/planting project will be the responsibility of a Restoration Specialist (RS). The RS must be a County of San Diego approved revegetation planner. Specifically, the RS will:

- Select and mark the various receptor sites;
- Mark goldenstar and barrel cacti to be salvaged;
- Mark north side of the barrel cacti;
- Oversee
    - Seed, corm, and plant collection;
    - Barrel cacti transport and placement at receptor site;
    - Cleaning and storage of salvaged plant material;
    - Planting, mapping and marking of translocated plants;
    - Weeding of tarplant receptor site;
    - Tarplant seed collection;
    - Tarplant seeding;
    - Tamarisk removal in marsh elder site; and
    - Marsh elder planting.
- Monitor dudleya propagation;
- Document pre-construction conditions and translocation progress by designating permanent photo locations;
- Attend pre-construction meeting with the installation contractor;
- Educate all participants about mitigation goals and requirements;
- Ensure that installation personnel understand the project requirements and limitations;

- Document post-construction conditions from the designated photo locations;
- Prepare a letter for submittal to the appropriate regulatory agencies (e.g., County and resource agencies) stating that the installation is complete;
- Conduct all monitoring data collection and annual assessments, and prepare all required reports;
- Provide the Project Proponent and contractor(s) with a brief report, including a written list of items in need of attention, following each monitoring visit; and
- Notify the contractor and Project Proponent if any requested remediation is not addressed.

4.6.4 Installation Contractor

The installation contractor will have upland habitat restoration experience; be under direction of the RS; and be responsible for completion of soil, seed, and corm collection, pre-planting weed control, plant translocation, planting, and seeding of the translocated species. The RS will provide guidance to the contractor(s).

5.0 MITIGATION IMPLEMENTATION PLAN

Mitigation implementation consists of scheduling, weed control, fencing, and signage placement.

5.1 IMPLEMENTATION SCHEDULE

The translocated, seeded, or planted species will be monitored for two years following implementation of the mitigation for a particular phase.

Table 2 MITIGATION IMPLEMENTATION CHECKLIST				
CONSTRUCTION PHASE	**RESTORATION TASK**	**RESPONSIBLE PARTIES**		
		Project Proponent	**Installation Contractor**	**Restoration Specialist**
Pre-construction	Attend pre-construction meeting	X	X	X
	Delineate translocation or planting boundaries			X[1]
	Document pre-installation site conditions			X
Installation	Weed receptor site(s)		X	X[1]
	Salvage propagules and plants from impact areas		X	X[1]
	Install salvaged plants and seed		X	X[1]
	Prepare/submit as-built report			X
Two-year Monitoring Period	Monitor site for remainder of two years			X

[1] Inspecting or overseeing work related to this task

5.2 TRANSLOCATION AREA SITE PREPARATION

5.2.1 Initial Weed Control

Weeding of the translocation and planting areas will occur prior to translocation and planting. If necessary, two grow kill cycles will be conducted in the soil receptor areas. This will reduce competition with weed in the translocation area and aid in the translocation establishment.

5.2.5 Fencing and Signage

The boundary of the translocation area will be staked to delineate this area for monitoring activities. Signs will be posted around the OHCA boundary as specified in the RMP, providing notice in both English and Spanish that the area is an ecological preserve and that trespassing is prohibited.

5.3 AS-BUILT CONDITIONS

The RS shall submit to the County and resource agencies, within six weeks of completion of mitigation installation, a map showing the as-built conditions of the translocation area. This plan would include overview photos of pre- and post-mitigation implementation.

6.0 MONITORING PLAN

6.1 MONITORING METHODS

Monitoring would be carried out by the RS to ensure proper implementation of this plan and assess the progress of the restoration effort. This monitoring is intended to inform the County and resource agencies on the efficacy of the translocation effort.

6.1.1 Monitoring Schedule

During the installation period, plant, soil, and corm collection shall be monitored full time, while other construction and installation activities such as seeding and planting would be monitored daily by a RS (Table 3). Subsequent monitoring will be done quarterly for two years. If the installation is done in phases based on project phasing, then each phased translocation effort will have its own installation monitoring and two-year quarterly monitoring, except that monitoring visits can be combined if phases overlap. Quarterly monitoring, other than the annual monitoring data collection, is primarily to check for impacts due to unauthorized access and to provide some context for the annual monitoring results.

Table 3
MONITORING SCHEDULE

PHASE	MONITORING FREQUENCY
Plant/Soil/Corm Collection	Full Time
Remainder of Site Preparation and Installation	Daily
Years 1 and 2	Quarterly

On-going monitoring of the translocated populations after Year 2 will be conducted by the long-term manager according to the RMP.

6.1.2 Monitoring Goal

The goal of the monitoring is to assess the success of the translocation of these species. Translocated individuals of each species would be counted during the spring each of the first two years following translocation to obtain an estimate of establishment success and to inform the long-term management of the OHCA under the RMP. The monitoring results from early phases of implementation may be used to adjust methods in subsequent phases as discussed in section 4.2. Monitoring would include multiple visits throughout the flowering and seed set period to assess the following:

For San Diego goldenstar, variegated dudleya and Otay tarplant:

- Total number of plants expressing themselves
- Total number of flowering plants
- Total number of plants producing seed
- Herbivory estimates
- General weed cover estimates

For San Diego barrel cactus and San Diego marsh elder:

- Total number of plants and general vigor of the translocated/planted individuals
- Total number of flowering plants
- Total number of plants producing seed

Photographs will be taken each year from the same locations to monitor change over time and will be included in each annual report. Photo points will be physically marked and have their locations recorded with a GPS unit. Photo documentation should also include close range photos to document typical translocated plants for each species.

6.2 ANNUAL REPORTS/INVITATION

As part of the monitoring program, annual reports prepared by the RS will be submitted to the County and resource agencies. Along with an evaluation of the success of the translocation effort, the annual report will provide recommendations for future actions, if applicable.

7.0 SUCCESS CRITERIA

There are no success criteria for the translocation and planting efforts. Completion of the mitigation of the five plant species described in this plan, according to the methods outlined herein, and completion of two years of monitoring and reporting fulfill the Project Proponent's obligation.

8.0 COMPLETION OF MITIGATION

8.1 NOTIFICATION OF COMPLETION

The Project Proponent shall notify the County and resource agencies of completion of the mitigation effort through submittal of a final (Year 2) monitoring report two years after the final phases of implementation.

8.3 LONG-TERM MANAGEMENT

Prior to initiation of project impacts, a Conservation Easement dedication will be recorded over the OHCA. Long-term habitat management would be provided for all preserved areas on and off site through implementation of measures in the RMP, which will fulfill BO conditions. This easement will be in favor of the County or another entity approved by the County. Long-term management of the translocation site would be the responsibility of the organization accepting the fee-title and/or Conservation Easement, which organization shall also be bound to implement the RMP through an Open Space Maintenance Agreement with the County. As of the writing of this report, the San Diego Habitat Conservancy is proposed to accept long-term responsibility of the restoration areas. Long-term management would be conducted according to the RMP (HELIX 2018c).

9.0 LIST OF PREPARERS

The following individuals contributed to the preparation of this report.

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Appendix L

RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

Otay Hills Conservation Area

Resource Management Plan

June 2020

Prepared for:
Superior Ready Mix
1508 West Mission Road
Escondido, CA 92029

Prepared by:
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

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OTAY HILLS CONSERVATION AREA
RESOURCE MANAGEMENT PLAN

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LIST OF ACRONYMS

AMA	Additional Management Area
AMSL	above mean sea level
BLM	Bureau of Land Management
CE	Conservation Easement
CDFW	California Department of Fish and Wildlife
ELM	Estimate for Long-term Management
MSCP	Multiple Species Conservation Program
OHCA	Otay Hills Conservation Area
OHV	off-highway vehicle
OSE	Biological Open Space Easement
QCB	Quino checkerspot butterfly
RMP	Resource Management Plan
SDCWA	San Diego County Water Authority
SDG&E	San Diego Gas & Electric
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

This Resource Management Plan (RMP) has been prepared for the 304.6-acre Otay Hills Conservation Area (OHCA) resulting from a Major Amendment to the South County Segment of the Multiple Species Conservation Program (MSCP), County of San Diego Subarea Plan (County; County et al. 1997) for the Superior Ready Mix Otay Hills Project. The OHCA was established to mitigate for direct and indirect impacts resulting from the construction and operation of the Otay Hills Project, as discussed in the project's Biological Technical Report (HELIX 2019).

This RMP also addresses an additional 61-acre Additional Management Area (AMA) that has an existing conservation easement (CE) in favor of the California Department of Fish and Wildlife (CDFW) over the 61 acres, but lacks management funding. The RMP spells out more limited management obligations of the AMA. For purposes of this report, management requirements for the AMA will be limited to those tasks where the AMA is specifically mentioned. Any additional management actions on the AMA would be at the discretion of the Habitat Manager based on available funding.

This RMP addresses the permanent conservation and management of 304.6 acres of habitat in the OHCA and the 61 acres in the AMA that support MSCP Covered, listed, and/or sensitive plant and animal species (may be collectively referred to as sensitive species herein) and which contribute to the biological goals and objectives of the MSCP. That goal is to maintain and enhance biological diversity in the region and conserve viable populations of endangered, threatened, and key sensitive species and their habitats, thereby preventing local extirpation and ultimate extinction.

The 304.6-acre OHCA primarily supports coastal sage scrub, chaparral, and grassland vegetation communities and associated MSCP Covered species such as the coastal California gnatcatcher (*Polioptila californica californica* and its Designated Critical Habitat), Otay tarplant (*Deinandra conjugens* and its Designated Critical Habitat), San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*), and variegated dudleya (*Dudleya variegata*), among others. The OHCA also supports the non-MSCP Covered and federal endangered Quino checkerspot butterfly (QCB; *Euphydryas editha quino* and its Designated Critical Habitat). The AMA supports coastal sage scrub and chaparral habitats and a similar suite of species as the OHCA.

This RMP and associated Estimate for Long-term Management (ELM; Appendix A) provide direction for the long-term management of the OHCA and AMA following acceptance of long-term management responsibilities by the Resource Manager. It is the responsibility of the Otay Hills Project Proponent (Superior Ready Mix) to fund implementation of the RMP. The County will require an Open Space Maintenance Agreement described in Section 2.2 to ensure that the RMP is implemented.

1.1 PURPOSE OF THE RESOURCE MANAGEMENT PLAN

The purpose of the OHCA is to establish a habitat management approach that will sustain the biological values of the property in perpetuity as summarized in the following vision statement:

"To contribute to the MSCP Preserve in southern San Diego County by providing in-perpetuity management and conservation of MSCP Covered Species and the QCB, among other sensitive species, and their associated habitats."

The purpose of this RMP is to identify management goals and objectives for the existing habitats and associated species in the OHCA complimentary to the MSCP, and to provide specific management tasks to meet those goals and objectives. This RMP:

1. Guides management and monitoring of vegetation communities and habitats, plant and animal species, and programs described herein to protect and, where appropriate, enhance biological resources;

2. Serves as a descriptive inventory of vegetation communities and plant and animal species that occur within OHCA;

3. Establishes the baseline conditions from which management will be determined and success will be measured; and

4. Provides an overview of the operation, maintenance, administrative, and personnel requirements to implement management goals, and serves as a budget planning aid.

1.1.1 Agency Review and Coordination

This RMP has been submitted for the approval of the County, as well as the U.S. Fish and Wildlife Service (USFWS) and the CDFW collectively "Wildlife Agencies".

2.0 IMPLEMENTATION

2.1 Responsible Parties

The Project Proponent will be responsible for ensuring transfer of title and initial establishment of the RMP. It is anticipated that the OHCA will be transferred in fee title to the Resource Manager or the County, and a CE recorded over the parcel. As noted, the AMA has an existing CE in favor of CDFW and no further action is required for the AMA. The Resource Manager will be the San Diego Habitat Conservancy (SDHC) or another qualified Resource Manager to the satisfaction of the County. The Resource Manager will be responsible for implementing the RMP and will serve as the Resource Manager in perpetuity. The selection of a Resource Manager requires written approval from the County and the Wildlife Agencies. The Resource Manager must possess the following qualifications:

- Ability to carry out habitat monitoring and maintenance activities;

- Fiscal stability, including preparation of an operational budget (using an appropriate analysis technique) for the management of this RMP;

- Resource Managers must have at least one staff member with a biological, ecological, or wildlife management degree; and

- Experience with habitat management in southern California.

The Project Proponent will ensure that the CE is recorded and any future transfer of fee title of the property to the Resource Manager or County is completed prior to any impacts. The CE will be dedicated to the County, or other appropriate entity as approved by the Wildlife Agencies and will designate the Wildlife Agencies as third-party beneficiaries. Additionally, an OSE shall also be recorded consistent with County policy. Management of the OHCA will begin upon approval and recordation of the CE, prior to any impacts.

2.2 RMP AGREEMENT

The County will require an Open Space Maintenance Agreement with the Project Proponent and the Resource Manager when the County accepts the final RMP. The Agreement will obligate the Project Proponent to implement the RMP and provide a source of funding to pay the cost to implement the RMP in perpetuity. The Agreement shall also provide a mechanism for the funds to be transferred to the County if the Resource Manager fails to meet the goals of the RMP. The Agreement will specify that RMP funding or funding mechanism be established prior to construction or use of the property in reliance on the Major Use Permit.

2.3 FINANCIAL RESPONSIBILITY/MECHANISM

The Project Proponent is responsible for all RMP funding requirements, including direct funds to support the start-up management tasks as well as a non-wasting endowment, which is tied to the property to fund RMP implementation. Start-up tasks include removal of trash, and placement of signage and fencing. Long-term tasks involve monitoring, adaptive management, and maintenance of the biological resources within the OHCA in perpetuity, including habitat and species monitoring and mapping, exotic species control, access control, and reporting. The Project Proponent will be responsible for funding all management activities for each Phase until the non-wasting endowment is fully funded and three years have elapsed, as described below. The Project Proponent may, at their discretion, also elect to fund the entire endowment amount.

Phasing of Endowment Payment and Tasks

The RMP implementation, and therefore its cost, will be phased in over time based upon the phasing of impacts. The CE will be recorded over the entire OHCA up front, along with installation and maintenance of required fencing and signage; however, management and monitoring will be phased in as detailed below. Asterisks are noted for tasks that include the AMA.

Phase 1

Phase 1 will impact 15.7 acres (14 percent of the development footprint) and is anticipated to be completed within one year of project initiation. Approximately 400 San Diego goldenstar and

142 San Diego marsh-elder will be impacted in Phase 1. No QCB resources will be impacted in Phase 1. Prior to initiating any work on Phase 1, 14 percent of the total endowment shall be funded.

Work tasks to be completed during Phase 1 include:

- Removal of any trash (Start-up task 1)*
- Installation of signage and fencing (Start-up task 2 and 3)*
- Monthly patrols (Task 4.1.2)*
- Collect baseline vegetation data (Task 1.1.3)
- Map non-native species (Task 1.1.6)*
- Establish QCB host plant and sensitive animal baseline (Task 2.1.1 and 2.3.1)*
- Establish sensitive plant baseline (Task 3.1.1 and 3.4.1)
- Coordinate with adjacent property owners and develop fire plan (Task 4.2.1 and 4.2.2)
- Translocate 400 San Diego goldenstar to the OHCA
- Plant 284 San Diego marsh-elder in the OHCA
- Prepare annual report (Task 5.1.1)

Phase 2a

Phase 2a will impact 18.2 acres (17 percent of the development footprint) and is anticipated to take approximately five years to implement. Approximately 30 Otay tarplant and 44 San Diego barrel cacti will be impacted in Phase 2a. Approximately 3,050 plantago plants and no QCB observation locations will be impacted in Phase 2a. Prior to initiating any work on Phase 2a, an additional 17 percent of the total endowment shall be funded (31 percent total).

Work tasks to be completed during Phase 2a include:

- Monthly patrols, fence repair, trash removal (Task 4.1.2, 4.1.3, 4.1.4)*
- Conduct QCB/habitat surveys and sensitive animal habitat assessments (Task 2.1.1, 2.1.3, and 2.3.1)*
- Weed QCB high use breeding areas (Task 2.1.2)*
- Translocate 44 San Diego barrel cacti to the OHCA
- Spread Otay tarplant seed from impacted individuals within the OHCA
- Prepare annual reports (Task 5.1.1)

Phase 2b

Phase 2b will impact 25.5 acres (24 percent of the development footprint) and is anticipated to take approximately six years to implement. Approximately 813 San Diego goldenstar, 120 variegated dudleya, and 18 San Diego barrel cacti will be impacted in Phase 2b. Approximately 1,560 plantago plants and no QCB observation locations will be impacted in Phase 2b. Prior to initiating any work on Phase 2b, an additional 24 percent of the total endowment shall be funded (55 percent total).

Work tasks to be completed during Phase 2b and subsequent phases include implementation of all management tasks within the RMP. The 813 San Diego goldenstar, 18 San Diego barrel cacti, and soil crust in the area where the 120 dudleya were observed will be translocated at the start of Phase 2b.

Phase 2c

Phase 2c will impact 48.0 acres (45 percent of the development footprint) and is anticipated to take approximately 11 years to implement. A single San Diego goldenstar and 134 San Diego barrel cacti will be impacted in Phase 2c. Approximately 1,540 plantago plants and five QCB observation locations will be impacted in Phase 2c. Prior to initiating any work on Phase 2c, the Project Proponent shall fund the remainder of the endowment, which shall be calculated as follows: the total endowment amount, adjusted for inflation according to the consumer price index, minus the current value of the endowment including the first three phased payments and the investment returns to date. The Project Proponent shall continue to fund the annual management costs for the three years following full funding of the endowment. Once the endowment is fully funded and three years have elapsed, completion of all management tasks within the RMP will be funded by the endowment. The 134 San Diego barrel cacti and one goldenstar will be translocated at the start of Phase 2c.

Disbursement of Funds to Resource Manager

The Resource Manager shall prepare an annual work plan including a budget by November 1 of each year for review and approval by the County and Wildlife Agencies. The County and Wildlife Agencies shall review the work plan, and the County shall provide written approval within 30 days of receipt of the annual work plan to the Fund Manager (anticipated to be San Diego Foundation) for release of management funds for the following year. If there are changes to the work plan, the Resource Manager shall make the requested changes, and the County and Wildlife Agencies shall have 15 days to review and approve the revised work plan. If the County and the Wildlife Agencies do not respond within the prescribed times, the annual work plan shall be deemed approved and the funds shall be released to the Resource Manager.

2.4 COST ESTIMATE/BUDGET

An ELM for implementation of the RMP has been prepared for the OHCA by the SDHC and is provided as Appendix A. As shown in the ELM, the cost to implement Phases 1 through 2b of open space management is $1,166,831.03. Those costs will be paid separately by the Project Proponent. The total cost for maintenance of the AMA, which is funded by an endowment prior to Phase 1, is $107,682.29, including $13,091.94 of initial costs for the first three years, $3,638.09 of emergency and legal defense fund, and $90,952.26 of endowment. The total cost for ongoing full maintenance of the OHCA, which starts in Phase 2c, is $3,150,758.65, including $388,174.44 of initial costs for the first three years, $106,253.24 of emergency and legal defense fund, and $2,656,330.97 of endowment. So in total, the Project Proponent will pay $4,425,271.90 to fully implement this RMP from Phase 1 through Phase 2c and in perpetuity thereafter. Should the Project Proponent elect to pay the entire endowment up front, including the AMA, the cost of the endowment would be $2,465,301.20.

2.5 Reporting Requirements

An annual written report will be prepared by the Resource Manager and submitted to the County and Wildlife Agencies that will summarize the previous year's management and monitoring as well as a workplan for the upcoming year. The submittal shall include a deposit to cover County staff review time. The report will provide a summary of methods employed, evaluate how management objectives have been met, identify new management issues and recommendation to address these issues, and address the success or failure of previous management approaches based on monitoring. It shall include a summary of the overall condition of vegetation communities and Covered or sensitive species in the OHCA, assess any changes from the baseline or from the previous year's conditions, assess how each specific management objective is being met, and address any monitoring and management limitations. All adaptive management (changes) resulting from previous monitoring results and methods for measuring the success for such adaptive management will be discussed. Adaptive management is discussed in more detail in Section 6.0. The annual report will also include an accounting of funds used for management that year, a proposed budget for management in the coming year, and a summary statement of the status of the endowment fund.

The results of all updated vegetation mapping and Covered sensitive plant and animal surveys will be included in the annual reports and will also be provided to the San Diego Management and Monitoring Program (SDMMP) and California Natural Diversity Database. The report will also include photos within the printed report and/or electronically.

2.6 LIMITATIONS AND CONSTRAINTS

The factors that could potentially limit successful implementation of the RMP were considered in the selection of tasks, their frequency, and estimated cost. Limitations commonly include weed cover, unauthorized access, and edge effects from adjacent development. The OHCA has relatively low weed cover, has very low edge relative to existing and anticipated development, and because of topography has limited access issues. The proposed quarry has the potential to create edge effects, especially dust (absent mitigation measures) that could affect management of the OHCA. The project includes measures to minimize dust impacts.

Fire is a natural part of southern California ecosystems, including within the OHCA. Non-natural fire return intervals (increased fire frequency over historic levels) could affect the long-term viability of habitats through type conversion (e.g., Diegan coastal sage scrub to non-native grassland).

AMA management obligations will be limited to:

- Monthly patrols
- One additional crew day (40 hours) for weeding annually
- Mapping of non-natives
- Adding the AMA to the QCB flight surveys and host plant mapping

- Placement and maintenance of signage along Otay Truck Trail
- Including AMA management information in the annual report

3.0 PROPERTY DESCRIPTION

3.1 LEGAL DESCRIPTION

The OHCA is located in the foothills immediately east of Otay Mesa in unincorporated southern San Diego County (Figure 1). It is in Township 18 South, Range 1 East, Sections 28, 29, 30, and 32 on the San Bernardino Base and Meridian U.S. Geological Survey (USGS) 7.5-minute Otay Mesa quadrangle map (Figure 2). The OHCA is approximately one mile north of the border with Baja California, Mexico, one mile east of the Otay Mesa border crossing, and east of the intersection of Otay Mesa and Alta Roads (Figure 3). The OHCA is made up of all or portions of Assessor Parcel Numbers 648-050-12, 648-050-17, 648-050-14, 648-050-13, 648-080-25, and 648-090-04. The AMA is part of APN 648-050-17.

3.2 GEOGRAPHICAL SETTING

The OHCA is located within the foothills of the San Ysidro Mountains (Figure 2) within the Janal Management Unit. Topographically, the area is composed of generally parallel ranges of steep-sloping hills and mountains separated by alluvial valleys. Elevation in the western portion of the OHCA ranges from approximately 700 to 1,020 feet above mean sea level (AMSL). Elevation in the north ranges from 700 to 1,300 feet AMSL, and areas in the east extend to above 1,500 feet AMSL.

3.3 LAND USE

The area to the west of the OHCA is dominated by industrial uses, including a power plant, a private prison, an automobile storage lot, an asphalt plant, and the already approved Otay Crossings Commerce Park project. Approval of the Otay Hills project will extend industrial uses to abut a majority of the western edge of the OHCA.

The San Ysidro Mountains and foothills lie north and east of the OHCA and are largely undeveloped. A few roads, such as the Otay Mountain Truck Trail and some dirt trails, transect these mountains. Most of these mountains are considered MSCP Biological Resource Core Area (County 1997). The Otay Mountain Cooperative Land and Wildlife Management Area and the Bureau of Land Management (BLM) Otay Mountain Wilderness Area, National Wilderness Preservation System land also overlay areas east of the development footprint. The Otay Mountain Truck Trail provides access to the BLM Otay Mountain Wilderness Area, portions of which cross the northern portion of the OHCA. The trail is used mainly by U.S. Border Patrol agents and by motorists desiring a scenic view; some mountain bikers also use the trail. Besides the Border Patrol, fewer than 1,000 recreationalists use the trail each year.

Numerous dirt roads cross the study area. These roads are frequently used illegally by off-highway vehicles (OHVs), especially dirt bikes. Hundreds of dirt bikes and OHVs have been observed within the study area during surveys. The U.S. Border Patrol traverses the study area in vehicles and OHVs during daily patrols. In addition, San Diego Gas & Electric (SDG&E) maintains access roads and transmission facilities in an easement within the study area (see Section 3.6). These activities degrade the biological resources within the study area but not to an extent that appreciably decreases their value.

The southern boundary of the OHCA abuts the boundaries of the proposed East Otay Mesa Recycling and Collection Center Land Fill. The final footprint of this facility has not been determined at this time.

3.4 GEOLOGY, SOILS, CLIMATE, AND HYDROLOGY

The OHCA is located within the Peninsular Ranges Geomorphic Province, a region characterized by northwest-trending structural blocks and intervening, generally parallel, fault zones. Typical lithologies in the Peninsular Ranges include a variety of igneous intrusive rocks (i.e., formed below the surface) associated with the Cretaceous (between approximately 65 and 135 million years old) Southern California Batholith (a large igneous intrusive body). Geologic exposures in the southwestern corner of San Diego County (including the study area) consist primarily of Jurassic metavolcanic and Tertiary sedimentary rocks, with batholithic rocks generally occurring farther to the east.

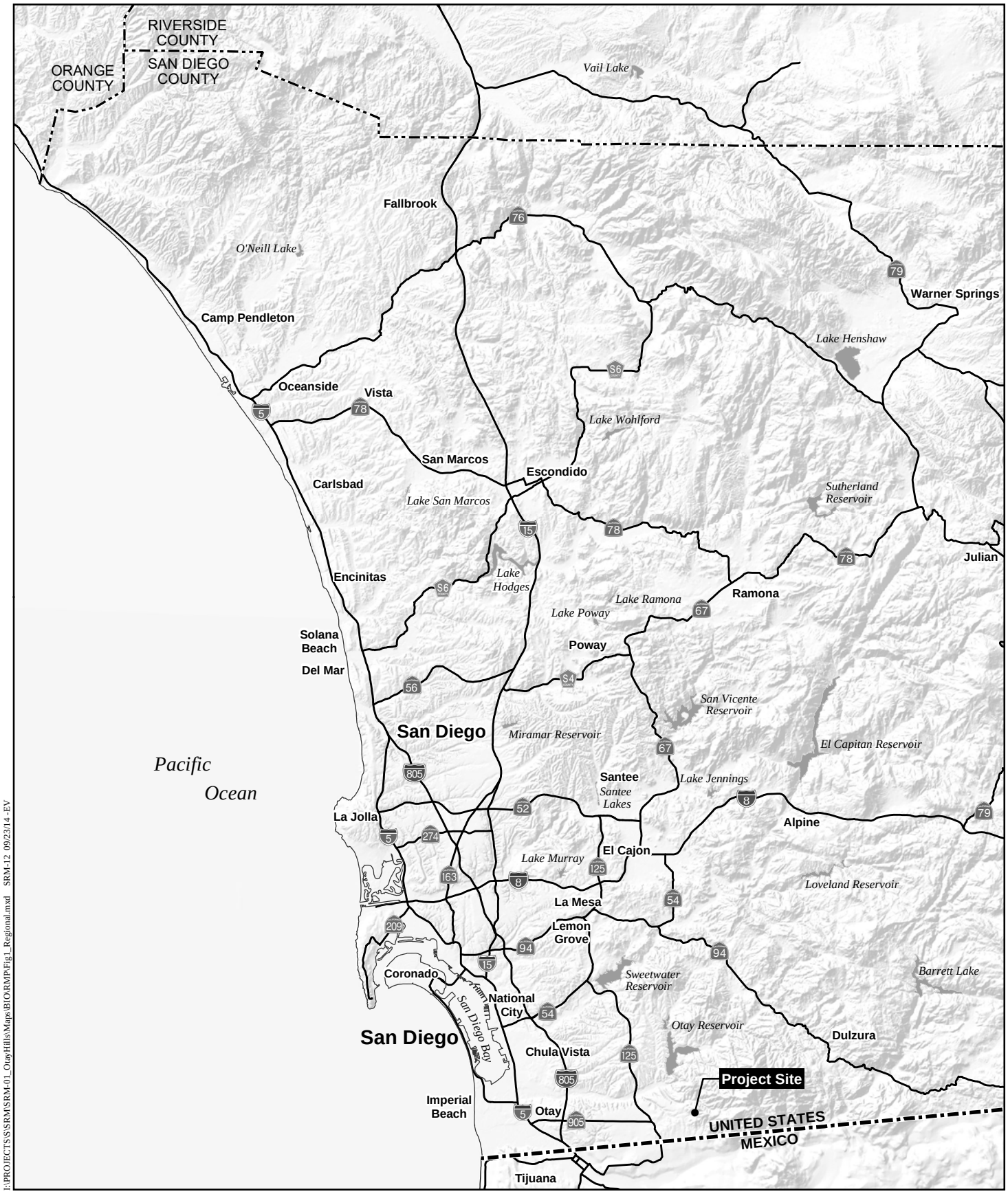
Topographically, the Peninsular Ranges Province is composed of generally parallel ranges of steep-sloping hills and mountains separated by alluvial valleys. More recent uplift and erosion has produced the characteristic canyon and mesa topography present today in western San Diego County, as well as the deposition of surficial materials including Quaternary (less than approximately 2 million years old) alluvium, colluvium, and topsoil.

Soils in the study area consist almost entirely of San Miguel-Exchequer rocky silt loam (9 to 70 percent slopes), which is typically found in mountainous uplands and consists of silt loams with a clay subsoil (Figure 4). Some of the western portion of the study area consists of Huerhuero loam (9 to 70 percent slopes), which typically consists of loams with a clay subsoil developed from sandy marine sediments (Bowman 1973).

The OHCA occurs within the South Coast Bioregion of California, which is characterized by hot, dry summers with predictable wildfires followed by wet winters with storms that can trigger mudslides on fire-denuded slopes (California Biodiversity Council 2008).

The OHCA is located within the 470-square-mile Tijuana Hydrologic Unit, which is drained by Cottonwood and Campo creeks. Although these creeks are not in the vicinity, they are tributaries to the Tijuana River that lies approximately two miles south of the OHCA.

Due to the fairly steep topography in the OHCA and lack of significant rainfall, it is unlikely that surface water has a large impact on groundwater in the area. Surface water may enter the Tijuana River and possibly end up in the Lower Tijuana River Valley alluvial aquifer.



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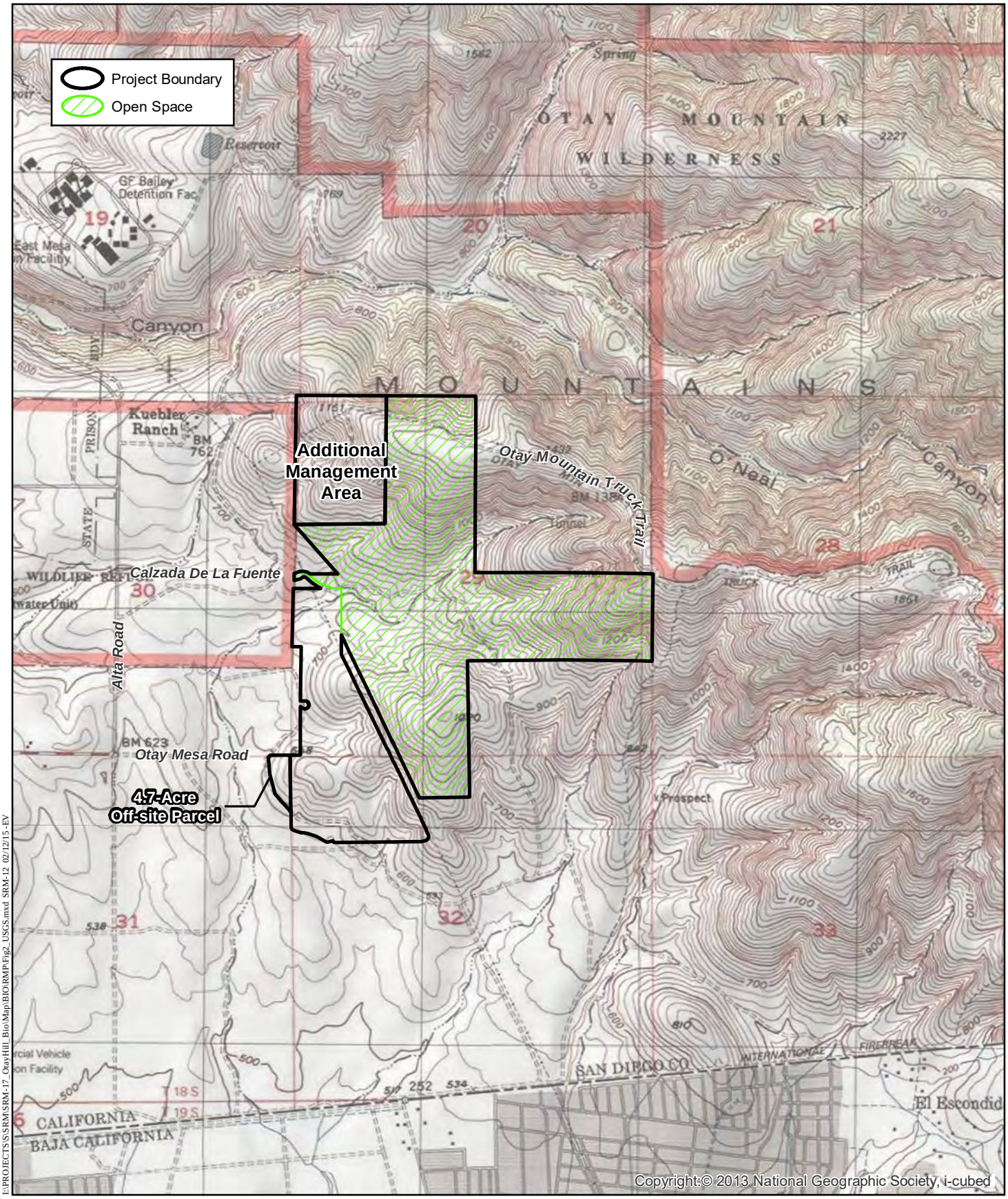
Regional Location Map

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N 0 8 Miles

Figure 1



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Project Location Map

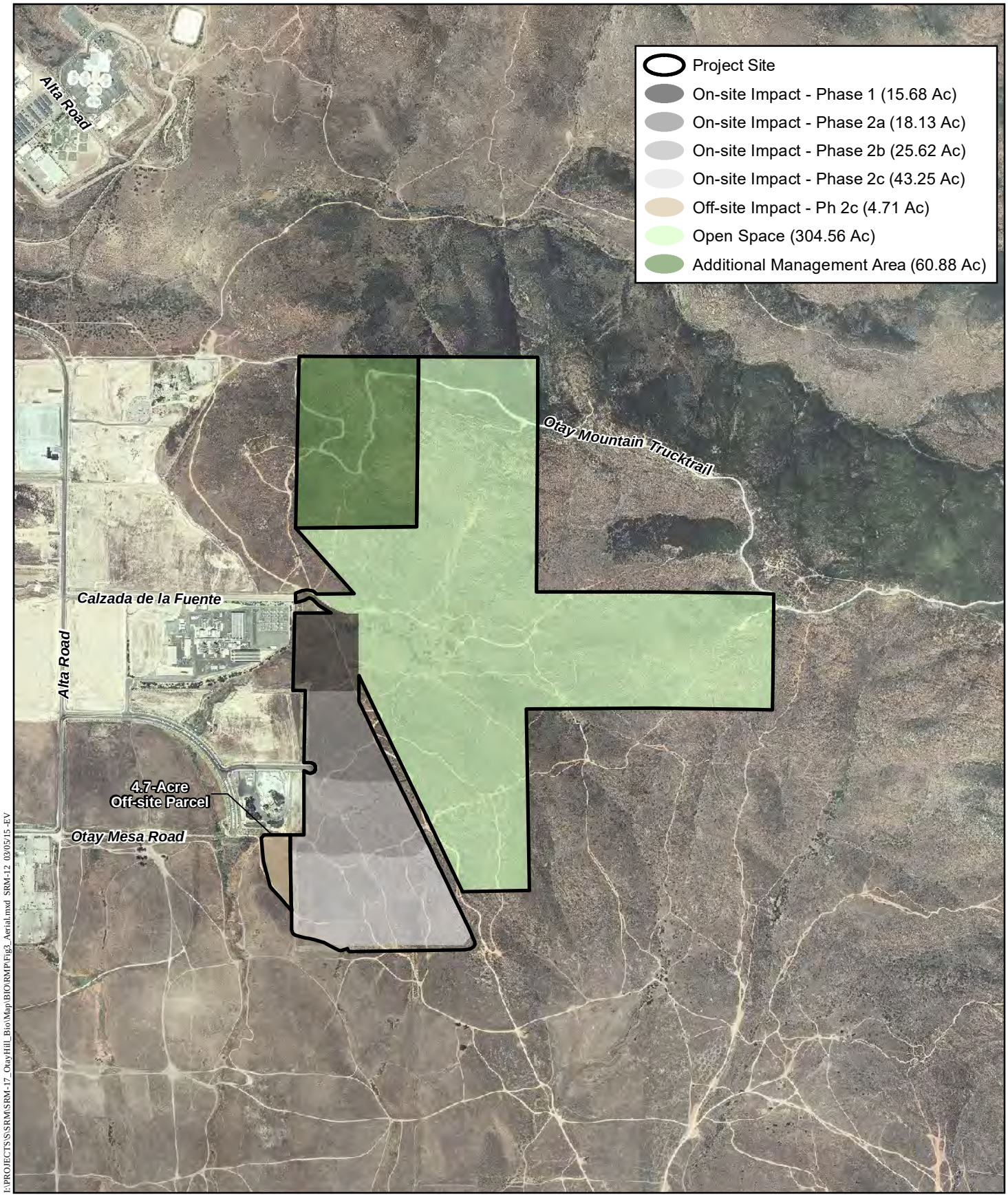
OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N

0 2,000 Feet

Figure 2



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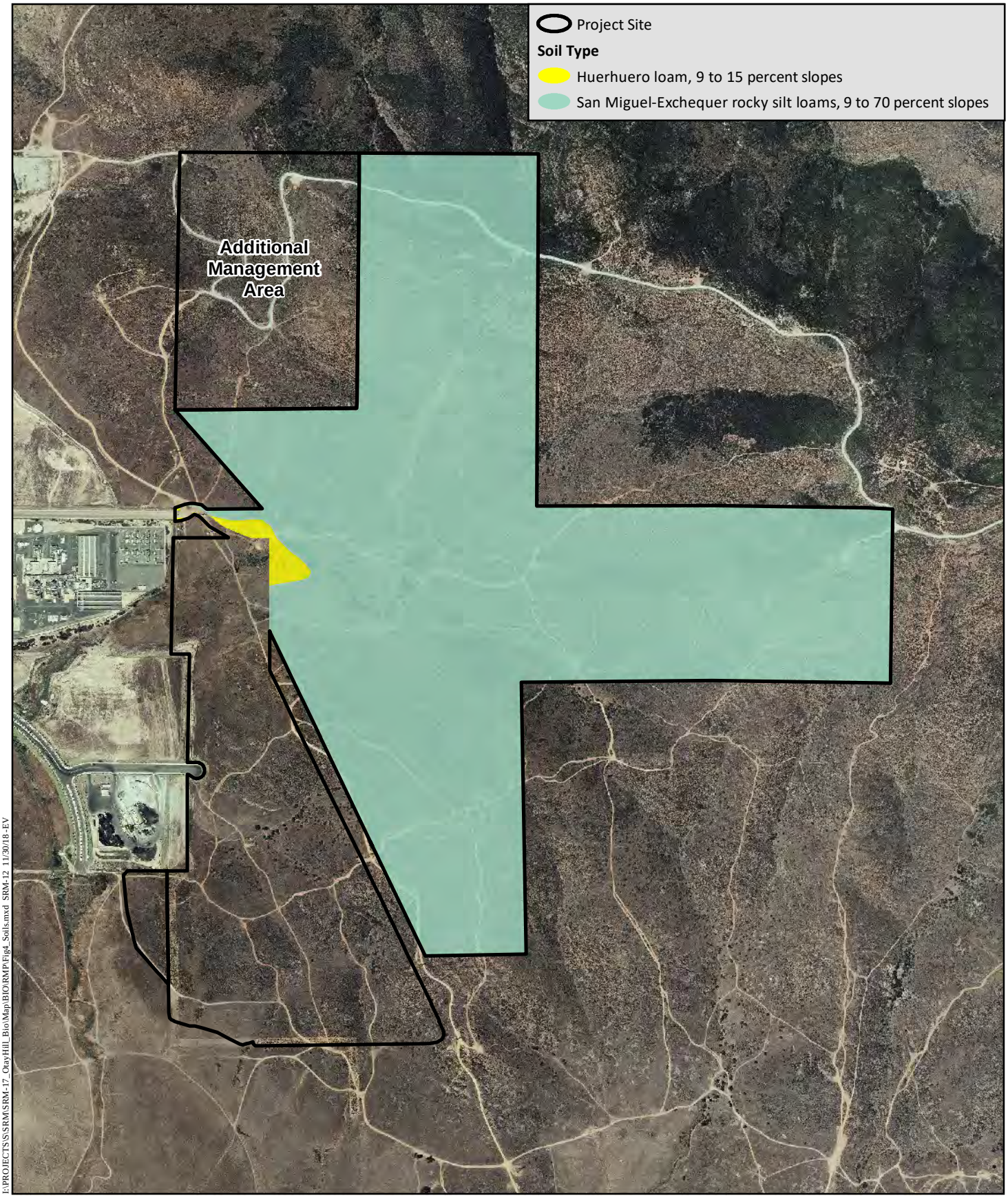
Aerial Photograph

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N 0 1,500 Feet

Figure 3



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Conservation Area Soil Types

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

Figure 4

According to the 1997 San Diego County Water Authority (SDCWA) Groundwater Report, the Lower Tijuana River Valley aquifer has a total surface area of 5.6 square miles, total storage capacity of 80,000 acre-feet, and a maximum depth of 80 feet (SDCWA 1997). Although the Tijuana River Valley aquifer collects surface water from the Tijuana Hydrologic Unit, the aquifer is approximately eight miles west of the OHCA.

3.5 TRAILS

The Otay Mountain Truck Trail bisects the very northern portion of the OHCA. This dirt road is used by motorized vehicular traffic, mountain bikes, and for hiking. The Border Patrol keeps a gate locked on the western end of Otay Mountain Truck Trail, close to the OHCA, so recreational users would have to come from the eastern end of the Truck Trail. No other trails will be located within the OHCA and access will be restricted only to those with express written permission from the Resource Manager.

3.6 EASEMENTS OR RIGHTS

There is one easement issued to others which exists within or across the OHCA (Figure 5). SDG&E has an easement for their existing 230-kV power line that traverses a very small portion of the northwest corner of the larger portion of the OHCA. As noted above, there is an existing CE over the AMA.

3.7 FIRE HISTORY

The rate of fires in San Diego County coastal shrublands generally increased over the last half of the 20th century. More than 600 fires have occurred in the foothills and mountains of San Diego County between 1910 and 1999, and several major fires in excess of 50,000 acres have occurred in recent years. The OHCA was burned in 1997 and the vegetation has largely recovered.

4.0 BIOLOGICAL RESOURCES DESCRIPTION

4.1 VEGETATION COMMUNITIES/HABITATS

In addition to developed land (Otay Mountain Truck Trail), 11 vegetation communities/habitats occur within the OHCA: mule fat scrub, cismontane alkali marsh, southern interior cypress forest, tamarisk scrub, native grassland, Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub, chamise chaparral, southern mixed chaparral, non-native grassland, and disturbed habitat (Figure 6; Table 1). The AMA supports 51.8 acres of coastal sage scrub, 7.0 acres of southern mixed chaparral, 0.3 acre of disturbed habitat, and 1.8 acres of developed land associated with the Otay Mountain Truck Trail.

Table 1
EXISTING VEGETATION COMMUNITIES/HABITATS
WITHIN THE OHCA

Vegetation Community/Habitat[1]	Acre(s)[2]
Mule fat scrub (63310)	0.03
Cismontane alkali marsh (52310)	0.07
Southern interior cypress forest (83330)	0.5
Tamarisk scrub (63810)	0.04
Native grassland (42100)	0.7
Diegan coastal sage scrub (including disturbed; 32500)	218.9
Coastal sage-chaparral scrub (37G00)	5.4
Chamise chaparral (37200)	14.8
Southern mixed chaparral (37120)	38.6
Non-native grassland (42220)	16.1
Disturbed habitat (11300)	8.7
Developed land (12000)	0.7
TOTAL	**304.6**

[1] Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008).
[2] Habitats are rounded to the nearest 0.1 or 0.01acre; thus, totals reflect rounding.

4.1.1 Mule Fat Scrub

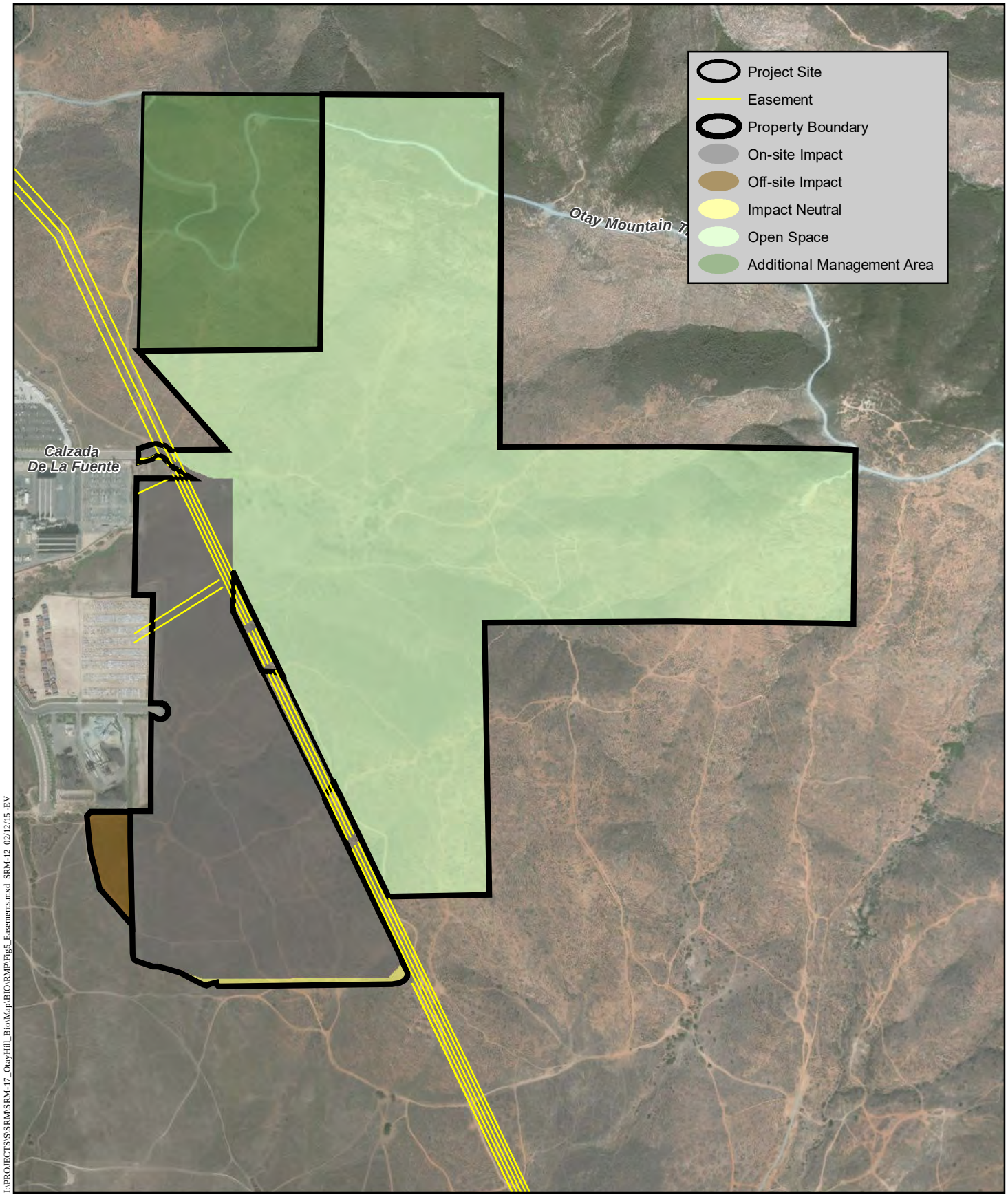
Mule fat scrub is a shrubby riparian scrub community dominated by mule fat (*Baccharis salicifolia*) interspersed with shrubby willows (*Salix* spp.) and a few other shrub species. This vegetation community occurs along intermittent stream channels with a coarse substrate and moderate depth to the water table. Mule fat scrub is maintained by frequent flooding, the absence of which would lead to riparian woodland or forest (Holland 1986). Mule fat scrub in the OHCA is dominated by mule fat; other species include arroyo willow (*S. lasiolepis*), tamarisk (*Tamarix* sp.), and broom baccharis (*B. sarothroides*).

4.1.2 Cismontane Alkali Marsh

Cismontane alkali marsh is characterized by wet or inundated areas dominated by emergent plant species, but often with an understory of grasses or sedges. Standing water or saturated soil is present during all or most of the year. High evaporation rates and low input of freshwater result in high salinity levels, especially during the summer (Holland 1986). Characteristic species generally include yerba mansa (*Anemopsis californica*), saltgrass (*Distichlis spicata* var. *stricta*), cattails (*Typha* spp.), and/or rush (*Juncus* sp.). Within the OHCA, cismontane alkali marsh is dominated by San Diego marsh-elder (*Iva hayesiana*) and southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*). An additional 284 individuals of San Diego marsh-elder will be planted in the OHCA prior to implementing Phase 1 of the project, as mitigation for impacts to 142 San Diego marsh-elder plants within Phase 1.

4.1.3 Southern Interior Cypress Forest

Southern interior cypress forest is a fairly dense, fire-maintained, low forest dominated by piute cypress (*Cupressus nevadensis*), Tecate cypress (*C. forbesii*), or Arizona cypress



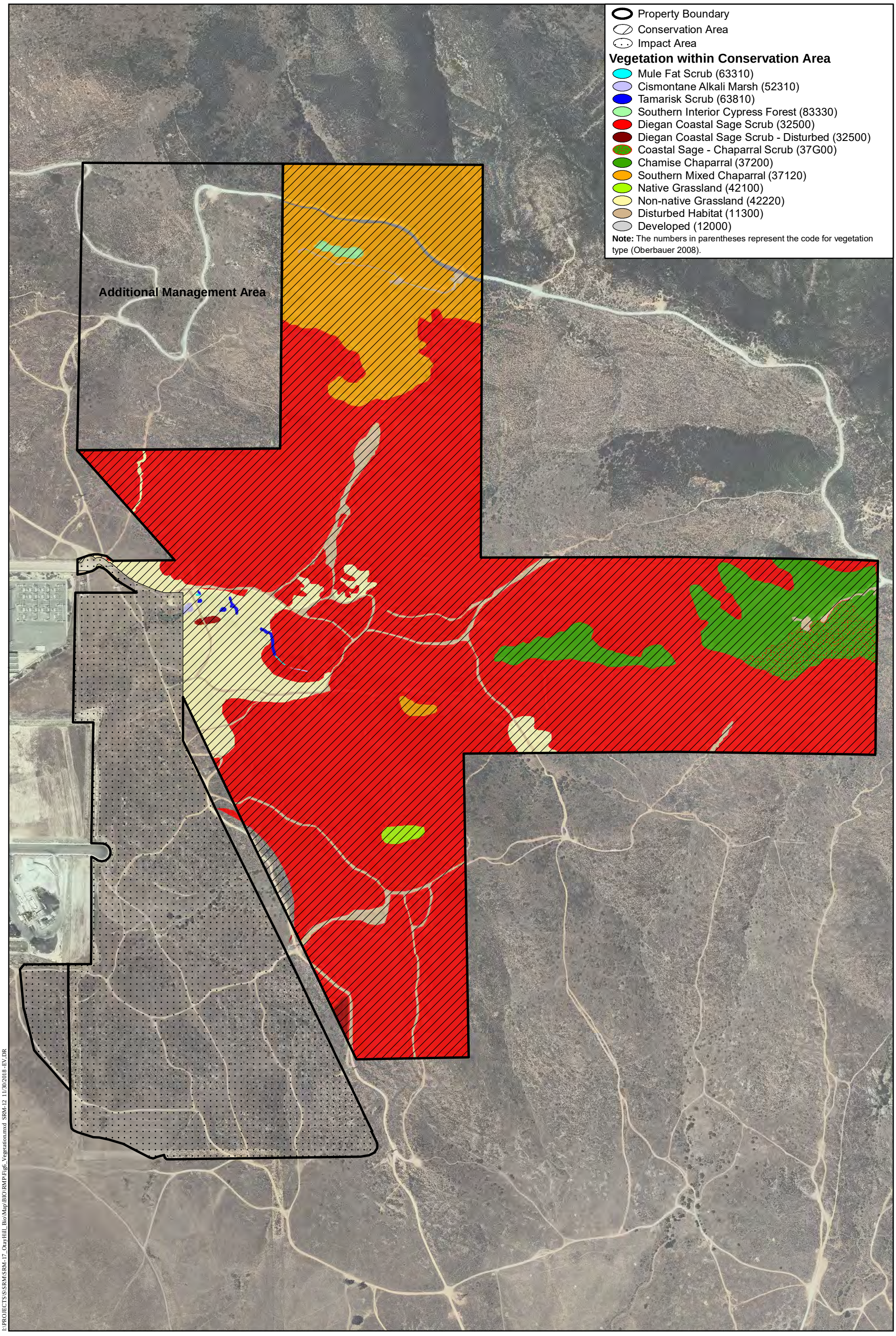
Easements

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N 0 1,000 Feet

Figure 5



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Conservation Area Vegetation

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

0 650 Feet

Figure 6

(*C. stephensonii*). This forest often occurs as isolated groves within a matrix of chaparral or piñon-juniper woodland (Holland 1986). Within the OHCA, southern interior cypress forest is dominated by Tecate cypress with a matrix of chaparral species. The other two cypress species do not occur in the OHCA.

4.1.4 Tamarisk Scrub

Tamarisk scrub is a weedy stand of tamarisk species, which are non-native plant species that displace native vegetation subsequent to a major disturbance. It occurs along intermittent streams where high evaporation rates increase the salinity level of the soil. Because of its deep root system and high transpiration rates, tamarisk can substantially lower the water table to below the root zone of native species, thereby competitively excluding them. As a prolific seeder, it is able to rapidly replace the native species that it displaces within drainages (Holland 1986). Five small patches of tamarisk scrub occur in the western portion of the OHCA.

4.1.5 Native Grassland

Native grassland is a vegetation community dominated by perennial bunchgrasses such as purple needlegrass (*Stipa pulchra*) with annual and perennial forbs such as common golden stars (*Bloomeria crocea* ssp. *crocea*) and California blue-eyed grass (*Sisyrinchium bellum*). Native grasslands generally occur on fine-textured soils that generally exclude the annual, exotic grasses. Almost all of the native grasslands in California have been displaced by non-native grassland dominated by introduced, annual species. Native grasslands occur throughout California as small isolated islands. Native grassland occurs in one patch on a northwest-facing slope in the southern portion of the OHCA. Native grasses also occur in smaller patches within Diegan coastal sage scrub on these same slopes. Native grass species that occur within this vegetation community in the OHCA include purple needlegrass and San Diego County needlegrass (*Stipa diegoense*).

4.1.6 Diegan Coastal Sage Scrub (including disturbed)

Coastal sage scrub is one of two major shrub types that occur in southern California. It occupies xeric sites characterized by shallow soils. Dominated by drought-deciduous shrub species with relatively shallow root systems and open canopies, coastal sage scrub communities often contain a substantial herbaceous component. Four distinct coastal sage scrub geographical associations are recognized along the California coast (northern, central, Venturan, and Diegan). Despite being greatly reduced from its historical distribution (Oberbauer and Vanderwier 1991), the Diegan association is the dominant coastal sage scrub in coastal southern California from Los Angeles to Baja California, Mexico (Holland 1986) and supports a number of rare, threatened, or endangered species.

Diegan coastal sage scrub (including disturbed) dominates the OHCA. Plant species observed within the Diegan coastal sage scrub include California sagebrush (*Artemisia californica*), lemonadeberry (*Rhus integrifolia*), California buckwheat (*Eriogonum fasciculatum*), and laurel sumac (*Malosma laurina*).

Disturbed Diegan coastal sage scrub contains many of the same shrub species as undisturbed habitat but is sparser and has a higher proportion of non-native, annual species. Disturbed Diegan coastal sage scrub may have developed in areas with a slower post-fire revegetation rate that allowed for more non-native species to become established and is limited to 0.7 acre of the site.

4.1.7 Coastal Sage-Chaparral Scrub

Coastal sage-chaparral scrub is a mixture of sclerophyllous chaparral shrubs and drought-deciduous sage scrub species and is regarded as an ecotone, or transition, between the two vegetation communities. This vegetation community in the OHCA contains floristic elements of both communities including California sagebrush, California buckwheat, laurel sumac, chamise (*Adenostoma fasciculatum*), and Ramona ceanothus (*Ceanothus tomentosus*).

4.1.8 Chamise Chaparral

The most widely distributed chaparral shrub is chamise, which occurs from Baja California, Mexico to northern California in pure or mixed stands. Chamise's ubiquitous distribution may be the result of it being the only chaparral species that regenerates from fire from both an underground root crown and from seed (Rundel 1986). It often dominates at low elevations and on xeric south-facing slopes with 60 to 90 percent canopy cover. Along its lower elevation limit, chamise intergrades with coastal sage scrub (Rundel 1986). Mission manzanita (*Xylococcus bicolor*) is a minor associate within this vegetation community in the OHCA.

4.1.9 Southern Mixed Chaparral

Southern mixed chaparral is composed of broad-leaved, sclerophyllous shrubs that reach between six and 10 feet in height and form dense, often nearly impenetrable stands. The plants of this association are typically deep-rooted. In southern mixed chaparral there is a well developed soil litter layer, high canopy coverage (greater than 100 percent), low light levels within the canopy, and lower soil temperatures (Keeley and Keeley 1988). This vegetation community occurs on dry, rocky, often steep north-facing slopes with little soil. As conditions become more mesic, broad-leaved, sclerophyllous shrubs that re-sprout from underground root crowns become dominant. Southern mixed chaparral in the OHCA includes such species as chamise, mission manzanita, and Ramona ceanothus.

4.1.10 Non-Native Grassland

Non-native grassland is a dense to sparse cover of annual grasses. Characteristic species in the OHCA include oats (*Avena* sp.), red brome (*Bromus madritensis* ssp. *rubens*), ripgut (*B. diandrus*), ryegrass (*Lolium* sp.), and mustard (*Brassica* sp.). Most of the annual species that comprise the majority of species and biomass within non-native grassland were introduced from the Mediterranean region, an area with a long history of agriculture and a climate similar to California. These two factors, in addition to intensive grazing and agricultural practices in conjunction with severe droughts, contributed to the successful invasion and establishment of

these species and the replacement of native grasslands with annual-dominated, non-native grassland (Jackson 1985).

Non-native grassland occurs primarily in the western portion of the OHCA and in small patches scattered throughout Diegan coastal sage scrub. This vegetation community is important raptor foraging habitat.

4.1.11 Disturbed Habitat

Disturbed habitat includes land that has been cleared of vegetation (e.g., dirt roads), contains a preponderance of non-native plant species such as star thistle (*Centaurea melitensis*) that take advantage of disturbance (e.g., from off-highway vehicles or fire), or shows signs of past or present animal usage which has reduced the land's capability of providing higher quality wildlife habitat.

Within the OHCA, disturbed habitat includes dirt roads crisscrossing the area that have been carved out of native vegetation and non-native grassland by dirt bikes, SDG&E, and U.S. Border Patrol vehicles. Although SDG&E's power line easement was almost entirely excluded from the OHCA, the dirt road that SDG&E uses to access their power poles crosses the OHCA in a few locations. The Project Proponent will provide access for SDG&E outside of the OHCA where the quarry footprint crosses SDG&E's existing road; however, existing dirt roads within the OHCA will continue to be used for access by the Resource Manager, SDG&E, and likely by the Border Patrol.

4.2 OVERALL BIOLOGICAL AND CONSERVATION VALUE

The OHCA serves as a key component enabling gene flow of many Covered and sensitive plant and animal species that move between it and adjacent open space to the north, south, and east. Sightings of the federal listed endangered QCB over multiple years within the OHCA demonstrate that it contains viable habitat for this species. Additionally, observation of southern mule deer (*Odocoileus hemionus fuliginata*) and tracks of mountain lion (*Puma concolor*) within the vicinity of the OHCA is an indication that it is part of a large contiguous block of open space that can support wide-ranging species and may act as a wildlife corridor or be part of a core wildlife area.

The OHCA is bordered to the north and east by County MSCP Subarea Plan designated Hardline Preserve and Major Amendment areas, to the southeast by Major Amendment areas, and to the south and west by Minor Amendment or Minor Amendment Subject to Special Consideration designated areas. Minor amendment areas within the Otay Hills project footprint will become take authorized upon approval of the Otay Hills project and completion of required mitigation. Designated public lands and private open space on Otay Mountain occur beyond these areas to the north and east. The OHCA will be a biologically important extension of the largest tract of protected County open space in southern San Diego County. Being located adjacent to developed areas would also make the OHCA an important buffer area for adjacent undeveloped open space.

The OHCA supports approximately 304.6 acres of habitat (and an additional 61 acres within the AMA) within which 35 Covered and/or sensitive species (18 plant and 17 animal) have been documented, as listed below (Figures 7a through 7c and 8a through 8b). Those species listed below with an asterisk are MSCP Covered Species, and QCB is also a Proposed Covered Species under the Otay Hills HCP.

Plants

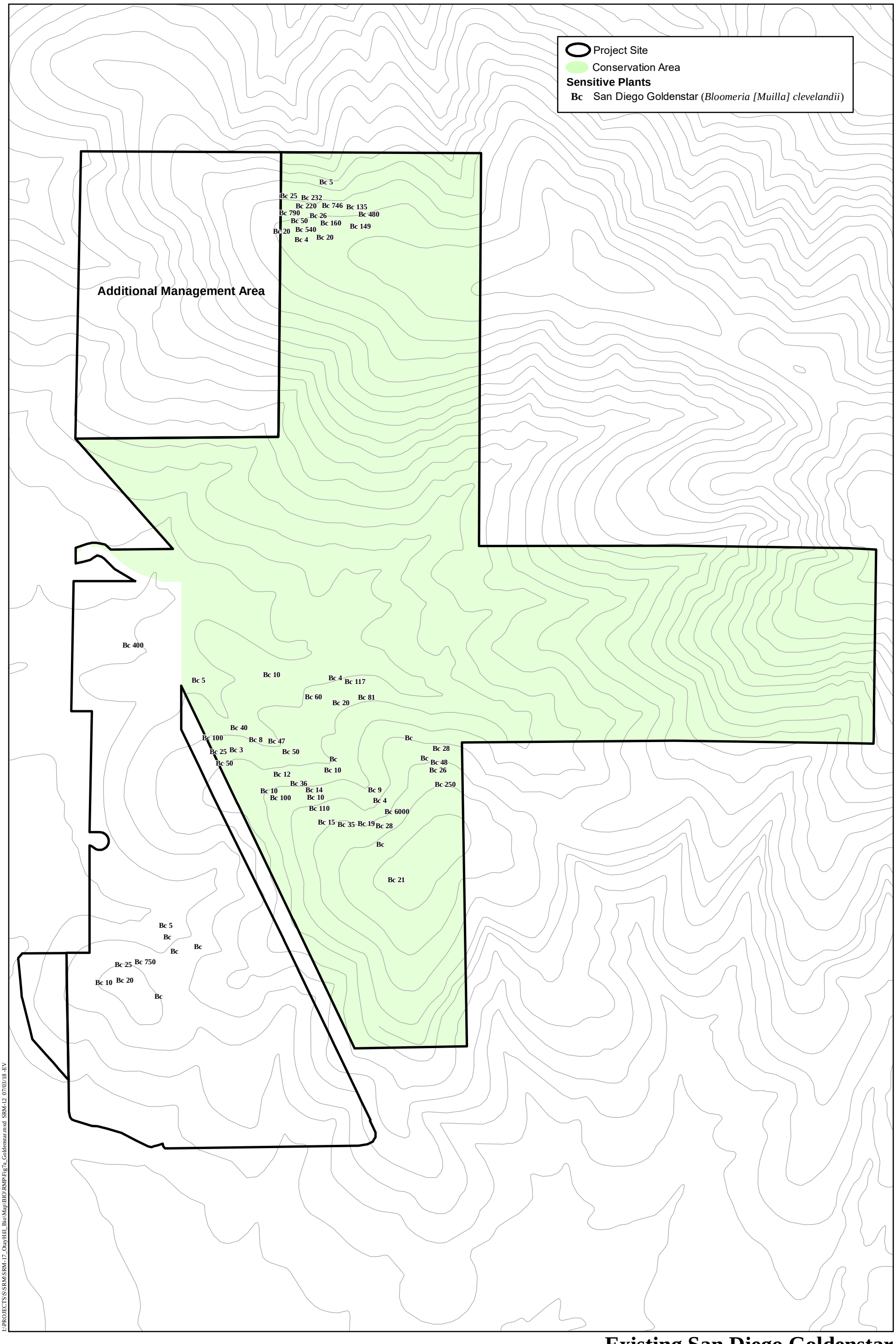
Ashy spike-moss (*Selaginella cinerascens*)
Coulter's matilija poppy (*Romneya coulteri*)
Dunn's mariposa lily (*Calochortus dunnii*)*
Gander's pitcher sage (*Lepechinia ganderi*)*
Munz's sage (*Salvia munzii*)
Orcutt's bird's beak (*Cordylanthus orcuttianus*)*
Otay tarplant (*Deinandra conjugens*)*
Palmer's grapplinghook (*Harpagonella palmeri*)
San Diego barrel cactus (*Ferocactus viridescens*)*
San Diego County needlegrass (*Achnatherum diegoense*)
San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*)*
San Diego marsh-elder (*Iva hayesiana*)
San Diego sunflower (*Viguiera laciniata*)
Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)
Summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)
Tecate cypress (*Hesperocyparis* [*Cupressus*] *forbesii*)*
Variegated dudleya (*Dudleya variegata*)*
Western dichondra (*Dichondra occidentalis*)

Animals

Invertebrates
Quino checkerspot butterfly (*Euphydryas editha quino*)

Reptiles
Red-diamond rattlesnake (*Crotalus ruber ruber*)
Coast horned lizard (*Phrynosoma coronatum*)*
Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*)*

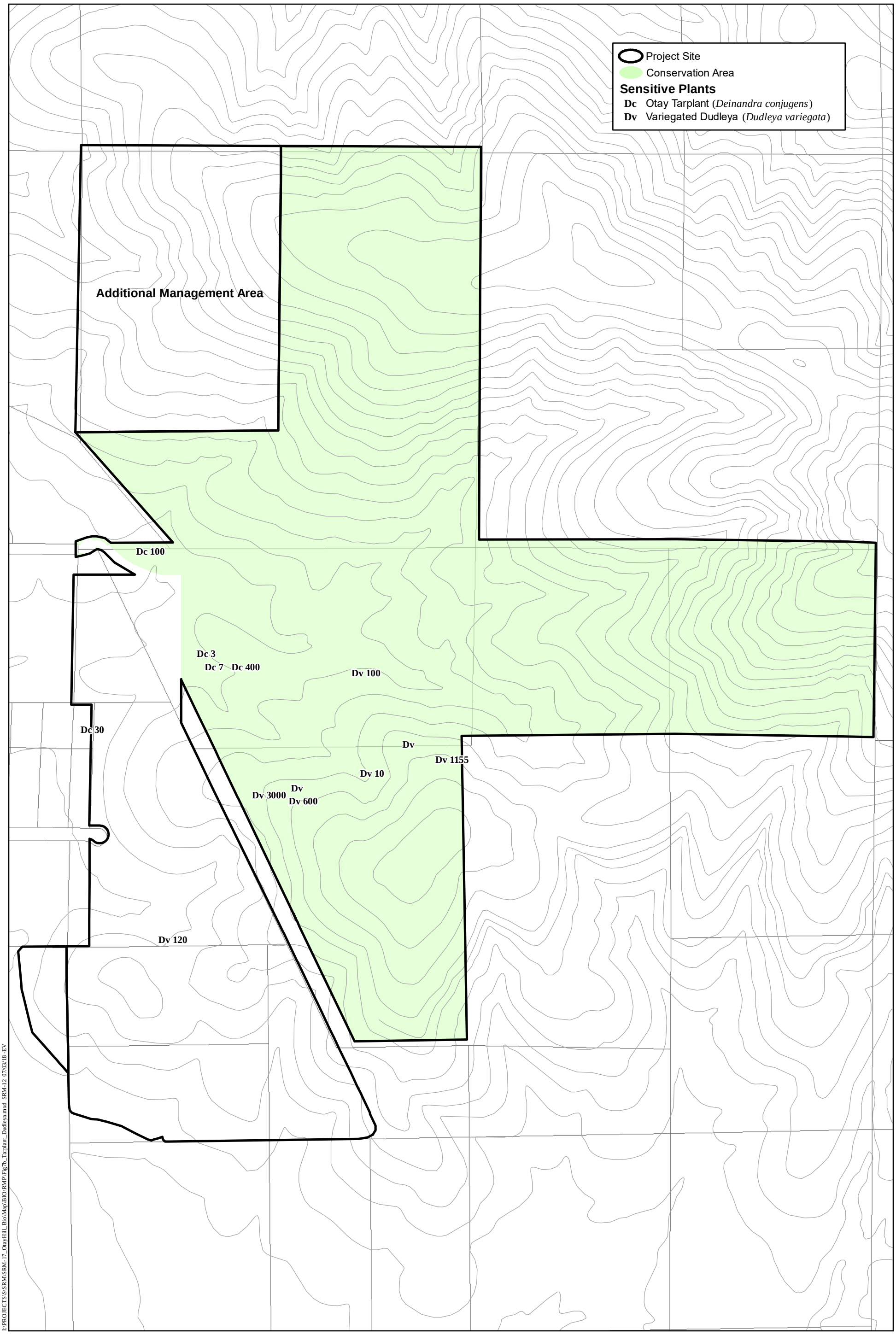
Birds
Coastal California gnatcatcher (*Polioptila californica californica*)*
Bell's sage sparrow (*Amphispiza belli belli*)
Golden eagle (*Aquila chrysaetos*)*
Burrowing owl (*Athene cunicularia*)*
Loggerhead shrike (*Lanius ludovicianus*)
Grasshopper sparrow (*Ammodramus savannarum*)
Northern harrier (*Circus cyaneus*)*
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)*



Existing San Diego Goldenstar

OTAY HILLS RESOURCE MANAGEMENT PLAN

Figure 7a



Existing Otay Tarplant and Variegated Dudleya

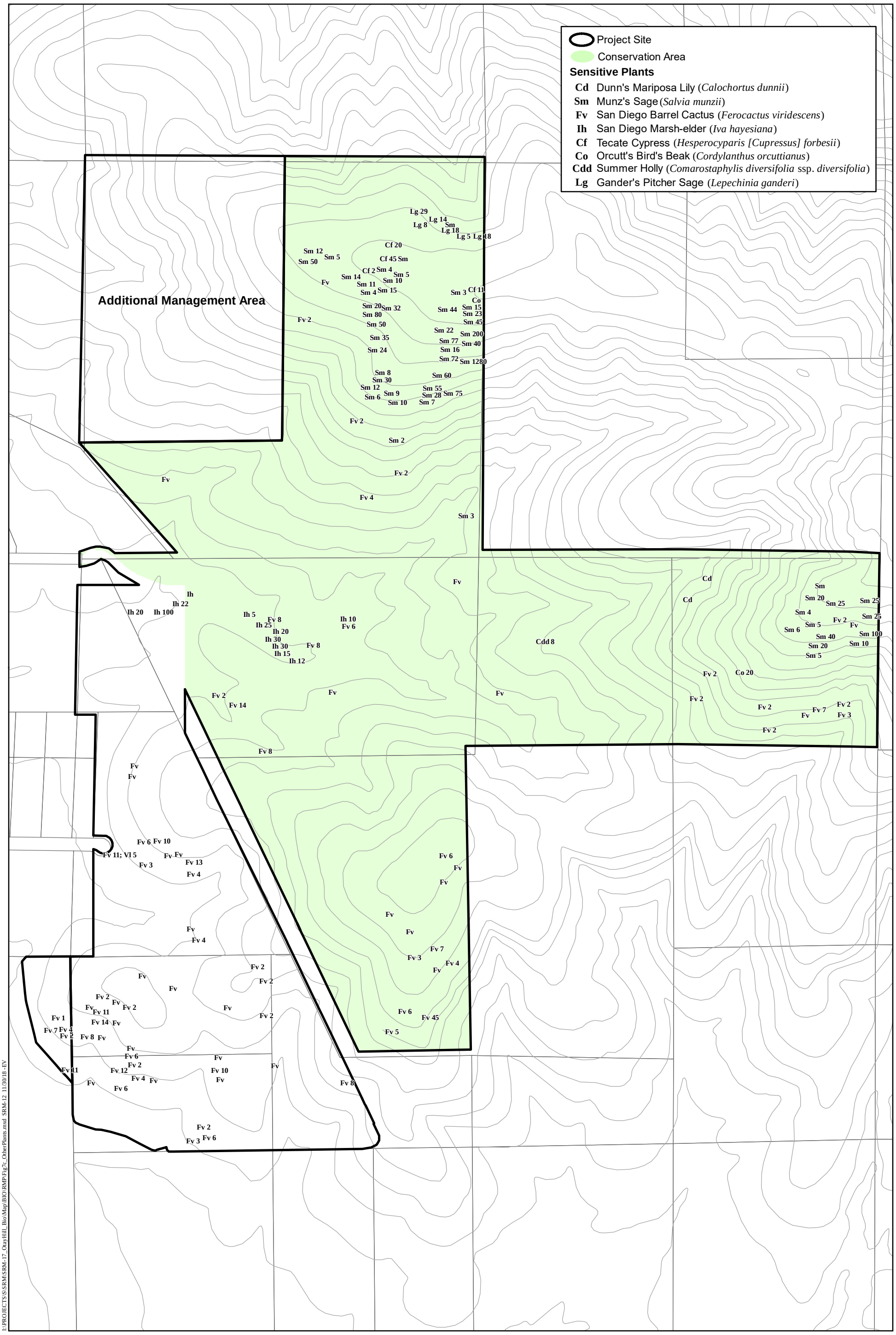
OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N

0 600 Feet

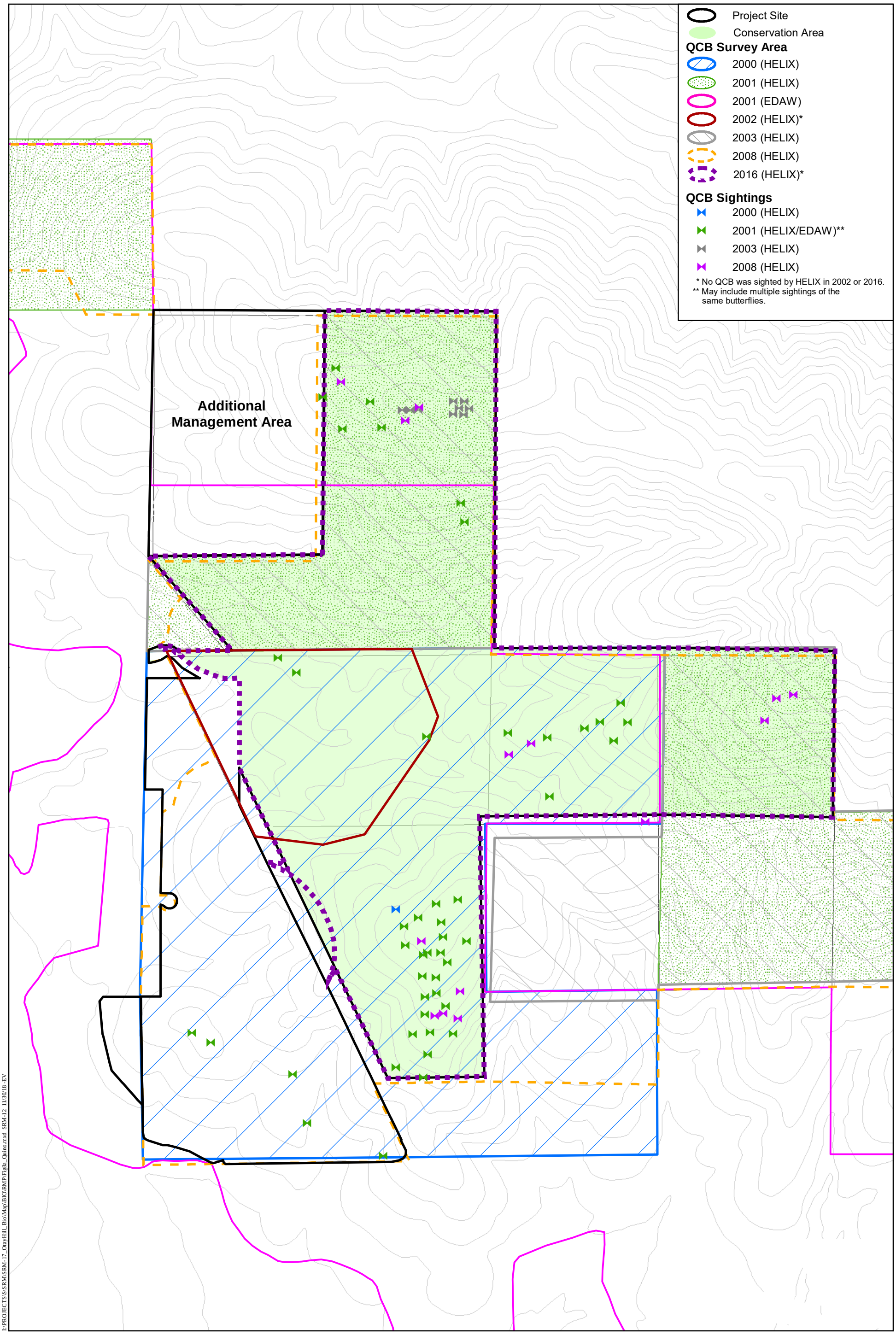
Figure 7b



Other Existing Federal, State, and County List A and B Sensitive Plant Species

OTAY HILLS RESOURCE MANAGEMENT PLAN

Figure 7c



Quino Checkerspot Butterfly (QCB) Survey Limits and Sightings

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N 0 700 Feet

Figure 8a

Project Site

Sensitive Animals*

CAGN	Coastal California Gnatcatcher	(*Polioptila californica californica*)
GOEA	Golden Eagle	(*Aquila chrysaetos*)
SDHL	San Diego Horned Lizard	(*Phrynosoma coronatum blainvillii*)
CWWH	Coastal Whiptail	(*Aspidoscelis tigris stejnegeri*)
RCSP	Southern California Rufous-crowned Sparrow	(*Aimophila ruficeps canescens*)
LOSH	Loggerhead Shrike	(*Lanius ludovicianus*)
HOLA	Coast Horned Lizard	(*Phrynosoma blainvillii*)
SDBJ	San Diego Black-tailed Jackrabbit	(*Lepus californicus bennettii*)
RDRS	Red-diamond Rattlesnake	(*Crotalus ruber ruber*)
SGSP	Bell's Sage Sparrow	(*Amphispiza belli belli*)
TUVU	Turkey Vulture	(*Cathartes aura*)
NOHA	Northern Harrier	(*Circus cyaneus*)
BAOW	Common Barn Owl	(*Tyto alba*)
MUDE	Southern Mule Deer	(*Odocoileus hemionus fuliginata*)

*Sensitive resources in red represent HELIX's 2011 survey data.
Sensitive resources in orange represent HELIX's 2008 survey data.
Sensitive resources in green represent HELIX's 2004 survey data.
Sensitive resources in black represent EDAW's 2001 survey data.
Sensitive resources in blue represent HELIX's 2000/2001/2003 survey data.

Additional Management Area

CAGN 2 SGSP 2 RCSP RCSP CAGN RCSP SDBJ RCSP SGSP CAGN 2 RCSP RCSP CWWT CWWT SGSP RCSP RCSP SGSP LOSH SGSP SDHL SDHL RCSP LOSH 2 RDRS CWWT SDHL SDHL SDBJ SDHL LOSH RTHA SDHL BAOW SDBJ TUVU RCSP SDHL LOSH LOSH CWWT CWWH RCSP SDBJ NOHA HOLA CAGN 2 CAGN 2 CWWH LOSH MUDE SDBJ CAGN 2 RCSP SDBJ SDBJ LOSH SDBJ CWWT SDBJ SDBJ SDBJ RCSP LOSH SGSP SGSP SDHL SDBJ HOLA 2 HOLA 2 SDBJ RCSP 2 RCSP LOSH 2 SGSP RCSP CAGN 2

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Conservation Area Existing Sensitive Animal Species (except QCB)

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N 0 600 Feet

Figure 8b

California horned lark (*Eremophila alpestris actia*)
Turkey vulture (*Cathartes aura*)
Common barn owl (*Tyto alba*)

Mammals
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
Southern mule deer (*Odocoileus hemionus fuliginata*)*
Mountain lion (*Puma concolor*)*

Appendix B, Species Accounts, provides a complete description of covered species that occur within the OHCA.

5.0 MANAGEMENT ELEMENTS AND GOALS

5.1 BIOLOGICAL GOALS AND TASKS

Three start-up tasks will be implemented by the Project Proponent prior to turn over to the Resource Manager.

1. All trash shall be removed from the OHCA and AMA. Currently, there is limited trash on the site. All trash removal should be monitored by a biologist to ensure sensitive resources are avoided.
2. The Project Proponent will install six foot tall galvanized chain link fencing on the eastern and southern boundary of the quarry, against the western boundary of the OHCA (Figure 9).
3. Permanent signage will be posted every 500 feet along the western and southern boundaries of the OHCA and along the portion of Otay Truck Trail that traverses the OHCA and AMA (Figure 9), and at locations of any unauthorized trails entering the OHCA. All signs will be corrosion-resistant (e.g., steel), measure at minimum 12 by 18 inches in size, be posted on a metal post at least three feet above ground level, and provide notice in both Spanish and English that the area is restricted. The signs will state the following:

Sensitive Environmental Resources
Area is Restricted by Easement
Entry without express written permission
from the County of San Diego is prohibited.
To report a violation or for more information about
easement restrictions and exceptions contact:
County of San Diego, Department of Planning & Development
Services Ref. PDS2004-3300-04-004
Phone Number: (858) 694-2960

In addition, signage will be placed such that trespassing laws can be enforced. Additionally, the Resource Manager shall provide the sheriff's office with a letter stating that the sheriff's office

has the right to enforce this even if the land owner is not present to insure that enforcement will occur.

As noted above, the purpose of this RMP is to identify management goals and objectives for the existing habitats and associated species that occur within the OHCA consistent with the vision for the OHCA, and to provide specific management tasks to meet those goals and objectives. In order to meet this overall purpose, this RMP establishes the following goals with regard to biological resources:

Goal 1: Conserve native vegetation in the OHCA that is in the Otay Lakes/Otay Mesa/Otay River Valley BRCA and contiguous with the Otay Mountain/Marron Valley BRCA.

Goal 2: Conserve existing populations of Proposed Covered Wildlife Species through monitoring, maintenance, and management of the OHCA.

Goal 3: Conserve existing and transplanted populations of Proposed Covered Plant Species through monitoring, maintenance, and management of the OHCA.

Goal 4: Maintain physical conditions of the open space for the benefit of biological resources, including Proposed Covered Species, through appropriate access controls, trash removal, fire management, and related measures.

Goal 5: Provide program administration through planning and reporting on the RMP implementation in a consistent and efficient manner.

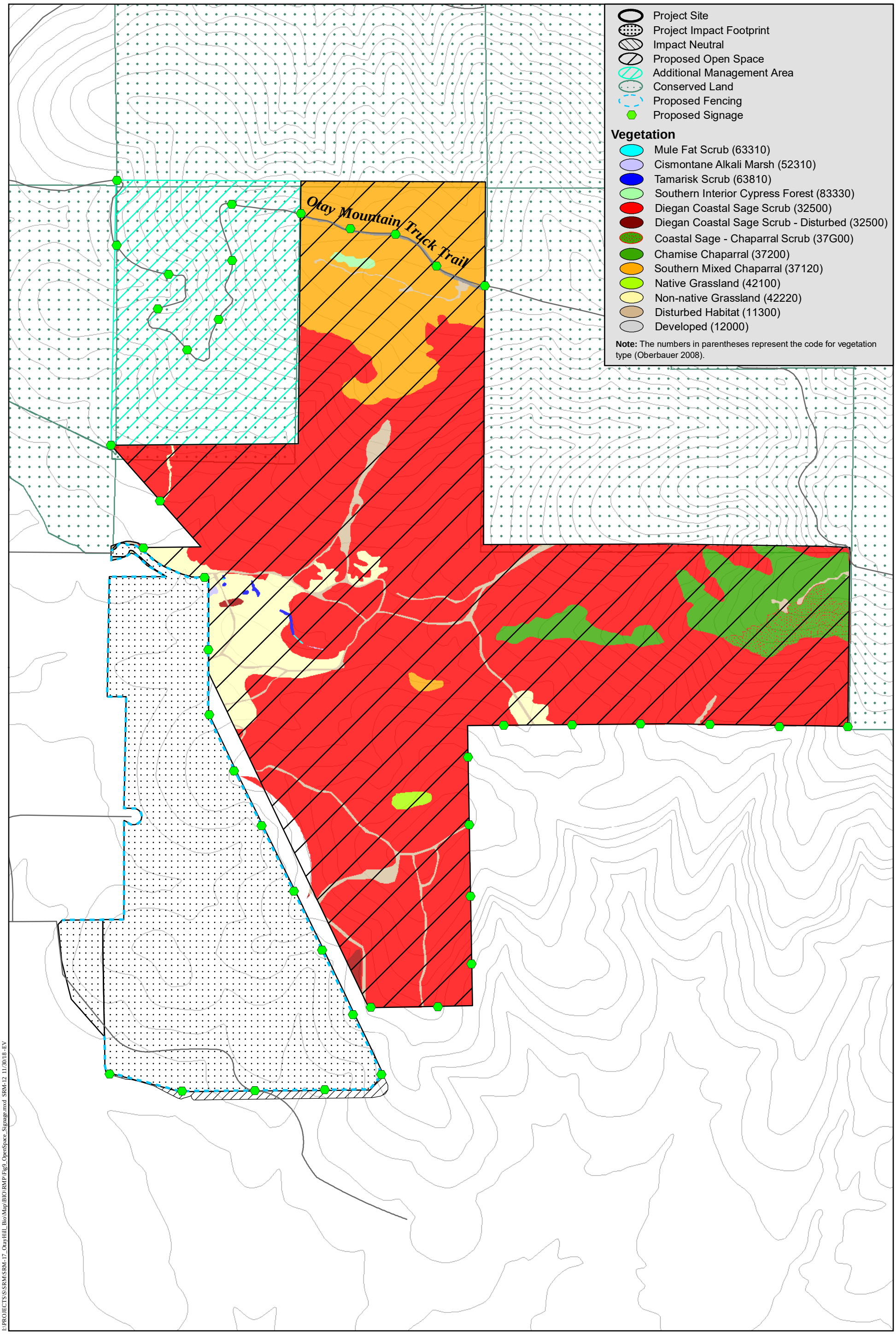
Goal 6: Coordinate/Integrate Management of the OHCA with adjacent conserved lands within the Janal Management Unit of the San Diego Management and Monitoring Program Management Strategic Plan (2013).

Goal 7: Ensure that, through the monitoring and reporting process, results of management are evaluated, and management is adjusted appropriately to meet the RMP goals and the County and Wildlife Agencies' commitment to the conservation goals of the MSCP.

Specific objectives for achieving each goal along with specific tasks needing to be implemented to meet these objectives are spelled out below.

Goal 1: Conserve Native Vegetation in the OHCA that is in the Otay Lakes/Otay Mesa/Otay River Valley BRCA and contiguous with the Otay Mountain/Marron Valley BRCA.

Goal 1 is to retain the vegetation on the property while recognizing that changes will occur over time. The goal is to maintain at least 295.5 acres of sensitive vegetation communities as shown in Table 1, meaning the acreage of disturbed and developed land would not increase. The community-level targets reflect the baseline conditions and provide a point of comparison for conditions on the property over time. Disturbed habitat and developed land will be subject to the Goal 1 tasks, and should these areas, over time, revert to native vegetation that would be viewed



Fencing and Signage

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N 0 650 Feet

Figure 9

as a beneficial change. The objectives and tasks for Goal 1 focus management on maintaining the largely undisturbed state of the property and controlling the infestation and spread of invasive, non-native plant species (weeds).

Objective 1.1: Protect, maintain, and manage the 304.6-acre conservation area including at least 295.5 acres of sensitive habitat within the OHCA.

Task 1.1.1: *Record Conservation Easement.* Conserve 304.6 acres of open space through recordation of a Wildlife Agency-approved CE to the County, naming each of the Wildlife Agencies as third party beneficiaries to the CE. Additionally, an OSE shall also be recorded consistent with County policy. Fee title of the OHCA shall be held by the County, Resource Manager, or other entity acceptable to the County and Wildlife Agencies.

Task 1.1.2: *Record Access Easement*. Record access easements to the Resource Manager as needed to access all of the OHCA for implementation of the RMP.

Task 1.1.3: *Baseline Vegetation Map*. Prepare baseline vegetation map of the OHCA using the Vegetation Classification Manual for Western San Diego County, cross-referenced to Holland code).

Task 1.1.4: *Update Vegetation Mapping.* Update the vegetation mapping at least once every five years and evaluate the changes in terms of the total sensitive habitat acreage target and the vegetation acreage baseline outlined in Table 1. Each mapping event will use the same classification system as the baseline (using the Vegetation Classification Manual for Western San Diego County, cross-referenced to Holland code).

As part of each mapping update, changes in vegetation community types and acreage will be compared to the Table 1 baseline and the previous update (if one exists), and an assessment will be made to determine if the Goal 1 target is being met, as well as whether the relative acreage of vegetation types has changed (e.g., whether non-native grassland acreage has increased relative to coastal sage scrub acreage). For any noted changes, the significance and likely cause(s) of the changes will be identified, as well as any remedial actions or changes to management activities that are needed.

Task 1.1.5: *Assess Changes.* If changes to the native vegetation acreage targets are thought necessary, such changes will be proposed to the County and Wildlife Agencies for concurrence as needed. The County and Wildlife Agencies must concur with any targets before a modification is made to the RMP.

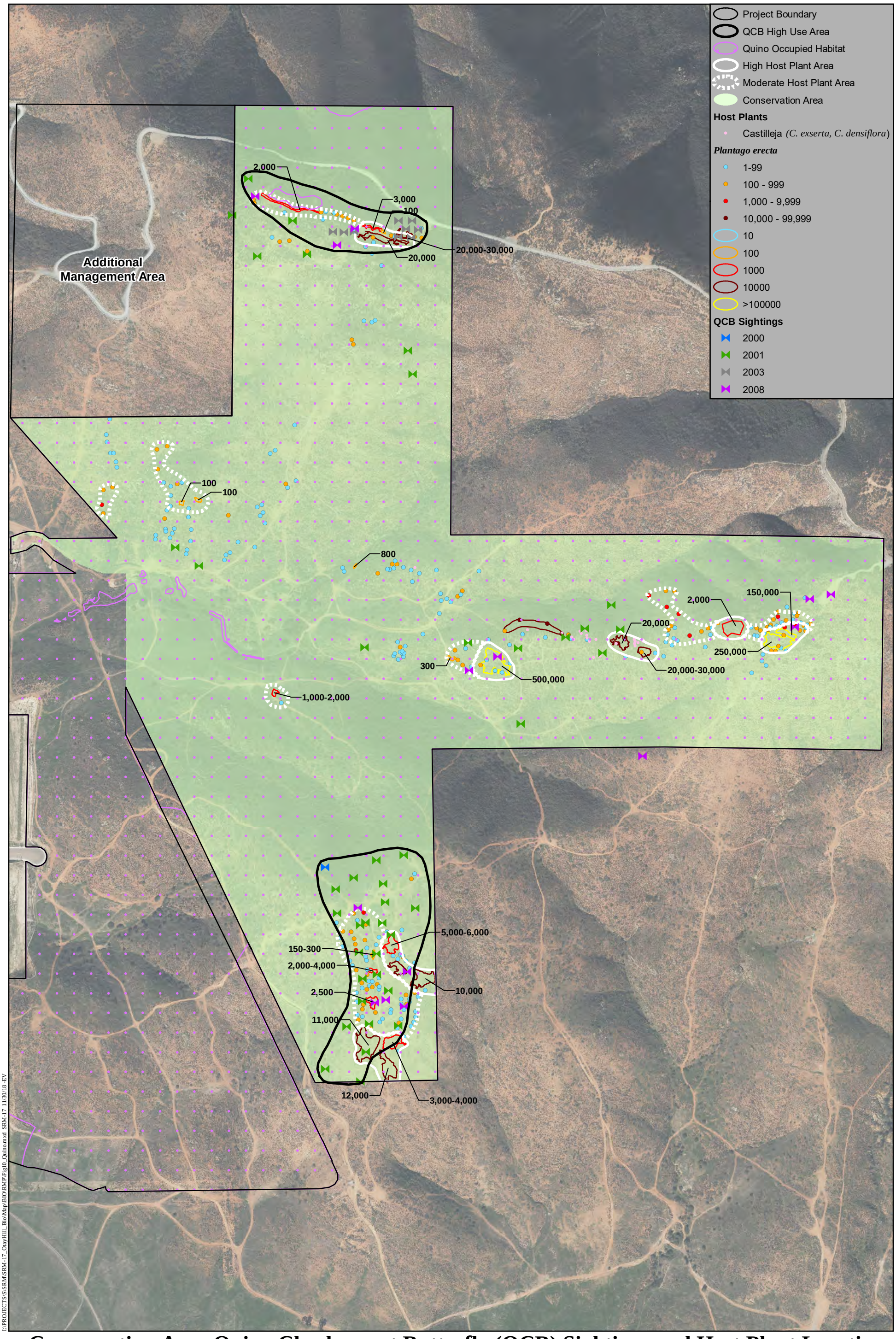
Task 1.1.6: *Map Non-native Species.* During the first year of RMP implementation, create a list of all invasive non-native plant species on the OHCA and AMA using existing species lists from previous reports of the property and from on-site inspection. Special attention should be paid to species noted in the Management Priorities for Invasive Non-native Plants. A Strategy for Regional Implementation, San Diego County, California (Dendra Inc. 2012). Map the invasive, non-native plant species (exclusive of non-native grasses) on the property by the end of the second year of RMP implementation and update the mapping every five

years. Plant locations will be recorded as points or polygons using specific location data (Global Positioning System [GPS] coordinates). Where appropriate, report invasive species consistent with Management Priorities for Invasive Non-native Plants. A Strategy for Regional Implementation, San Diego County, California. In QCB high use areas (Figure 10), this mapping will occur annually.

During an April 2019 site visit, SDHC documented an approximately eight-acre infestation of fennel (*Foeniculum vulgare*) in the OHCA. If not addressed early, this species could continue to spread. Therefore, the fennel will be controlled starting in year 1 through a three-year removal plan totaling eight crew days of treatment, with three surveys to ensure avoidance of rare plants in the area.

Task 1.1.7: *Annual Assessment for Rapidly Expanding Weed Populations.* The OHCA and AMA will be searched for new or rapidly expanding invasive plant species locations at least once per year. These observations will be incorporated into the latest map of invasive plant species. These rapid assessments are designed to identify potentially problematic invasive plant locations before they become outbreaks. These locations will be targeted for removal during the year in which they are observed and will be included in the following year's work plan for follow-up treatment.

Task 1.1.8: *General Weed Control.* Non-native plant species will be removed from the OHCA (outside of QCB high use areas) two times per year during the late winter and early spring in areas identified as problematic in annual weed assessments per task 1.1.7 and areas where non-native plant species identified by the most current California Invasive Plant Council (Cal-IPC) Inventory as High or Moderate category species exceed 20 percent cover based on a visual estimate, with High category species targeted for more aggressive removal. In addition, any Management Level 1 or 2 plants will be removed within two weeks of detection and any Level 3 plants will be removed in the next scheduled removal event. Management Level 4 plants will be targeted for aggressive removal in order to control their population and eradicate them if possible. Any weeding conducted within tecate cypress forest will be sensitive to the Thorne's hairstreak butterfly (*Callophrys thornei*) breeding season in case of future occupation by the Thorne's hairstreak. Based on the existing relatively low weed cover and the overlap with the 218.9 acres of Diegan coastal sage scrub being maintained, it is anticipated that four crew days per year consisting of two crew days per weeding effort will be required: approximately one crew day for coastal sage scrub and one crew day for non-native grassland. A "crew day" is defined as a landscape crew of four individuals.



Conservation Area Quino Checkerspot Butterfly (QCB) Sightings and Host Plant Locations

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N 0 550 Feet

Figure 10

Goal 2: Conserve existing populations of Covered Wildlife Species through monitoring, maintenance, and management of the OHCA.

Objective 2.1: Maintain existing population(s) of QCB within the OHCA through management and monitoring of 304.6 acres of suitable habitat that includes eight high density host plant areas, two high use areas (e.g., hilltops), and adult nectar sources of sufficient density that will provide long-term persistence (> than 100 years) of the on-site QCB population; and manage 61 acres of suitable habitat in the AMA to augment onsite and offsite QCB populations in the region.

Task 2.1.1: *QCB Host Plant Mapping*. During the first year and every three years thereafter, map the extent and abundance of host plants within high host plant areas and adjacent moderate host plant areas for the OHCA and AMA. For areas with dense patches of host plants, record the boundaries with a GPS device, number the location, and estimate population size and density (i.e., percent cover), and percent cover of invasive species, and other threats. For both the high and moderate host plant areas, conduct a visual assessment of host plant and nectaring resources, along with non-native weed cover and threats using a methodology similar to the SDMMP rare plant monitoring protocol. Based on this data, in coordination with SDMMP and other regional efforts as needed, identify host plant enhancement areas where additional non-native plant removal and/or future seeding needs to occur, as well as monitor long-term trends of overall habitat quality for the QCB.

Task 2.1.2: *QCB High Host Plant Area Weed Control.* Areas on the OHCA and AMA will be prioritized for treatment first within QCB high host plant areas (Figure 10) and areas identified for enhancement based on QCB host plant mapping conducted under task 2.1.1. High host plant areas total approximately seven acres in size. There are also an additional 8.9 acres of area adjacent to these high host plant areas will be treated secondarily if the high host plant areas are weeded in less time than the allotted eight crew days per year noted below. The priority for weed treatment will also be based on the level of threat posed by the plants to the habitats of sensitive species. The areas to be weeded will be identified in an annual work plan for review by the County and Wildlife Agencies. Nonnative cover should be less than 10 percent cover of Cal-IPC High and Moderate category species within each of the high host plant areas, with High category species targeted for more aggressive removal. Weeding on the AMA will be limited to 40 crew hours per year.

The QCB larval food and adult nectar plants require open ground for successful reproduction and long-term persistence (*Habitat Restoration Methods: Recovery Plan for the Quino Checkerspot Butterfly; In USFWS 2003*). Because areas of open ground allow for movement and thermoregulation of adults and larvae, non-native vegetation removal, including removal of non-native grasses, has potential to improve Quino habitat. Removal of weeds within or adjacent to host plants will be done in a manner to prevent incidental take of QCB. In order to maximize success, weeding will need to be performed in the spring after germination but prior to seed set for the target weed species, which is coincident with when QCB larvae have the potential to be actively feeding. Therefore, weed management in QCB high host plant areas should be performed in the presence of a biologist with a USFWS 10(a)(1)(A) recovery permit for QCB. The biologist's responsibility will include ensuring the work is performed prior to seed set, approving the work area prior to work, identifying the access route, and

being present during work. If larvae are observed in the work area immediately prior to work, efforts should be redirected to adjacent areas.

The method of weed management within or adjacent to Quino host plants must be based on recommendations for restoring occupied habitat described in the 2003 USFWS Recovery Plan for Quino, as well as currently accepted and approved methods. These methods may include hand removal, dethatching, chemical application, or any other techniques that can be performed without impacting eggs, larvae (diapausing or active), and/or adult butterflies, and shall be spelled out in the annual work plan.

To date, only one study has looked at specific herbicides being utilized in weed management of QCB habitat. That study looked at the early growth of Quino larvae following exposure to Fusilade® or Transline® along with a surfactant and found that there were no direct or indirect effects from exposure to these two herbicides (Williams and Deutschman 2012). Additionally, application of a glyphosate (a broad-spectrum herbicide, such as Roundup® or Resolva 24H®) has been used successfully on sites in central and southern San Diego County (Dodero 2003; *Habitat Restoration Methods: Recovery Plan for the Quino Checkerspot Butterfly*). Because pre-emergent herbicides such as Pendulum® or Surflan® are non-selective in nature and could kill QCB host plants, pre-emergent herbicides should not be used. Any other methods that deviate from the proposed methods described above should be discussed in consultation with USFWS prior to work. Additional measures may be proposed and may be implemented if approved in advance by USFWS.

Weed treatment will occur twice annually, or as necessary, during periods when treatment would be most effective (based on plant phenology). All treatments will be conducted by personnel trained in native plant identification, and all treatments within QCB high host plant areas will be directly overseen by a biologist with a 10(a)(1)(A) recovery permit for QCB. The weed treatment events will consist of four crew days per event, meaning eight crew days per year. A "crew day" is defined as a landscape crew of four individuals.

Areas where weed treatment occurs will be monitored twice annually to determine the effectiveness of the control treatment methods and to determine if additional or different methods need to be taken to effectively control the weeds.

Task 2.1.3: *Conduct QCB Adult Flight Surveys.* Conduct adult QCB surveys at least once every three years starting in year three on the OHCA and AMA. Surveys will be planned to occur in years of rainfall/climatic conditions that maximize QCB observations. Population assessments will consist of three surveys conducted one to two weeks apart at the peak of the flight season and will be conducted in QCB high use areas (Figure 10). Surveys will occur during conditions recommended in the most current USFWS survey protocol (USFWS 2014) or most current recommendations from USFWS. The Resource Manager will coordinate with the USFWS, in coordination with SDMMP and other regional efforts as needed, on the appropriate timing of the surveys. The surveys will include mapping of nectar plants.

The host plant phenology will be recorded in conjunction with larval and adult flight season in order to compare with fluctuations in Quino observations. Host plant phenology data collected will include tracking germination, inflorescence emergence, and senescence.

Task 2.1.4: *QCB Larval Surveys.* Conduct larval surveys at least once every six years in high and moderate host plant areas. Up to 25 acres of high plantago areas would be surveyed twice during the optimum time for larval detection. Surveys will be planned to occur in years of rainfall/climatic conditions that maximize QCB larval observations in coordination with SDMMP and other regional efforts as needed. When larvae are detected, record number observed, map location, note nearest food plant(s), and, if possible, note preferred shelter habitat. The larval surveys will potentially document evidence of reproduction in specific areas and will inform prioritization of management actions.

Task 2.1.5: *Identify Changes.* Every six years compare the results of all Quino-related surveys and habitat assessment and identify any new or significant changes to habitat. If QCB populations and/or habitat quality have significantly decreased or appear under threat based on the adult and larval surveys, and host plant mapping and habitat assessment, initiate discussions with QCB experts, the County and Wildlife Agencies to determine whether population fluctuation is consistent with data reported to the County and Wildlife Agencies from other sites in the region and the most likely cause(s). In consultation with the County and Wildlife Agencies, in coordination with SDMMP and other regional efforts as needed, identify and implement feasible strategies to increase usage of the OHCA as needed. Such strategies might include augmentation of host plant populations through seeding, increases in weeding efforts in QCB high use areas, or other measures as appropriate. Contingency funds may be used for this purpose if deemed appropriate by the Resource Manager, County, and Wildlife Agencies.

Objective 2.2: Maintain existing populations of Belding's orange-throated whiptail and coast horned lizard within the OHCA through management and monitoring of 295.7 acres of suitable habitat that includes chaparral, Diegan coastal sage scrub, and coastal sage-chaparral scrub.

Task 2.2.1: *Record Species Observations.* During all site inspection visits and surveys, lists of wildlife species observed or detected will be recorded in field notes, and new locations of sensitive species will be mapped.

Task 2.2.2: *Argentine Ant Monitoring*. Personnel will be instructed to look for and map Argentine ants (that displace native ant species that are prey to the coast horned lizard) as needed during site inspection visits and surveys, with an emphasis on the quarry/open space interface. Monitoring stations along this edge will be established and monitored consistent with USGS methodology of placement of plates with cookies. Should Argentine ants be observed, the Resource Manager will consult with the County and Wildlife Agencies regarding control methods.

Management and monitoring of suitable habitat is included in tasks 1.1.4 through 1.1.8.

Objective 2.3: Maintain existing populations of coastal California gnatcatcher and rufous-crowned sparrow within the OHCA through management and monitoring of 218.9 acres of Diegan coastal sage scrub and 5.4 acres of coastal sage-chaparral scrub.

Task 2.3.1: *Evaluate Habitat Quality for Coastal California Gnatcatcher and Southern California Rufous-Crowned Sparrow.* Evaluate coastal California gnatcatcher and southern California rufous-crowned sparrow habitat annually. Monitor habitat quality annually for sensitive animal species to assess trends, overall habitat quality, and potential threats using the USGS rapid assessment protocol currently in development or another protocol acceptable to the County and the Wildlife Agencies. In addition, gnatcatchers and rufous-crowned sparrows observed opportunistically during other surveys will be noted and reported. If habitat quality declines to a level that triggers action per the assessment protocol or populations of either of these species fall noticeably based on incidental observations, initiate discussions with the County and Wildlife Agencies to identify feasible strategies to increase habitat quality in the OHCA. Such strategies might include supplemental seeding to enhance habitat or assessment of potential for non-native predator/cowbird parasitism impacts. Ponds within the OHCA would be treated to remove mosquitoes if the County and the Wildlife Agencies determine that West Nile Virus or other mosquito-borne diseases pose a threat to birds in the OHCA. Contingency funds may be used for these purposes if deemed appropriate by the Resource Manager, County, and Wildlife Agencies.

Objective 2.4: Maintain existing foraging habitat for the northern harrier, golden eagle, burrowing owl, and Cooper's hawk, and maintain potential breeding habitat for the northern harrier and burrowing owl through management and monitoring of 0.7 acre of native grassland and 16.1 acres of non-native grassland.

Management and monitoring of suitable habitat is included in tasks 1.1.4 through 1.1.8. No specific monitoring of sensitive raptor species is proposed; however, sensitive species observed opportunistically during other surveys will be noted and reported per task 2.2.1.

Objective 2.5: Maintain habitat to help support the regional mountain lion and southern mule deer population through management and monitoring of 304.6 acres of suitable habitat.

Management and monitoring of suitable habitat is included in tasks 1.1.4 through 1.1.8. No specific monitoring of mammal species is proposed; however, sensitive species observed opportunistically during other surveys will be noted and reported per task 2.2.1.

Goal 3: Conserve existing and transplanted occurrences of Covered Plant Species through monitoring, maintenance, and management of the OHCA.

Objective 3.1: Maintain existing population(s) of San Diego goldenstar within the OHCA through management and monitoring of 69.46 acres of suitable habitat that includes five populations totaling 11,174 individuals (and an additional 1,214 translocated individuals) that will provide long-term persistence (> than 100 years) of the on-site San Diego goldenstar population.

Task 3.1.1: *Conduct High Priority Rare Plant Surveys.* Evaluate San Diego goldenstar, Orcutt's birds-beak, and variegated dudleya populations every year per SDMMP requirements. Surveys shall be conducted at the appropriate time of year for these species.

If San Diego goldenstar, Orcutt's birds-beak, or variegated dudleya populations show a significant decline in numbers, area, or health, and the reduction cannot be attributed to a lack of rainfall, the Resource Manager will identify potentially causative agents such as non-native plant invasions and initiate discussions with the County and Wildlife Agencies to identify feasible strategies to increase population numbers in the OHCA. Such strategies might include supplemental weed control in higher density plant areas and seed collection and establishing nursery stock for population augmentation. Contingency funds may be used for this purpose if deemed appropriate by the Resource Manager, County, and Wildlife Agencies. Management and monitoring of suitable habitat is included in tasks 1.1.4 through 1.1.8.

Objective 3.2: Maintain existing and translocated population(s) of Otay tarplant within the OHCA through management and monitoring of 6.58 acres of suitable habitat that includes two populations totaling 510 individuals (plus additional individuals resulting from seeding) that will provide long-term persistence (> than 100 years) of the on-site Otay tarplant population.

Monitoring for Otay tarplant is included in task 3.4.1. Management and monitoring of suitable habitat is included in tasks 1.1.4 through 1.1.8.

Objective 3.3: Maintain existing and translocated population(s) of variegated dudleya within the OHCA through management and monitoring of 48.65 acres of suitable habitat that includes four populations totaling 4,867 individuals (plus additional individuals resulting from translocation) that will provide long-term persistence (> than 100 years) of the on-site variegated dudleya population.

Monitoring for variegated dudleya is included in task 3.1.1. Management and monitoring of suitable habitat is included in tasks 1.1.4 through 1.1.8.

Objective 3.4: Maintain existing population(s) of Dunn's mariposa lily, Orcutt's bird's beak, Tecate cypress, Gander's pitcher sage, and existing and translocated populations of San Diego barrel cactus within the OHCA through management and monitoring of suitable habitat.

Task 3.4.1: *Other Sensitive Plant Species.* Evaluate Dunn's mariposa lily, Otay tarplant, Tecate cypress, San Diego barrel cactus, and Gander's pitcher sage populations every five years, using the SDMMP sampling protocol. Surveys shall be conducted at the appropriate time of year for these species, as necessary. Several of these species, including Dunn's mariposa lily, Orcutt's bird's beak, and Tecate cypress, have very small populations on site and population trends for these species will be difficult to track. For San Diego barrel cactus and Gander's pitcher sage, if populations of any of these species, including the 196 translocated San Diego barrel cacti, show a significant decline in numbers, area, or health for two consecutive survey periods, the Resource Manager will identify potentially causative agents such as non-native plant invasions and initiate discussions with the County and

Wildlife Agencies to identify feasible strategies to increase population numbers in the OHCA. Such strategies might include supplemental weed control in higher density plant areas and seed collection and establishing nursery stock for population augmentation. Contingency funds may be used for this purpose if deemed appropriate by the Resource Manager, County, and Wildlife Agencies.

Monitoring for Orcutt's birds-beak is included in task 3.1.1. Management and monitoring of suitable habitat is included in tasks 1.1.4 through 1.1.8.

Goal 4: Maintain the physical conditions of the open space for the benefit of biological resources, including Proposed Covered Species, through appropriate access controls, trash removal, fire management, and related measures.

Objective 4.1: Resource Manager will control public access through the maintenance of signage, fencing, and gates; will cooperate and coordinate with law enforcement, U.S. Border Patrol, and adjacent landowners/managers; will maintain regular on-site presence; will remove trash; and will conduct monthly inspections.

Task 4.1.1: *Additional Fencing and Signage.* Fencing and signage will be installed by the Project Proponent under Section 5.1 start up tasks. The Resource Manager may install additional fencing at any access points to the OHCA deemed necessary to preclude unauthorized access to the OHCA. The Resource Manager will determine what access routes are authorized for use by personnel implementing the RMP, and these routes will be clearly mapped. These existing routes will not be upgraded, and no new routes will be established.

Task 4.1.2: *Monthly Patrols.* The Resource Manager will maintain at least a monthly presence in the OHCA and AMA and will conduct inspections during those visits.

Task 4.1.3: *Inspect and Repair Fencing and Signage.* The Resource Manager will inspect all fencing and signs that protect the OHCA and AMA (including fencing on the east and south side of the quarry but not on the west side of the quarry) during each monthly patrol and request that Project Proponent repair or replace damaged or missing fencing within one month. The Resource Manager shall be responsible for repair and replacement of signage.

Task 4.1.4: *Trash Removal.* The Resource Manager will conduct general trash removal during the regular inspections, as needed.

Task 4.1.5: *Erosion Control.* The Resource Manager will identify areas where erosion is becoming an issue and will implement measures to control it and promote restoration. There is a pre-existing area of substantial erosion on the south facing slope in the center of the property, which originated from disturbance in approximately 2000. The original disturbance scar is now revegetating naturally, and this task does not include major repairs in that area. Should the focus shift to larger repairs and the use of mechanized equipment be needed, advanced approval from the County and Wildlife Agencies will be required.

Objective 4.2: Develop a fire management plan within one year of initiating management of the OHCA for review by the County and implement fire management activities in the OHCA in consultation with the appropriate fire agencies.

Task 4.2.1: *Develop a Fire Management Plan.* The Resource Manager will coordinate with the BLM and County Fire Marshall in year one of management to limit damage to natural resources by determining preferred access and parking areas for fire trucks, preferred fire break locations to avoid sensitive plants, and otherwise planning to minimize impacts from both fire and fire suppression activities.

Task 4.2.2: *Coordinate with BLM and County Fire Marshall.* The Resource Manager will coordinate fire management practices with the BLM and County Fire Marshall at least annually to limit damage to natural resources by avoiding unnecessary impacts during fire suppression activities and remediating impacts from both fire and fire suppression activities.

Task 4.2.3: *Conduct Assessments Following Fires.* Within 30 days of a fire, the Resource Manager will make a preliminary assessment of the effects of the fire within the OHCA. Based on the extent and severity of fire damage, as determined by County staff and/or the Resource Manager with concurrence of the Wildlife Agencies, the Resource Manager will develop and implement specific adaptive management tasks such as additional weeding and/or seeding. The Resource Manager will address monitoring of natural regrowth within the damaged area for a period of five years and implement measures to minimize the invasion by exotic species and excessive soil erosion. Qualitative and quantitative monitoring will be required to evaluate post-fire restoration success (based on pre-fire conditions). As data are gathered, adaptive management actions will be initiated and modified as needed to reduce potential threats and their adverse impacts.

Task 4.2.4: *Conduct Assessments of the Status of Tecate Cypress Following Fires.* Following fires that burn areas supporting Tecate cypress, conduct assessments to determine if there is excessive mortality with no recruitment of new individuals. Additional seeding or planting of container stock may be required at the discretion of the Resource Manager.

Objective 4.3: Implement protective measures outlined in the Conservation Easement.

Task 4.3.1: The following activities will be specifically prohibited by the CE:

- Unseasonable watering; use of fertilizers, pesticides, biocides, herbicides, or other agricultural chemicals; weed abatement activities; incompatible fire protection activities; and any and all other activities and uses which may impair or interfere with the purposes of this Conservation Easement, except for the use of water for habitat restoration, and use of pesticides, biocides, herbicides, or other agricultural chemicals for habitat management purposes as specifically provided in the RMP.

- Use of off-road vehicles and use of any other motorized vehicles except on existing roadways, except for use in habitat restoration and management as specifically provided in this RMP.

- Agricultural activity of any kind.

- Recreational activities, including, but not limited to, horseback riding, biking, hunting, or fishing, with the exception of existing uses on Otay Truck Trail.

- Commercial, industrial, residential, or institutional uses.

- Any legal or de facto division, subdivision, or partitioning of the OHCA.

- Construction, reconstruction, erecting, or placement of any building, billboard, or sign, or any other structure or improvement of any kind except for fences and signs described in Section 5.1 and task 4.1.1.

- Depositing or accumulation of soil, trash, ashes, refuse, waste, bio-solids, or any other materials.

- Planting, introduction, or dispersal of non-native or exotic plant or animal species.

- Filling, dumping, excavating, draining, dredging, mining, drilling, removing, exploring for, or extracting minerals, loam, soil, sand, gravel, rock, or other material on or below the surface of the OHCA, or granting or authorizing surface entry for any of these purposes.

- Altering the surface or general topography of the OHCA, including but not limited to any alterations to habitat, building roads or trails, paving or otherwise covering the OHCA with concrete, asphalt, or any other impervious material except for those habitat management activities specified in the RMP, or as may be used for future habitat management and restoration activities approved by the County and Wildlife Agencies.

- Removing, destroying, or cutting of trees, shrubs, or other vegetation, except as required by law for (i) fire breaks ordered by the fire authorities based on an immediate fire threat, (ii) maintenance of existing foot trails or roads that are required for continued access by the Resource Manager, SDG&E, law enforcement and fire authorities, or (iii) prevention or treatment of disease and except for weed removal as specifically provided in the RMP.

- Manipulating, impounding, or altering any natural water course, body of water, or water circulation in the OHCA, and any activities or uses detrimental to water quality including, but not limited to, degradation or pollution of any surface or sub-surface waters.

- Without the prior written consent of Grantee [County] and Wildlife Agencies, which Grantee or Wildlife Agencies may withhold, transferring, encumbering, selling, leasing, or otherwise separating the mineral, air, or water rights for the

OHCA; changing the place or purpose of use of the water rights; abandoning or allowing the abandonment of, by action or inaction, any water or water rights, ditch or ditch rights, spring rights, reservoir or storage rights, wells, ground water rights, or other rights in and to the use of water historically used on or otherwise appurtenant to the OHCA including but not limited to: (i) riparian water rights; (ii) appropriative water rights; (iii) rights to waters which are secured under contract with any irrigation or water district, to the extent such waters are customarily applied to the OHCA; and (iv) any water from wells that are in existence or may be constructed in the future on the OHCA.

- Engaging in any use or activity that may violate, or may fail to comply with, relevant federal, State, or local laws, regulations, or policies applicable to Grantor, the OHCA, or the use or activity in question.

Objective 4.4: Resource Manager will implement Management Activities in a manner that avoids impacts to known Cultural Resources.

Task 4.4.1: *Protect Cultural Resources.* If any ground-disturbing activities are proposed on the property, such as mechanical removal of non-native vegetation or creation of burrows for burrowing owls in areas of known cultural resources as noted in confidential information provided to the Resource Manager, the archaeological sites will be avoided, and ground-disturbing activities should be monitored by an archaeologist and a Native American monitor.

Goal 5: Provide program administration through planning and reporting on the RMP implementation in a consistent and efficient manner.

Objective 5.1: Resource Manager will submit an annual report and work plan to the County and Wildlife Agencies by November 1 of each year and revise work plan to meet changing management needs.

Task 5.1.1: *Prepare and Submit Annual Reports.* Prepare and submit an annual report as described in Section 2.4 that summarizes management activities and monitoring results conducted during the year for each objective, an assessment of the success of those management tasks, and measures recommended for the coming year to achieve the goals of the RMP. Management years will run from October 1 through September 30 with the annual report submitted by November 1 of each year. The annual report will include a current aerial photograph.

Task 5.1.2: *Prepare and Submit Annual Workplan.* Prepare and submit an annual workplan that spells out the specific tasks that will be implemented in the coming year to achieve the recommendations outlined in the annual report. The workplan may be included in a section of or an appendix to the annual report.

Task 5.1.3: *Financial Tracking.* Include in the annual report an accounting of funds used for management that year, a proposed budget for management in the coming year, and a summary statement of the status of the endowment fund.

Task 5.1.4: *Photo Point Monitoring*. During the first year of management, the Resource Manager will select at least nine locations, three in each section of the Biological Open Space, that can be used as photo points to document the visual status of the habitat. The photo points will be recorded using GPS and shown on a figure in the annual report. Photos will be taken once a year at each of the photo points and submitted in print and/or electronically with each annual report. Any changes observed in the photos will be explained in the report and addressed as necessary.

Task 5.1.5: *Update RMP*. Conduct a review of the RMP goals, objectives, and tasks every five years and make the appropriate modifications. Submit proposed RMP modifications to the County and the Wildlife Agencies for review and concurrence prior to finalizing changes.

Goal 6: Coordinate and integrate management of the OHCA with adjacent conserved lands within the Janal Management Unit of the San Diego Management and Monitoring Program (SDMMP) Management Strategic Plan (2013).

Objective 6.1: The Resource Manager will coordinate weed control actions, fire management, and public access controls with the BLM, SDG&E, County, SDMMP, other land managers in this Management Unit, or other adjacent landowners at least annually.

Task 6.1.1: *Coordinate with Adjacent Property Owners.* The Resource Manager will meet at least annually with adjacent property owners to coordinate weed control actions, fire management, and public access control.

6.0 ADAPTIVE MANAGEMENT

The goal of adaptive management is to ensure that the land management is adjusted appropriately to meet the RMP goals and the County and Wildlife Agencies' commitment to the conservation goals of the MSCP.

The term adaptive management was adopted for resource management by Holling (1978), who described adaptive management as an interactive process that not only reduces but also benefits from uncertainty. Adaptive management includes steps that may be involved in a long-term adaptive implementation program, including opportunistic learning, management, monitoring, and directing the results of analysis and assessment back into the program through decision makers. It is important that the RMP incorporate the flexibility to change implementation strategies after initial start-up. The RMP is intended to be flexible enough to develop adaptive management strategies that will facilitate and improve the decision making process for operating the conservation program of the RMP as well as provide for informative decision-making.

Monitoring and adaptive management of the OHCA will be a cooperative effort between the Resource Manager, the County, the Wildlife Agencies, and regional entities such as the SDMMP. Adaptive management is built into preserve management through the use of phased monitoring and evaluation to modify management actions based on monitoring results.

According to the SDMMP Management Strategic Plan, important regional threats/stressors on species and vegetation communities include: (1) fire (altered fire regime); (2) invasive species (exotic and native) and predation and herbivory by native species; (3) urban edge effects on preserves; (4) habitat fragmentation (roads, urban development); and (5) human use of preserves (both authorized and unauthorized). Other threats/stressors region-wide include nitrogen deposition, altered hydrology, potential exposure of species to rodenticides and insecticides, disease, and climate change.

This RMP addresses the threat of fire in objective 4.2, tasks 4.2.1 through 4.2.4. The Resource Manager will develop a fire management plan in the first year of management and coordinate with the BLM and Fire Marshall at least annually to avoid unnecessary impacts during fire suppression activities. Tasks 4.2.3 and 4.2.4 call for post-fire assessment of the OHCA in general and the Tecate cypress areas in particular, with qualitative and quantitative monitoring of fire recovery triggering adaptive management actions as needed.

The threat of invasive plants is addressed through tasks 1.1.6, 1.1.7, 1.1.8, and 2.1.2. Based on surveys to date, there are no Management Level 1, 2, or 3 plants within the OHCA and only two level 4 plants: fennel and milk thistle (*Silybum marianum*). A baseline invasive plant inventory will be conducted in the first year of management and updated every five years per task 1.1.6. In addition, the Resource Manager will conduct annual assessments every year for new or rapidly expanding invasive plant locations per task 1.1.7. Weed control will be conducted preserve-wide per task 1.1.8, with additional effort focused on QCB areas per task 2.1.2. Weed control efforts will be specifically targeted to the areas of greatest threat as identified by monitoring. Using adaptive management, species that are targeted will be based on Cal-IPC and SDMMP lists as well as species that emerge as threats in the future based on monitoring within the preserve and regionally.

Invasive animals are not currently a major concern within the OHCA. Argentine ants have not been observed to date and are unlikely to occur based on the distance from residential development; nevertheless, Argentine ant monitoring is included as task 2.2.2, and their observation would trigger consultation with the County and Wildlife Agencies on adaptive management approaches. The OHCA is not known or expected to support brown-headed cowbirds (*Molothrus ater*), invasive aquatic animals, feral pigs (*Sus scrofa*), or gold-spotted oak borer (*Agrilus auroguttatus*). The Kuroshio shot-hole borer (*Euwallacea* sp.) is not known from the OHCA, but willow trees are a known host; therefore, the Resource Manager will take precautions to avoid introducing the shot-hole borer.

Although it is not located near residential development, the OHCA may be subject to certain urban edge effects such as lighting and noise; however, the project design incorporates features such as shielded lights and noise barriers to minimize the impacts on

the OHCA. No new roads are proposed within the OHCA and the project footprint is compact, such that fragmentation of the OHCA will not occur. Additionally, land abutting the OHCA to the north and east is largely conserved and future roadways would not occur in these areas. Human use of the OHCA would be controlled through objective 4.1, tasks 4.1.1 through 4.1.4. Finally, this RMP does not include specific tasks for potential threats such as nitrogen deposition and climate change; however, the monitoring proposed in tasks 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.1.1, 2.1.3, 2.1.4, 2.1.5, 2.2.1, 2.2.2, 2.3.1, 3.1.1, 3.4.1, 4.2.3, 4.2.4, and 5.1.4 will provide all of the information needed to recognize any changes occurring within the OHCA, make hypotheses regarding their causes, and propose adjustments in management approach, along with additional targeted monitoring as needed.

Adaptive management relies on monitoring efforts such as those outlined in Section 5.0 above to detect changes in species, habitats, and/or threats. Linking the monitoring program with adaptive management actions will inform the Resource Manager of the status of target species, natural communities, and essential ecological processes, as well as the effectiveness of management actions in a manner that provides data to allow informed management actions and decisions. When change is detected, the Resource Manager assesses the information and responds by initiating, modifying, or even ending a particular management strategy, if necessary. An important component of implementing the management measures described above will include evaluating data from monitoring activities to determine whether trends in threats are part of a natural cycle of fluctuation or are anthropogenic. If there is a substantial decline in native species compared to the baseline (e.g., greater presence of invasive, non-native plants species) or other apparent threats to habitat conditions are observed, remedial measures will be evaluated with the County and Wildlife Agencies and implemented on an as-needed basis. Adaptive management measures shall be limited to funds available for adaptive management through the proposed management and monitoring tasks combined with a 12 percent contingency as detailed in the Estimate for Long-term Management (Appendix A). The SDHC uses a 12 percent contingency rate for all of the preserves they manage, and have found that this rate, combined with adequate funding for specified monitoring and management tasks, provides adequate funding for adaptive management.

The Resource Manager will ensure that, through the monitoring and reporting process, results of management are evaluated, and management is adjusted appropriately to meet the RMP goals and the County and Wildlife Agencies' commitment to the conservation goals of the MSCP and the Otay Hills Amendment. The Resource Manager will continue to learn and modify management approaches by testing assumptions through purposeful scientific monitoring. Management strategies will be reviewed and updated as appropriate to meet the conservation goals, in the annual work plan (task 5.1.2) and the periodic RMP review (task 5.1.5).

7.0 RESOURCE MANAGEMENT PLAN SUMMARY AND BUDGET

7.1 OPERATIONS AND BUDGET SUMMARY

Tables 2 and 3 provide a summary of all management tasks described above and the frequency of each task. The budget for these tasks is provided in Appendix A.

Table 2 MANAGEMENT TASKS	
TASK	**FREQUENCY**
Biological Resources Tasks	
Remove Trash (Start-up task 1)	Prior to initiation of RMP
Install Fencing (Start-up task 2)	Prior to initiation of RMP
Install Signage (Start-up task 3)	Prior to initiation of RMP
1.1.1 Record Conservation Easement	Prior to initiation of RMP
1.1.2 Record Access Easement	Prior to initiation of RMP
1.1.3 Baseline Vegetation Data	During first year of management
1.1.4 Update Vegetation Mapping	Every five years
1.1.5 Assess Changes	As needed
1.1.6 Map Non-native Species	Every five years starting in year 1; fennel removal for three years starting in year 1
1.1.7 Annual Assessment for Rapidly Expanding Weed Populations	Annually
1.1.8 General Weed Control	Two times per year
2.1.1 QCB Host Plant Mapping	Every three years
2.1.2 QCB High Use Area Weed Control	Two times per year
2.1.3 QCB Adult Flight Surveys	Every three years
2.1.4 QCB Larval Surveys	Every six years
2.1.5 Identify Changes	Every six years
2.2.1 Record Species Observations	During every visit, reported annually
2.2.2 Argentine ant monitoring	During visits as needed
2.3.1 Coastal California gnatcatcher and rufous-crowned sparrow habitat assessment	Annually
3.1.1 Survey for SDMMP high priority plant species	Annually
3.4.1 Survey for lower priority plant species	Every five years
4.1.1 Additional Fencing and Signage	As needed
4.1.2 Monthly Patrols	Monthly
4.1.3 Inspect and Repair Fencing and Signage	Monthly
4.1.4 Trash Removal	Monthly / As needed
4.1.5 Erosion Control	As needed
4.2.1 Prepare Fire Management Plan	During first year of management
4.2.2 Coordinate with BLM and County Fire Marshall	Annually
4.2.3 Conduct Assessments Following Fires	As needed
4.3.1 Implement Conservation Easement	At all times
4.4.1 Protect Cultural Resources	As needed
5.1.1 Prepare and Submit Annual Reports	Annually
5.1.2 Prepare and Submit Annual Workplan	Annually
5.1.3 Financial Tracking	Annually
5.1.4 Photo Point Monitoring	Annually
5.1.5 Update RMP	Annually
6.1.1 Coordinate with Adjacent Landowners	Annually

Table 3
ONGOING MANAGEMENT TASKS BY MONTH

Task	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.1.4 Update Vegetation Mapping Every Five Years		X										
1.1.6 Map Non-native Species Every Five Years		X										
1.1.7 Annual Assessment for Rapidly Expanding Weed Populations		X										
1.1.8 General Weed Control[1,2]	X		X									
2.1.1 QCB Host Plant Mapping Every Three Years[1,2]		X										
2.1.2 QCB High Use Area Weed Control[1,2]	X		X									
2.1.3 QCB Adult Flight Surveys Every Three Years		X	X	X								
2.1.4 QCB Larval Surveys and Identify Changes Every Six Years[1,2]	?											
2.3.1 Coastal California gnatcatcher and rufous-crowned sparrow Habitat Assessment Every Year[1,2]				X								
3.1.1 Survey for high priority plant species Every Year[1,2,3]				X	X							
3.4.1 Survey for lower priority plant species Every Five Years[1,2,4]		X	X	X	X	X	X					
4.1.2 Monthly patrols	X	X	X	X	X	X	X	X	X	X	X	X
4.1.3 Inspect and repair fencing and signage	X	X	X	X	X	X	X	X	X	X	X	X
5.4.1.4 Pick up trash	X	X	X	X	X	X	X	X	X	X	X	X
5.4.2.1 Coordinate fire management				X								
5.5.1.1 Submit annual report											X	
5.5.1.2 Submit annual work plan											X	

[1]May be adjusted as needed by the Resource Manager.
[2]Will vary based on rainfall.
[3]Peak survey month for San Diego goldenstar is April, Orcutt's bird's beak is May (but ranges from March to September), and variegated dudleya is April/May.
[4]Blooming period for Dunn's mariposa lily is February-June, Otay tarplant is April-June, Gander's pitcher sage is June-July, and Tecate cypress and San Diego barrel cactus can be surveyed year round.

7.2 EXISTING STAFF AND ADDITIONAL PERSONNEL NEEDS SUMMARY

Staff and personnel needs will be provided in the final RMP after a Resource Manager is identified.

8.0 REPLACEMENT, AMENDMENTS, AND NOTICES

8.1 REPLACEMENT

As further detailed in the Open Space Maintenance Agreement required by Section 2.2, if the Resource Manager fails to implement the tasks described in this RMP and is notified of such failure in writing (Notice of Violation) by the County or Wildlife Agencies, the Resource Manager shall have 30 days to cure such failure and report back to the County and Wildlife Agencies. If said cure reasonably requires more than 30 days, the land manager shall begin the cure within the 30 day period and work diligently to complete such cure and provide updates and estimated completion dates to the County and Wildlife Agencies. If the Resource Manager disputes the Notice of Violation or needs clarification, the Resource Manager may within 15 days of receiving Notice of Violation request a meeting with the County and Wildlife Agencies to resolve the failure. Such meeting shall occur within 30 days or a longer period if approved by the County and Wildlife Agencies. Following the meeting, if the Resource Manager agrees that a failure occurred, the Resource Manager shall begin the cure within 15 days and work diligently to complete such cure and provide updates and estimated completion dates to the County and Wildlife Agencies. If the Resource Manager refuses or fails to cure the failure or does not respond, the County and Wildlife Agencies may designate a replacement Resource Manager who shall be obligated to implement this RMP. Such public or private land or resource management organization, acceptable to and as directed by the County and Wildlfie Agencies, may enter the OHCA in order to fulfill the purposes of this RMP. The replacement manager shall become the beneficiary of the endowment fund.

8.2 AMENDMENTS

The Resource Manager, the County, and the Wildlife Agencies may meet and confer from time to time, upon the request of any one of them, to revise the RMP to better meet management objectives and preserve the habitat and conservation values of the OHCA. Any proposed changes to the RMP shall be discussed with the County and Wildlife Agencies and the Resource Manager. Amendments to the RMP shall be approved by the County and the Wildlife Agencies in writing and shall be required management components implemented by the Resource Manager.

If the CDFW or USFWS make a determination, in writing, that continued implementation of the RMP would jeopardize the continued existence of a Covered Species or a State or federal listed species, any written amendment to this RMP, determined by either the CDFW or USFWS as necessary to avoid jeopardy, shall be a required management component and shall be implemented by the Resource Manager.

8.3 NOTICES

Any notices regarding this RMP shall be directed as follows:

Resource Manager (name, address, telephone and FAX)

San Diego Habitat Conservancy
3065 Rosecrans Place, Suite 106
San Diego, CA 92110
Attn: Executive Director
Telephone: 619-365-4839
Fax: 619-810-0552

Property Owner (name, address, telephone and FAX)

_____
_____
_____
_____

County and Wildlife Agencies:

County of San Diego
Planning & Development Services
5510 Overland Avenue, Suite 310
San Diego, CA 92123
Attn: Chief of Project Planning
Telephone: 858-694-3722
Fax: 858- 694-3373

U.S. Fish and Wildlife Service
Carlsbad Field Office
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008
Attn: Assistant Field Supervisor
Telephone: 760-431-9440
Fax: 760-431-5901

California Department of Fish and Wildlife
South Coast Region
3883 Ruffin Road
San Diego, CA 92123
Attn: Regional Manager
Telephone: 858- 467-4201
Fax: 858-467-4299

California Department of Fish and Wildlife
Habitat Conservation Branch
1416 Ninth Street, 12th Floor
Sacramento, CA 95814
Attn: Branch Chief
Telephone: 916-653-4875
Fax: 916-653-2588

9.0 LIST OF PREPARERS

The following individuals contributed to the preparation of this report.

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Appendix A

ESTIMATE FOR LONG-TERM MANAGEMENT

OTAY HILLS CONSERVATION AREA
ESTIMATE FOR LONG-TERM MANAGEMENT
(Phases 1, 2a, 2b, and 61-Acre Additional Management Area)

Prepared for:
HELIX Environmental Planning, Inc.
Contact: Barry Jones
(619) 462-1515

Prepared by:
San Diego Habitat Conservancy
Contact: Don Scoles or Kathleen Pollett
(619) 365-4839

August 2, 2019

ESTIMATE FOR LONG-TERM MANAGEMENT
OTAY HILLS CONSERVATION AREA, COUNTY OF SAN DIEGO
PHASES 1, 2a, 2b, and 61-ACRE ADDITIONAL MANAGEMENT AREA
August 2, 2019

An Estimate for Long-term Management (ELM) has been prepared for Phases 1, 2a, and 2b of the Otay Hills Conservation Area (OHCA) as well as an additional 61-acre Additional Management Area (AMA), in accordance with the provisions in the October 12, 2016 and July 7, 2018 Cost Proposal Agreements between San Diego Habitat Conservancy (SDHC) and Superior ReadyMix (Project Proponent). The purpose of the ELM is to identify the interim tasks and costs associated with the phasing in of the 304.6-acre OHCA as well as the tasks and costs associated with the more limited management obligations for the 61-acre AMA located approximately one mile north of the border with Baja California, Mexico, one mile east of the Otay Mesa border crossing, and east of the intersection of Otay Mesa and Alta Roads in the foothills immediately east of Otay Mesa in unincorporated southern San Diego County.

This ELM includes the phased tasks and costs (Phase 1 Tasks and Costs, Phase 2a Tasks and Costs, Phase 2b Tasks and Costs) associated with managing the OHCA and the sensitive habitat and resources within the OHCA. The ELM also includes the tasks and costs associated with the more limited management obligations of the 61-acre AMA directly adjacent to the OHCA. Refer to Attachment A for a map of the OHCA and AMA habitat and boundaries. The costs were estimated utilizing an Excel spreadsheet adapted from Property Analysis Record (PAR) software and based on management experience. The complete ELM cost sheets are provided in Attachment B. Although this ELM only applies to the interim costs associated with the phased-in management tasks and costs for the OHCA associated with Phases 1, 2a, and 2b, and the long-term costs associated with the limited management tasks for the 61-acre AMA, it assumes that SDHC will also perform all long-term management tasks for the OHCA which are to be funded by a non-wasting endowment as set forth in a separate ELM. Project Proponent will provide separate, annual funding for the tasks set forth in this ELM for Phases 1, 2a, and 2b, as set forth below. Project Proponent will provide an endowment for the 61-acre AMA, as well as the initial costs for the first three years of management, as set forth below. This ELM was initially drafted in May 2017. An update was performed in July 2018 to include the additional costs for managing the 61-acre AMA, to add monthly monitoring visits to Phase 1, and to reflect other updates to the resource management plan for the OHCA. This update is being performed to reflect cost changes and edits provided by HELIX Environmental Planning.

SDHC's Executive Director, Don Scoles, and Program Coordinator, Sarah Krejca, conducted a site visit of the OHCA on February 20, 2015. Kathleen Pollett, SDHC Senior Conservation Habitat Manager conducted a site visit on April 18th 2019. The primary source used to prepare this ELM is the Otay Hills Conservation Area Resource Management Plan prepared by HELIX Environmental Planning, Inc. (February 14, 2018) (RMP).

The ELM has been organized into the following categories:

- Open Space Property Description
- Phase 1 Tasks and Costs
- Phase 2a Tasks and Costs
- Phase 2b Tasks and Costs
- 61-Acre AMA Tasks and Costs
- Financial Summary
- Additional Assumptions

OPEN SPACE PROPERTY DESCRIPTION

The OHCA consists of 304.6 acres as well as a 61-acre AMA within the foothills of the San Ysidro Mountains east of the intersection of Otay Mesa and Alta Roads, for a total of 365.6 acres. Refer to the map in Attachment A for the boundaries of the OHCA and AMA. The AMA has an existing conservation easement in favor of the California Department of Fish and Wildlife (CDFW) and is subject to more limited management obligations, as detailed in the RMP and in this ELM. The area to the west of the OHCA is dominated by industrial uses, including the Otay Hills Project. The San Ysidro Mountains and foothills lie to the north and east, including the Otay Mountain Cooperative Land and Wildlife Management Area and the Bureau of Land Management (BLM) Otay Mountain Wilderness Area, National Wilderness Preservation System land which overlay areas east of the Otay Hills Project development. The southern boundary abuts the proposed East Otay Mesa Recycling and Collection Center Landfill. Portions of the BLM Otay Mountain Truck Trail cross the northern portion of the OHCA and AMA.

The OHCA contains 11 vegetation communities/habitats: Diegan coastal sage scrub, southern mixed chaparral, non-native grassland, chamise chaparral, coastal sage-chaparral scrub, native grassland, southern interior cypress forest, tamarisk scrub, cismontane alkali marsh, mule fat scrub, disturbed habitat, and developed land. The AMA supports coastal sage scrub, southern mixed chaparral, disturbed habitat, and developed land associated with the Otay Mountain Truck Trail. Eighteen covered and/or sensitive plant species occur within the OHCA: ashy spike-moss (*Selaginella cinerascens*), Coulter's matilija poppy (*Romneya coulteri*), Dunn's mariposa lily (*Calochortus dunnii*), Gander's pitcher sage (*Lepechinia ganderi*), Munz's sage (*Salvia munzii*), Orcutt's bird's beak (*Cordylanthus orcuttianus*), Otay tarplant (*Deinandra conjugens*), Palmer's grapplinghook (*Harpagonella palmeri*), San Diego barrel cactus (*Ferocactus viridescens*), San Diego County needlegrass (*Achnatherum diegoense*), San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*), San Diego marsh-elder (*Iva hayesiana*), San Diego sunflower (*Bahiopsis laciniata*), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*), Tecate cypress (*Hesperocyparis* [*Cupressus*] *forbesii*), variegated dudleya (*Dudleya variegata*), and western dichondra (*Dichondra occidentalis*). Seventeen covered and/or sensitive animal species have been detected within the OHCA: Quino checkerspot butterfly (QCB), red-diamond rattlesnake, coast horned lizard, Belding's orange throated whiptail, coastal California gnatcatcher, Bell's sage sparrow, golden eagle, burrowing owl, loggerhead shrike, grasshopper sparrow, northern harrier, southern California rufous-crowned sparrow, California horned lark, turkey vulture, common barn owl, San Diego black-tailed jackrabbit, southern mule deer, and mountain lion. The AMA supports a similar suite of species as the OHCA.

SDHC assumes that the County of San Diego will serve as the grantee to the conservation easement and to the open space easement, and that SDHC will hold fee title to the OHCA. SDHC assumes tasks associated with Phase 1 of the OHCA and the AMA will commence in 2019, Phase 2a of the OHCA will commence in 2020, Phase 2b of the OHCA will commence in 2025, and Phase 2c of the OHCA will commence in 2031 at which time the full endowment will be funded. Project Proponent will provide funding through annual payments for Phases 1, 2a, and 2b and through an endowment for the AMA, as discussed further below. Note that the tasks and costs for Phase 2c, i.e. long-term ongoing tasks and costs, will be covered in a separate ELM and supported by the endowment.

PHASE 1 TASKS AND COSTS (Year 1) **$ 76,152.27**
(Refer also to Attachment B.)

Assumptions for Phase 1 Tasks and Costs

1. Property Inspection. Prior to accepting responsibility for interim management tasks associated with Phase 1, SDHC will conduct a property inspection to review the condition of the OHCA and compare it to the conditions stipulated in the RMP. The focus of the inspection will be on the condition of the sensitive plant species, and the condition of the site in general with regard to exotic species, weeds, and trash. SDHC's Executive Director and HM shall inspect the property. Assumes inspection to occur in 2019.

2. Baseline Vegetation Mapping (Task 1.1.3, 5.1.4). During the first year of management, SDHC will document current conditions, including preparation of a vegetation map of the OHCA using the Vegetation Classification Manual for Western San Diego County cross-referenced to Holland code; a list of all species observed either directly or indirectly, and the locations of any sensitive plant and animal species observed. SDHC will select photo points at a minimum of nine locations throughout the OHCA and record these locations using GPS. Baseline mapping will be completed in GIS, utilizing a digitized topographic base map, digitized vegetation and sensitive species maps, and aerial photographs provided by Project Proponent. Baseline surveys will utilize all data and maps supplied by Project Proponent and baseline surveys will field verify the status of the most current mapping.

3. Monthly Monitoring (Tasks 4.1.2). The HM will perform monthly monitoring visits to observe natural conditions and identify potential conflicts to the OHCA goals. The HM will be accompanied by an assistant during each monitoring visit. Monthly monitoring visits will be documented by keeping a monitoring log of site conditions. The monthly log reports shall be appended to the annual report (Phase 1 Task #9).

4. Non-native Species Mapping (Task 1.1.6). During the first year of management, SDHC will create a list of all invasive non-native plant species located in the OHCA using existing species lists from previous reports and on-site inspections. By the end of the second year of management, SDHC will map the invasive, non-native plant species, excluding non-native grasses, using specific location data (GPS coordinates). Non-native species mapping will be updated annually in QCB high use areas (see Figure 10 of the RMP) and every five years for the remainder of the OHCA.

   Based on the April 2019 site visit documenting an approximately eight-acre infestation of Fennel (*Foeniculum vulgare*), the species will be controlled through a three-year treatment plan totaling eight crew days of treatment and three surveys to ensure avoidance of rare plants in the area.

5. QCB Host Plant Mapping (Task 2.1.1). During the first year of management, SDHC will map the extent and abundance of QCB host plants within high host plant areas and adjacent moderate host plant areas in accordance with the methods outlined in Task 2.1.1 of the RMP and using a methodology similar to the San Diego Management and Monitoring Program (SDMMP) rare plant monitoring protocol. QCB host plant mapping will be updated every three years. This data will be used to identify potential host plant enhancement areas for additional non-native plant removal and/or future seeding needs.

6. Evaluation of Habitat Quality for Sensitive Species (Task 2.3.1). Each year SDHC will monitor habitat quality for coastal California gnatcatcher and southern California rufous-crowned sparrow to assess trends, overall habitat quality, and potential threats using the USGS rapid assessment protocol currently in development or another protocol acceptable to the County, U.S. Fish and Wildlife Service (USFWS), and California Department of Fish & Wildlife (CDFW). If habitat quality declines to a level triggering action per the assessment protocol or populations of either species fall noticeably based on incidental observations, SDHC will consult with the County, USFWS, and CDFW to identify feasible strategies to increase habitat quality within the OHCA, such as supplemental seeding. Any strategies to increase habitat quality will be limited to the availability of contingency funds.

7. Rare Plant Surveys (Tasks 3.1.1, 3.4.1). Each year SDHC will conduct surveys per SDMMP requirements for San Diego goldenstar, Orcutt's birds-beak, and variegated dudleya at the appropriate time of year for each species. During the first year of management and every five years thereafter, SDHC will also conduct surveys per SDMMP requirements for Dunn's mariposa lily, Otay tarplant, Tecate cypress, San Diego barrel cactus, and Gander's pitcher sage at the appropriate time of year for each species. If populations of San Diego goldenstar, Orcutt's birds-beak, variegated dudleya, San Diego barrel cactus, or Gander's pitcher sage show a significant decline in numbers, area, or health, for reasons other than low rainfall, (and for two consecutive survey periods for San Diego barrel cactus and Gander's pitcher sage) SDHC will consult with the County, USFWS, and CDFW to identify feasible strategies to increase population numbers within the OHCA. Any strategies to increase population numbers will be limited to the availability of contingency funds.

8. Fire Management Plan (Tasks 4.2.1, 4.2.2). During the first year of management, SDHC will coordinate with BLM and the County Fire Marshall to limit damage to natural resources by determining preferred access and parking areas for fire trucks, preferred fire break locations to avoid sensitive plants, and other methods to minimize impacts from both fire and fire suppression activities. SDHC will continue to coordinate fire management practices with BLM and the County Fire Marshall at least annually to limit damage to natural resources.

9. Annual Report (Tasks 5.1.1, 5.1.2, 5.1.3, 5.1.4). SDHC will prepare an annual report to be submitted to the County, USFWS, and CDFW by November 1st of each year for the previous management year (October 1st through September 30th). The annual report shall summarize management activities and monitoring results conducted during that year, provide an assessment of the success of those management tasks, and recommend measures for the coming year to achieve the goals of the RMP. The results of all vegetation mapping and sensitive plant and animal surveys will be included in the annual report and will also be provided to the SDMMP and California Natural Diversity Database (CNDDB). Photo point locations will be shown on a figure included with the annual report and photodocumentation from each point will be appended to that year's annual report. The annual report will also include an annual work plan, an accounting of funds used that year, a proposed budget for the coming year, and a summary statement of the status of the endowment fund. The annual work plan will consist of several paragraphs within the annual report and will identify the areas to be weeded, methods for treatment of invasives, and any additional tasks that will be implemented in the coming year.

   The annual work plan and budget will be reviewed by the County, USFWS, and CDFW. The County will provide written approval within 30 days of receipt of the annual work plan to the fund manager (anticipated to be The San Diego Foundation) for release of management funds for the following year. SDHC will make any requested changes and the County, USFWS, and CDFW will have 15 days to review and approve the revised work plan. If the

County, USFWS, and CDFW do not respond within the prescribed times, the annual work plan shall be deemed approved and the fund manager shall release funds to SDHC.

10. Database Management. File set up in SDHC file management system, including hard file, electronic files, and GIS mapping.

11. Start-up Costs. Operations costs associated with start-up, endowment processing, and accounting file setup.

12. Contingency of 12%.

13. Administrative cost of 16% for staff and 10% for subcontractors and supplies.

PHASE 2a TASKS AND COSTS (Year 2 through Year 6) $ 67,852.83
(Refer also to Attachment B.)

Assumptions for Phase 2a Tasks and Costs

1. Monthly Monitoring (Tasks 4.1.2, 4.1.3, 4.1.4). The HM will perform monthly monitoring visits to observe natural conditions and identify potential conflicts to the OHCA goals. The HM will be accompanied by an assistant during each monitoring visit. Monthly visits will also include removal of trash and inspection of fencing and signs, including fencing on the east and south side of the quarry. Repairs to damaged or missing fencing or signs will occur within one month. Trash will be removed during the monthly visits unless a larger removal effort is needed, requiring a separate site visit. Monthly monitoring visits will be documented by keeping a monitoring log of site conditions. The monthly log reports shall be appended to the annual report (Phase 2a Task #10).

2. Photodocumentation (Task 5.1.4). Photodocumentation from each of the nine photo point locations will occur on an annual basis in conjunction with a monthly monitoring visit.

3. Signs (Task 4.1.3). SDHC will be responsible for repairs and replacement of the 33 signs initially installed by Project Proponent throughout the OHCA pursuant to Figure 9 of the RMP. It is assumed that the signs will be replaced an average of every five years.

4. Fire Management Plan (Tasks 4.2.1, 4.2.2). SDHC will continue to coordinate fire management practices with BLM and the County Fire Marshall at least annually to limit damage to natural resources.

5. Non-native Species Mapping (Task 1.1.6). SDHC will continue updating non-native species mapping annually in QCB high use areas (see Figure 10 of the RMP) and every five years for the remainder of the OHCA in accordance with Phase 1 Task #4. This ELM assumes that non-native species mapping in QCB high use areas will occur in conjunction with a monthly monitoring visit so no additional time has been allotted for this task in Phase 2a or 2b.

6. QCB Host Plant Mapping (Task 2.1.1). SDHC will continue mapping the extent and abundance of QCB host plants as described above in Phase 1 Task #5, every three years.

7. QCB Adult Flight Surveys (Task 2.1.3). During one of the first two years of Phase 2a, SDHC will conduct surveys for adult QCB. These surveys will be done in years of rainfall/climactic conditions that maximize QCB observations and assumed to be conducted once every three

years. Population assessments will be conducted in QCB high use areas (Figure 10 of the RMP) and consist of three surveys conducted one to two weeks apart at the peak of the flight season. Surveys will follow the most current USFWS survey protocol or recommendations. Surveys will include mapping of nectar plants and recording host plant phenology (germination, inflorescence emergence and senescence) in conjunction with larval and adult flight season in order to compare with fluctuations in QCB observations.

8. QCB Larval Surveys (Task 2.1.4). SDHC will conduct surveys for QCB larvae once every six years in years of rainfall/climactic conditions that maximize QCB larval observations. Surveys will occur in high and moderate host plant areas and up to 25 acres of high plantago areas would be surveyed twice during the optimum time for larval detection. When larvae are detected, the surveyor will document the number observed, location, nearest food plant(s), and preferred shelter habitat, if possible. Although this task may not be due to be conducted until phase 2c funding will begin to accrue to enable the amount that is needed to be available when it is time to conduct the surveys.

9. Evaluation of Habitat Quality for Sensitive Species (Task 2.3.1). SDHC will continue monitoring the habitat quality for coastal California gnatcatcher and southern California rufous-crowned sparrow as described above in Phase 1 Task #6, on an annual basis.

10. QCB High Host Plant Area Weed Control (Task 2.1.2). SDHC will prioritize invasive control efforts first within QCB high host plant areas (Figure 10 of the RMP) and those areas identified for enhancement based on QCB host plant mapping conducted under Phase 2a Task #4, above. The secondary focus will be on the approximate 8.9 acres of area adjacent to these high host plant areas. The weed control efforts are anticipated to consist of eight crew days per year. The priority for weed treatment will also be based on the level of threat posed by the plants to the sensitive species. Nonnative cover within each high host plant area should be less than 10% cover of Cal-IPC High and Moderate category species. SDHC will prepare an annual work plan, to be submitted with the annual report (Phase 2a Task #10) identifying the areas to be weeded and methods for treatment for review by the County, USFWS, and CDFW. Pre-emergent herbicides will not be used.

    Weed management efforts in QCB high host plant areas will be performed in the presence of a biologist with a USFWS 10(a)(1)(A) recovery permit for QCB. This biologist will ensure the work is performed prior to seed set, approve the work area prior to work, identify the access route, be present during work, and redirect work immediately if QCB larvae are observed. Weed management efforts will occur twice annually, or as necessary, during periods when treatment would be most effective. Each of the two weed management efforts will consist of four crew days with a crew of four for a total of eight crew days. SDHC will monitor areas where weed treatment occurs at least twice annually during the monthly patrols to determine the effectiveness of control methods and if any changes should be made.

11. Annual Report (Tasks 5.1.1, 5.1.2, 5.1.3, 5.1.4). SDHC will continue to prepare and submit an annual report as described above in Phase 1 Task #9.

12. SDHC will update site conditions, hard files, electronic files, and GIS data annually.

13. Contingency of 12%.

14. Administrative cost of 16% for staff and 10% for subcontractors and supplies.

PHASE 2b TASKS AND COSTS (Year 7 through Year 12) $ 80,817.54

(Refer also to Attachment B.)

Assumptions for Phase 2b Tasks and Costs

1. Update Vegetation Mapping (Task 1.1.4, 1.1.5). SDHC will update the vegetation mapping beginning in the first year of Phase 2b and every five years thereafter using the Vegetation Classification Manual for Western San Diego County cross-referenced to Holland code. SDHC will evaluate the changes in terms of the total sensitive habitat acreage target and the vegetation acreage baseline from previous updates. For any noted changes, the significance and likely cause(s) will be identified, as well as any necessary changes to management. If changes to the acreage targets for native vegetation are deemed necessary, SDHC will propose such changes to the County, USFWS, and CDFW.

2. Non-native Species Mapping (Task 1.1.6). SDHC will continue updating non-native species mapping annually in QCB high use areas (see Figure 10 of the RMP) and every five years for the remainder of the OHCA in accordance with Phase 1 Task #4.

3. Annual Assessment for Rapidly Expanding Weed Populations (Task 1.1.7). At least once per year, SDHC will search the OHCA for new or rapidly expanding invasive plant species locations as part of a monthly patrol, incorporating any discoveries into the database of invasive plant species. These locations will be targeted for treatment during the year in which they are discovered and will be included in the following year's work plan for follow-up treatment.

4. General Weed Control Outside of QCB High Use Areas (Task 1.1.8). Invasive removal outside of QCB high use areas will occur twice per year during late winter and early spring in areas where non-native plants identified by Cal-IPC as High or Moderate category species exceed 20% cover. SDHC will make every effort to remove plants rated as Management Level 1 or 2 (per Dendra Inc.'s Management Priorities for Invasive Non-native Plants) within two weeks of detection, if possible. Plants rated as Management Level 3 will be removed during the next scheduled removal event and plants rated as Management Level 4 will be targeted for aggressive removal in an effort to eradicate the population, as possible. Any removal efforts within Tecate cypress forest will be sensitive to the Thorne's hairstreak butterfly breeding season. Two invasive removal efforts will be performed consisting of two crew days with a crew of four (4) for a total of four crew days.

5. QCB Host Plant Mapping (Task 2.1.1). SDHC will continue mapping the extent and abundance of QCB host plants as described above in Phase 1 Task #5, every three years.

6. QCB High Host Plant Area Weed Control (Task 2.1.2). SDHC will conduct invasive control efforts within QCB high host plant areas and those areas identified for enhancement based on QCB host plant mapping and will submit an annual work plan as described above in Phase 2a Task #6.

7. QCB Adult Flight Surveys (Task 2.1.3). SDHC will conduct QCB adult flight surveys at least once every three years as described above in Phase 2a Task #4.

8. QCB Larval Surveys (Task 2.1.4). SDHC will conduct surveys for QCB larvae once every six years in years of rainfall/climactic conditions that maximize QCB larval observations. Surveys will occur in high and moderate host plant areas and up to 25 acres of high plantago areas

would be surveyed twice during the optimum time for larval detection. When larvae are detected, the surveyor will document the number observed, location, nearest food plant(s), and preferred shelter habitat, if possible.

9. QCB Habitat Changes (Task 2.1.5). Every six years, SDHC will compare the results of all QCB adult and larval surveys, host plant mapping, and habitat assessments. If QCB populations and/or habitat quality have significantly decreased or appear threatened, after discussion with QCB experts, the County, USFWS, and CDFW, SDHC will determine whether such population fluctuations are consistent with data reported by other sites in the region and the likely cause(s). Working with the County, USFWS, and CDFW, SDHC will identify and implement feasible strategies to increase usage of the OHCA by QCB. The implementation of feasible strategies will be limited to the availability of contingency funds.

10. Monthly Monitoring (Tasks 4.1.2, 4.1.3, 4.1.4, 2.2.1, 2.2.2). SDHC will conduct monthly monitoring visits as described above in Phase 2a Task #1. SDHC will maintain an updated list of wildlife and plant species observed or detected during all visits and surveys and will map new locations of sensitive species. SDHC will also look for and map Argentine ants and consult with the County, USFWS, and CDFW regarding necessary control methods.

11. Photodocumentation (Task 5.1.4). Photodocumentation from each of the nine photo point locations will occur on an annual basis in conjunction with a monthly monitoring visit.

12. Evaluation of Habitat Quality for Sensitive Species (Task 2.3.1). SDHC will monitor habitat quality for coastal California gnatcatcher and southern California rufous-crowned sparrow on an annual basis as described above in Phase 1 Task #6.

13. Rare Plant Surveys (Tasks 3.1.1, 3.4.1). SDHC will continue conducting annual surveys per SDMMP requirements for San Diego goldenstar, Orcutt's birds-beak, and variegated dudleya and surveys every five years for Dunn's mariposa lily, Otay tarplant, Tecate cypress, San Diego barrel cactus, and Gander's pitcher sage as described above in Phase 1 Task #7.

14. Signs and Fencing (Task 4.1.1). SDHC will continue to repair and replace all signs as described above in Phase 2a Task #3. SDHC may install additional fencing to block unauthorized access points, as deemed necessary. SDHC will not create new routes through the OHCA.

15. Erosion Control (Task 4.1.5). SDHC will focus on measures to control erosion and promote restoration, as needed. It is acknowledged there is an existing area of substantial erosion on the south facing slope in the center of the property. Nominal erosion control funds included in this ELM are intended to be used for minor future erosion control needs and limited to those erosion control funds and contingency as available. The erosion control funds included in this ELM are not currently intended to repair the substantial existing erosion in the center portion of the property. If sufficient contingency is built up and it is decided to use the contingency for an erosion control effort requiring mechanized equipment, advanced approval would be obtained from the County, USFWS, and CDFW.

16. Fire Management Plan (Tasks 4.2.1, 4.2.2). SDHC will continue to coordinate fire management practices with BLM and the County Fire Marshall at least annually to limit damage to natural resources.

17. Post-fire Assessment (Tasks 4.2.3, 4.2.4). Within 30 days after a fire, the Executive Director and HM will assess the effects and, based on the extent and severity of damage, develop

and implement specific adaptive management tasks such as weeding and/or seeding after concurrence with USFWS and CDFW. After this initial assessment, the HM, with assistance from SDHC's Program Coordinator or other personnel, will map all high burn areas and areas where invasive removal and/or seeding are necessary. Due to the lack of water at the OHCA and the difficulty and expense of providing water to the OHCA, container plants will not be used. This ELM assumes a "post-fire" five-year weed management effort. During the first year following a fire, the weed management effort will consist of four crew days with a crew of four. Thereafter, the second year will include three crew days with a crew of four, the third year will include two crew days with a crew of four, and the fourth and fifth years will each include one crew day with a crew of four. This schedule may be adjusted at the discretion of the HM. Qualitative and quantitative monitoring of natural regrowth in the burned area(s) will be conducted to evaluate post-fire restoration success and be limited to the availability of contingency funds and post-fire grants. The HM will determine what type of sampling methods to use, based on the severity of the fire and the availability of funds. Additional adaptive management actions will be implemented as deemed necessary. If areas supporting Tecate cypress burn and there is excessive mortality with no recruitment of new individuals, SDHC will determine whether additional seeding is necessary. This ELM assumes that a post-fire assessment and restoration will be needed every 30 years.

18. General Coordination (Task 6.1.1). SDHC will meet with adjacent property owners to coordinate weed control actions, fire management, and public access control, on an annual basis or as needed.

19. Annual Report (Tasks 5.1.1, 5.1.2, 5.1.3, 5.1.4). SDHC will continue to prepare and submit an annual report as described above in Phase 1 Task #9.

20. RMP Update (Task 5.1.5). Every five years, SDHC will review the RMP goals, objectives, and tasks and make modifications, as necessary. Proposed RMP updates will be submitted to the County, USFWS, and CDFW for review and approval.

61-ACRE AMA TASKS AND COSTS (Beginning in Year 1) $ 4,363.98
(Refer also to Attachment B.)

Assumptions for 61-Acre AMA Tasks and Costs

This ELM provides additional costs for SDHC to perform the following tasks on the 61-acre AMA. Any additional management actions on the AMA would be at the discretion of SDHC and based on available funding.

1. Non-native Species Mapping (Task 1.1.6). SDHC will continue updating non-native species mapping annually in QCB high use areas (see Figure 10 of the RMP) and every five years for the remainder of the OHCA in accordance with Phase 1 Task #4.

2. QCB Host Plant Mapping (Task 2.1.1). SDHC will continue mapping the extent and abundance of QCB host plants as described above in Phase 1 Task #5, every three years.

3. QCB Adult Flight Surveys (Task 2.1.3). SDHC will conduct QCB adult flight surveys at least once every three years as described above in Phase 2a Task #4.

4. QCB High Host Plant Area Weed Control (Task 2.1.2). Once SDHC begins management duties as described above for Phase 2a, SDHC will conduct invasive control efforts within QCB high host plant areas and those areas identified for enhancement based on QCB host

plant mapping as described above in Phase 2a Task #6. This ELM includes an additional one crew day with a crew of 4.

5. Signs (Task 4.1.3). This ELM assumes an additional 8 signs to be installed and maintained along the Otay Mountain Truck Trail. It is assumed that the signs will be replaced an average of every 5 years.

6. Monthly Monitoring (Tasks 4.1.2, 4.1.3, 4.1.4). SDHC will include this area in monthly monitoring visits as described above in Phase 1 Task #3. No additional funding is assumed for this task.

7. Annual Assessment for Rapidly Expanding Weed Populations (Task 1.1.7). At least once per year and as time allows, SDHC will search the AMA for new or rapidly expanding invasive plant species locations as part of a monthly patrol, incorporating any discoveries into the database of invasive plant species. These locations will be targeted for treatment. No additional funding is assumed for this task.

8. Annual Report (Tasks 5.1.1, 5.1.2, 5.1.3, 5.1.4). SDHC will include AMA management information in the annual report as described above in Phase 1 Task #9.

FINANCIAL SUMMARY

Phases 1, 2a, 2b[1]

Annual Costs

Phase 1 Annual Costs Per Year (Year 1)	$	76,152.27
Phase 2a Annual Costs Per Year (Year 2 through Year 6)[2]	$	67,852.83
Phase 2b Annual Costs Per Year (Year 7 through Year 12)[3]	$	80,817.54

Total Costs Per Phase[4]

Phase 1 Total Costs (Year 1)	$	79,198.36
Phase 2a Total Costs (Year 2 through Year 6)	$	382,213.30
Phase 2b Total Costs (Year 7 through Year 12)	$	705,419.37
Total Contribution	**$**	**1,166,831.03**

[1] Project Proponent will provide funding through annual payments. Costs shown are using 2019 rates. Each annual payment will be increased 4% annually.
[2] Annual costs for Phase 2a will increase 4% annually.
[3] Annual costs for Phase 2b will increase 4% annually.
[4] Includes Annual Ongoing Costs plus Emergency and Legal Fund (4%) per Year

61-acre AMA

Initial Financial Requirements[1]	$	13,091.94
Annual Ongoing Financial Requirements	$	4,363.98
Endowment to Provide Income of $4,363.98	$	90,952.26
Emergency and Legal Defense Fund (4%)	$	3,638.09
Total Contribution	**$**	**107,682.29**

[1] Assumes initial financial requirements and endowment will be paid in 2019 and management will begin in 2019.
[2] Assumes a 4.25% capitalization rate.

ADDITIONAL ASSUMPTIONS

1. This ELM assumes SDHC will manage the habitat in perpetuity and take fee title to the OHCA and AMA. The County of San Diego will be the grantee to the conservation easement and an open space easement for the OHCA. Project Proponent will be responsible for ensuring a conservation easement over the OHCA, an open space easement over the OHCA, and any access easements are recorded prior to SDHC beginning any management tasks set forth above.
2. It is assumed SDHC will begin management of Phase 1 of the OHCA and the limited management tasks for the AMA in 2019, Phase 2a of the OHCA in 2020, Phase 2b of the OHCA in 2025, and Phase 2c of the OHCA in 2031 at which time the full endowment will be funded.
3. Control of exotic species, such as brown-headed cowbirds (*Molothrus ater*) and feral pigs (*Sus scrofa*), will be coordinated with regional efforts and be limited to the availability of contingency funds. Any control for Kuroshio shot-hole borer (*Euwallacea* sp., KSHB) will be limited to the availability of contingency funds. SDHC may elect to seek outside funding sources to address KSHB, as needed. SDHC will not be responsible for revegetation related to any dieback of vegetation due to KSHB.
4. The tasks and costs for Phase 2c, i.e. long-term ongoing tasks and costs, are covered in a separate ELM.
5. Any ground-disturbing activities conducted on the site will avoid known archaeological sites and will be monitored by an archaeologist and a Native American monitor.
6. Project Proponent shall guarantee and maintain legal and physical access to the OHCA and AMA so SDHC can perform its obligations. Access points shall be verified by SDHC prior to the execution of the operating agreement.
7. Project Proponent will be responsible for the costs associated with repair and replacement of fencing required by the RMP. SDHC may install additional fencing to block unauthorized access points, as deemed necessary. SDHC will not create new routes through the OHCA and AMA.
8. Project Proponent will make available to SDHC all biological resource vegetation maps, sensitive plant maps, and digital files associated with biological resource surveys within the OHCA and AMA, at the time SDHC takes responsibility for habitat management. In addition, Project Proponent shall provide a digital base map with topography and OHCA and AMA boundaries. Boundary survey data points shall also be provided to SDHC.
9. Estimate does not include the costs associated with SDHC and SDHC General Counsel review of legal documents, including but not limited to: Conservation Easements, Title Reports, Operating Agreements, Access Agreements, or Deeds. Review and comment on applicable documents will be performed under a separate contract prior to SDHC taking

responsibility for long-term habitat management. A minimum of **four weeks** is required between when these documents are final to document execution to provide time for SDHC Board of Director review and vote.

10. Project Proponent shall provide a current aerial, at a scale of 1" = 400' and as current as possible to the date of the initial property inspections, prior to the date of inspection. The aerial will be used during the site inspection to document the condition of the site upon transfer of duties.

11. Adaptive management is anticipated over the life of the stewardship and the RMP is expected to evolve and be updated as site conditions warrant. However, changes to the scope of annual stewardship as a result of adaptive management will be limited to available contingency funds.

12. This estimate is good for a period of six months.

ATTACHMENT A

OPEN SPACE MAP

Property Boundary

Conservation Area

Vegetation within Conservation Area

- Mule Fat Scrub (63310)
- Cismontane Alkali Marsh (52310)
- Tamarisk Scrub (63810)
- Southern Interior Cypress Forest (83330)
- Diegan Coastal Sage Scrub (32500)
- Diegan Coastal Sage Scrub - Disturbed (32500)
- Coastal Sage - Chaparral Scrub (37G00)
- Chamise Chaparral (37200)
- Southern Mixed Chaparral (37120)
- Native Grassland (42100)
- Non-native Grassland (42220)
- Disturbed Habitat (11300)
- Developed (12000)

Note: The numbers in parentheses represent the code for vegetation type (Oberbauer 2008).

Inset - East Parcel

Key Map

Main Map

Inset Map

I:\PROJECTS\SRM\SRM-17_OtayHill_Bio\Map\BIO\RMPFig6_Vegetation.mxd SRM-12 03/03/15 EV.DR

Conservation Area Vegetation

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N

0 650 Feet

Figure 6

ATTACHMENT B

ELM WORKSHEETS

Phase 1, Tasks and Costs

PROPERTY: Otay Hills Preserve LAST UPDATED: 8-2-2019

	C%	A%	TASK	RMP TASK NO.	ITEM	TITLE	#	UNIT	COST (Item)	COST (Title)	BASE COST	YRS	ANNUAL CONT	ANNUAL ADMIN	ANNUAL COST
			Initial Property Inspection												
1	12%	16%	Site Visit/Inspection			Executive Director	6	Hour(s)		$ 120.00	$ 720.00	1	$ 86.40	$ 115.20	$ 921.60
2	12%	16%	Site Visit/Inspection			Habitat Manager	8	Hour(s)		$ 105.00	$ 840.00	1	$ 100.80	$ 134.40	$ 1,075.20
3	12%	16%	Document Preparation & Review			Habitat Manager	12	Hour(s)		$ 105.00	$ 1,260.00	1	$ 151.20	$ 201.60	$ 1,612.80
4											**SUBTOTAL**		$ 338.40	$ 451.20	$ 3,609.60
5			**Biotic Surveys**												
6	12%	16%	Baseline Mapping - Vegetation	1.1.3, 1.1.4, 1.1.5	VCS Method	Habitat Manager	60	Hour(s)		$ 105.00	$ 6,300.00	1	$ 756.00	$ 1,008.00	$ 8,064.00
7	12%	10%	Baseline Mapping - Vegetation	1.1.3, 1.1.4, 1.1.5		GIS Contractor	8	Hour(s)		$ 86.00	$ 688.00	1	$ 82.56	$ 68.80	$ 839.36
8	12%	16%	Non-native Species Mapping	1.1.6	Non-QCB High Use Areas	Habitat Manager	32	Hour(s)		$ 105.00	$ 3,360.00	1	$ 403.20	$ 537.60	$ 4,300.80
9	12%	16%	Non-native Species Mapping	1.1.6	QCB High Use Areas	Habitat Manager	8	Hour(s)		$ 105.00	$ 840.00	1	$ 100.80	$ 134.40	$ 1,075.20
10	12%	16%	QCB Host Plant Mapping	2.1.1		Habitat Manager	44	Hour(s)		$ 105.00	$ 4,620.00	1	$ 554.40	$ 739.20	$ 5,913.60
11	12%	16%	Rare Plant Survey		Pre-fennel treatment rare plant survey	Habitat Manager	30	Hour(s)		$ 105.00	$ 3,150.00	1	$ 378.00	$ 504.00	$ 4,032.00
12	12%	16%	Sensitive Species Habitat Evaluation	2.3.1		Habitat Manager	12	Hour(s)		$ 105.00	$ 1,260.00	1	$ 151.20	$ 201.60	$ 1,612.80
13	12%	16%	Rare Plant Survey	3.1.1, 3.4.1	SD goldenstar, Orcutt's birds-beak, variegated dudleya	Habitat Manager	24	Hour(s)		$ 105.00	$ 2,520.00	1	$ 302.40	$ 403.20	$ 3,225.60
14	12%	16%	Rare Plant Survey	3.1.1, 3.4.1	Dunn's mariposa lily, Otay tarplant, Tecate cypress, SD barrel cactus, Gander's pitcher sage	Habitat Manager	36	Hour(s)		$ 105.00	$ 3,780.00	1	$ 453.60	$ 604.80	$ 4,838.40
15											**SUBTOTAL**		$ 3,182.16	$ 4,201.60	$ 33,901.76
16			**Habitat/Site Maintenance**												
17	12%	16%	Monthly Patrol	4.1.2, 4.1.3, 4.1.3		Habitat Manager	36	Hour(s)		$ 105.00	$ 3,780.00	1	$ 453.60	$ 604.80	$ 4,838.40
18	12%	10%	Fennel treatment		Fennel treatment	Field Technician	320	Hour(s)		$ 43.68	$ 13,977.60	1	$ 1,677.31	$ 1,397.76	$ 17,052.67
19	12%	10%	Fennel treatment		Fennel treatment	Field Supervisor	16	Hour(s)		$ 101.00	$ 1,616.00	1	$ 193.92	$ 161.60	$ 1,971.52
20	12%	16%	Fennel treatment		Fennel treatment	Habitat Manager	8	Hour(s)		$ 105.00	$ 840.00	1	$ 100.80	$ 134.40	$ 1,075.20
21	12%	16%	Monthly Patrol	4.1.2, 4.1.3, 4.1.4		Asst Habitat Manager	36	Hour(s)		$ 78.00	$ 2,808.00	1	$ 336.96	$ 449.28	$ 3,594.24
22											**SUBTOTAL**		$ 2,762.59	$ 2,747.84	$ 28,532.03
23			**Reporting**												
24	12%	16%	Monthly Log Report - Preparation			Asst Habitat Manag	12	Hour(s)		$ 78.00	$ 936.00	1	$ 112.32	$ 149.76	$ 1,198.08
25	12%	16%	CNDDB & SDMMP Data Submissions			Asst Habitat Manager	2	Hour(s)		$ 78.00	$ 156.00	1	$ 18.72	$ 24.96	$ 199.68
26	12%	16%	Annual Report - Preparation	5.1.1, 5.1.2, 5.1.3		Asst Habitat Manager	12	Hour(s)		$ 78.00	$ 936.00	1	$ 112.32	$ 149.76	$ 1,198.08
27	12%	16%	Annual Report - Preparation	5.1.1, 5.1.2, 5.1.3		Habitat Manager	4	Hour(s)		$ 105.00	$ 420.00	1	$ 50.40	$ 67.20	$ 537.60
28	12%	10%	Annual Report - Preparation	5.1.1, 5.1.2, 5.1.3		GIS Contractor	6	Hour(s)		$ 86.00	$ 516.00	1	$ 61.92	$ 51.60	$ 629.52
29	12%	16%	Annual Report - Review	5.1.1, 5.1.2, 5.1.3		Executive Director	2	Hour(s)		$ 120.00	$ 240.00	1	$ 28.80	$ 38.40	$ 307.20
30	12%	10%	Annual Report - County Review Fee	5.1.1, 5.1.2, 5.1.3			1	Fee	$ 378.00		$ 378.00	1	$ 45.36	$ 37.80	$ 461.16
31	12%	10%	Photo		Aerial Photo		1	Photo(s)	$ 54.00		$ 54.00	1	$ 6.48	$ 5.40	$ 65.88
32											**SUBTOTAL**		$ 436.32	$ 524.88	$ 4,597.20
33			**General Coordination**												
34	12%	16%	Coordinate - Fire Management Plan	4.2.1, 4.2.2		Habitat Manager	8	Hour(s)		$ 105.00	$ 840.00	1	$ 100.80	$ 134.40	$ 1,075.20
35											**SUBTOTAL**		$ 100.80	$ 134.40	$ 1,075.20
36			**Field Equipment**												
37	12%	10%	Mileage		Mileage - Annually		1300	Mile(s)	$ 0.72		$ 936.00	1	$ 112.32	$ 93.60	$ 1,141.92

Phase 1, Tasks and Costs

PROPERTY: Otay Hills Preserve LAST UPDATED: 8-2-2019

38												**SUBTOTAL**		$ 112.32	$ 93.60	$ 1,141.92
39			**Operations**													
40	12%	16%	Project Management - Supervise & Coordinate			Executive Director	6	Hour(s)		$ 120.00	$ 720.00	1	$ 86.40	$ 115.20	$ 921.60	
41	12%	10%	Audit		Audit - Flat Fee		1	Per Site	$ 730.00		$ 730.00	1	$ 87.60	$ 73.00	$ 890.60	
42	12%	10%	Insurance Liability				1	Fee	$ 303.05		$ 303.05	1	$ 36.37	$ 30.31	$ 369.72	
43	12%	10%	Project Accounting			Accountant	8	Hour(s)		$ 114.00	$ 912.00	1	$ 109.44	$ 91.20	$ 1,112.64	
												SUBTOTAL	$ 319.81	$ 309.71	$ 3,294.56	

TOTAL	**$**	**76,152.27**

Phase 2a, Tasks and Costs

PROPERTY: Otay Hills Preserve LAST UPDATED: 8-2-2019

	C%	A%	TASK	RMP TASK NO.	ITEM	TITLE	#	UNIT	COST (Item)	COST (Title)	BASE COST	YRS	ANNUAL CONT	ANNUAL ADMIN	ANNUAL COST
			Biotic Surveys												
1	12%	16%	Non-native Species Mapping	1.1.6	Non-QCB High Use Areas	Habitat Manager	32	Hour(s)		$ 105.00	$ 3,360.00	5	$ 80.64	$ 107.52	$ 860.16
2	12%	16%	Non-native Species Mapping	1.1.6	QCB High Use Areas	Habitat Manager	8	Hour(s)		$ 105.00	$ 840.00	1	$ 100.80	$ 134.40	$ 1,075.20
3	12%	16%	QCB Host Plant Mapping	2.1.1		Habitat Manager	44	Hour(s)		$ 105.00	$ 4,620.00	3	$ 184.80	$ 246.40	$ 1,971.20
4	12%	16%	QCB Larval Surveys	2.1.4		Habitat Manager	56	Hour(s)		$ 105.00	$ 5,880.00	6	$ 117.60	$ 156.80	$ 1,254.40
5	12%	16%	Sensitive Species Habitat Evaluation	2.3.1		Habitat Manager	12	Hour(s)		$ 105.00	$ 1,260.00	1	$ 151.20	$ 201.60	$ 1,612.80
6	12%	16%	Rare Plant Survey	3.1.1, 3.4.1	SD goldenstar, Orcutt's birds-beak, variegated dudleya	Habitat Manager	24	Hour(s)		$ 105.00	$ 2,520.00	1	$ 302.40	$ 403.20	$ 3,225.60
7	12%	16%	Rare Plant Survey	3.1.1, 3.4.1	Dunn's mariposa lily, Otay tarplant, Tecate cypress, SD barrel cactus, Gander's pitcher sage	Habitat Manager	30	Hour(s)		$ 105.00	$ 3,150.00	5	$ 75.60	$ 100.80	$ 806.40
8															
9	12%	16%	QCB Adult Flight Surveys	2.1.3		Habitat Manager	60	Hour(s)		$ 105.00	$ 6,300.00	3	$ 252.00	$ 336.00	$ 2,688.00
10											**SUBTOTAL**		$ 1,265.04	$ 1,686.72	$ 13,493.76
11			**Habitat/Site Maintenance**												
12	12%	16%	Monthly Patrol	4.1.2, 4.1.3, 4.1.4		Habitat Manager	36	Hour(s)		$ 105.00	$ 3,780.00	1	$ 453.60	$ 604.80	$ 4,838.40
13	12%	16%	Monthly Patrol	4.1.2, 4.1.3, 4.1.4		Asst Habitat Manager	36	Hour(s)		$ 78.00	$ 2,808.00	1	$ 336.96	$ 449.28	$ 3,594.24
14	12%	10%	Signs	4.1.3	Basic - 12"x18"		33	Item(s)	$ 40.00		$ 1,320.00	5	$ 31.68	$ 26.40	$ 322.08
15	12%	10%	Signs	4.1.3	Installation - Basic Sign	Field Technician	16	Hour(s)		$ 47.00	$ 752.00	5	$ 18.05	$ 15.04	$ 183.49
16	12%	10%	Invasives	2.1.2	Weeding - QCB High Host Plant Area	Field Technician	320	Hour(s)		$ 47.00	$ 15,040.00	1	$ 1,804.80	$ 1,504.00	$ 18,348.80
17	12%	10%	Invasives	2.1.2	Weeding - QCB High Host Plant Area	Field Supervisor	16	Hour(s)		$ 101.00	$ 1,616.00	1	$ 193.92	$ 161.60	$ 1,971.52
18	12%	16%	Invasives	2.1.2	Weeding - QCB High Host Plant Area	Habitat Manager	80	Hour(s)		$ 105.00	$ 8,400.00	1	$ 1,008.00	$ 1,344.00	$ 10,752.00
19											**SUBTOTAL**		$ 3,847.01	$ 4,105.12	$ 40,010.53
20			**Reporting**												
21	12%	16%	Monthly Log Report - Preparation			Habitat Manager	12	Hour(s)		$ 105.00	$ 1,260.00	1	$ 151.20	$ 201.60	$ 1,612.80
22	12%	16%	CNDDB & SDMMP Data Submissions			Asst Habitat Manager	2	Hour(s)		$ 78.00	$ 156.00	1	$ 18.72	$ 24.96	$ 199.68
23	12%	16%	Annual Report - Preparation	5.1.1, 5.1.2, 5.1.3		Asst Habitat Manager	12	Hour(s)		$ 78.00	$ 936.00	1	$ 112.32	$ 149.76	$ 1,198.08
24	12%	16%	Annual Report - Preparation	5.1.1, 5.1.2, 5.1.3		Habitat Manager	4	Hour(s)		$ 105.00	$ 420.00	1	$ 50.40	$ 67.20	$ 537.60
25	12%	10%	Annual Report - Preparation	5.1.1, 5.1.2, 5.1.3		GIS Contractor	4	Hour(s)		$ 86.00	$ 344.00	1	$ 41.28	$ 34.40	$ 419.68
26	12%	16%	Annual Report - Review	5.1.1, 5.1.2, 5.1.3		Executive Director	2	Hour(s)		$ 120.00	$ 240.00	1	$ 28.80	$ 38.40	$ 307.20
27	12%	10%	Annual Report - County Review Fee	5.1.1, 5.1.2, 5.1.3			1	Fee	$ 378.00		$ 378.00	1	$ 45.36	$ 37.80	$ 461.16
28	12%	10%	Photo		Aerial Photo		1	Photo(s)	$ 54.00		$ 54.00	1	$ 6.48	$ 5.40	$ 65.88
29											**SUBTOTAL**		$ 454.56	$ 559.52	$ 4,802.08
30			**General Coordination**												
31	12%	16%	Coordinate - Fire Management Plan			Habitat Manager	6	Hour(s)		$ 105.00	$ 630.00	1	$ 75.60	$ 100.80	$ 806.40
32	12%	16%	Coordinate - Resource Agencies		Work Plan, Habitat & Species Changes/Decline, Argentine Ants	Habitat Manager	10	Hour(s)		$ 105.00	$ 1,050.00	1	$ 126.00	$ 168.00	$ 1,344.00
33											**SUBTOTAL**		$ 201.60	$ 268.80	$ 2,150.40
34			**Field Equipment**												
35	12%	10%	Mileage		Mileage - Annually		1560	Mile(s)	$ 0.72		$ 1,123.20	1	$ 134.78	$ 112.32	$ 1,370.30
36	12%	10%	Mileage		Mileage - 3-Year Efforts		390	Mile(s)	$ 0.72		$ 280.80	3	$ 11.23	$ 9.36	$ 114.19
37	12%	10%	Mileage		Mileage - 5-Year Efforts		260	Mile(s)	$ 0.72		$ 187.20	5	$ 4.49	$ 3.74	$ 45.68
38											**SUBTOTAL**		$ 150.51	$ 125.42	$ 1,530.17

Phase 2a, Tasks and Costs

PROPERTY: Otay Hills Preserve LAST UPDATED: 8-2-2019

39			**Operations**													
40	12%	16%	Project Management - Supervise & Coordinate			Executive Director	6	Hour(s)		$ 115.00	$ 690.00	1	$ 82.80	$ 110.40	$ 883.20
41	12%	10%	Audit		Audit - Flat Fee		1	Per Site	$ 730.00		$ 730.00	1	$ 87.60	$ 73.00	$ 890.60
42	12%	10%	Insurance Liability				1	Fee	$ 303.05		$ 303.05	1	$ 36.37	$ 30.31	$ 369.72
43	12%	10%	Project Accounting			Accountant	8	Hour(s)		$ 114.00	$ 912.00	1	$ 109.44	$ 91.20	$ 1,112.64
											SUBTOTAL		$ 316.21	$ 304.91	$ 3,256.16

TOTAL	**$**	**65,243.10**

Phase 2b, Tasks and Costs

PROPERTY: Otay Hills Preserve LAST UPDATED: 8-2-2019

	C%	A%	TASK	RMP TASK NO.	ITEM	TITLE	#	UNIT	COST (Item)	COST (Title)	BASE COST	YRS	ANNUAL CONT	ANNUAL ADMIN	ANNUAL COST
			Biotic Surveys												
1	12%	16%	Baseline Mapping - Vegetation	1.1.3, 1.1.4, 1.1.5	VCS Method	Habitat Manager	22	Hour(s)		$ 105.00	$ 2,310.00	5	$ 55.44	$ 73.92	$ 591.36
2	12%	10%	Baseline Mapping - Vegetation	1.1.3, 1.1.4, 1.1.5		GIS Contractor	2	Hour(s)		$ 86.00	$ 172.00	5	$ 4.13	$ 3.44	$ 41.97
3	12%	16%	Non-native Species Mapping	1.1.6	Non-QCB High Use Areas	Habitat Manager	32	Hour(s)		$ 105.00	$ 3,360.00	5	$ 80.64	$ 107.52	$ 860.16
4	12%	16%	Non-native Species Mapping	1.1.6	QCB High Use Areas	Habitat Manager	8	Hour(s)		$ 105.00	$ 840.00	1	$ 100.80	$ 134.40	$ 1,075.20
5	12%	16%	QCB Host Plant Mapping	2.1.1		Habitat Manager	44	Hour(s)		$ 105.00	$ 4,620.00	3	$ 184.80	$ 246.40	$ 1,971.20
6	12%	16%	Sensitive Species Habitat Evaluation	2.3.1		Habitat Manager	12	Hour(s)		$ 105.00	$ 1,260.00	1	$ 151.20	$ 201.60	$ 1,612.80
7	12%	16%	Rare Plant Survey	3.1.1, 3.4.1	SD goldenstar, Orcutt's birds-beak, variegated dudleya	Habitat Manager	24	Hour(s)		$ 105.00	$ 2,520.00	1	$ 302.40	$ 403.20	$ 3,225.60
8	12%	16%	Rare Plant Survey	3.1.1, 3.4.1	Dunn's mariposa lily, Otay tarplant, Tecate cypress, SD barrel cactus, Gander's pitcher sage	Habitat Manager	30	Hour(s)		$ 105.00	$ 3,150.00	5	$ 75.60	$ 100.80	$ 806.40
9	12%	16%	QCB Adult Flight Surveys	2.1.3		Habitat Manager	60	Hour(s)		$ 105.00	$ 6,300.00	3	$ 252.00	$ 336.00	$ 2,688.00
10	12%	16%	QCB Larval Surveys	2.1.4		Habitat Manager	56	Hour(s)		$ 105.00	$ 5,880.00	6	$ 117.60	$ 156.80	$ 1,254.40
11	12%	16%	Post-fire Assessment	4.2.3, 4.2.4		Habitat Manager	10	Hour(s)		$ 105.00	$ 1,050.00	30	$ 4.20	$ 5.60	$ 44.80
12	12%	16%	Post-fire Assessment	4.2.3, 4.2.4		Executive Director	10	Hour(s)		$ 120.00	$ 1,200.00	30	$ 4.80	$ 6.40	$ 51.20
13	12%	16%	Post-fire Mapping	4.2.3, 4.2.4		Habitat Manager	20	Hour(s)		$ 105.00	$ 2,100.00	30	$ 8.40	$ 11.20	$ 89.60
14	12%	16%	Post-fire Mapping	4.2.3, 4.2.4		Asst Habitat Manager	20	Hour(s)		$ 78.00	$ 1,560.00	30	$ 6.24	$ 8.32	$ 66.56
15											**SUBTOTAL**		$ 1,348.25	$ 1,795.60	$ 14,379.25
16			**Habitat/Site Maintenance**												
17	12%	16%	Monthly Patrol	4.1.2, 4.1.3, 4.1.4		Habitat Manager	36	Hour(s)		$ 105.00	$ 3,780.00	1	$ 453.60	$ 604.80	$ 4,838.40
18	12%	16%	Monthly Patrol	4.1.2, 4.1.3, 4.1.4		Asst Habitat Manager	36	Hour(s)		$ 78.00	$ 2,808.00	1	$ 336.96	$ 449.28	$ 3,594.24
19	12%	10%	Signs	4.1.3	Basic - 12"x18"		33	Item(s)	$ 41.60		$ 1,372.80	5	$ 32.95	$ 27.46	$ 334.96
20	12%	10%	Signs	4.1.3	Installation - Basic Sign	Field Technician	16	Hour(s)		$ 42.00	$ 672.00	5	$ 16.13	$ 13.44	$ 163.97
21	12%	10%	Invasives	2.1.2	Weeding - QCB High Host Plant Areas	Field Technician	320	Hour(s)		$ 42.00	$ 13,440.00	1	$ 1,612.80	$ 1,344.00	$ 16,396.80
22	12%	10%	Invasives	2.1.2	Weeding - QCB High Host Plant Areas	Field Supervisor	16	Hour(s)		$ 101.00	$ 1,616.00	1	$ 193.92	$ 161.60	$ 1,971.52
23	12%	16%	Invasives	2.1.2	Weeding - QCB High Host Plant Areas	Habitat Manager	80	Hour(s)		$ 105.00	$ 8,400.00	1	$ 1,008.00	$ 1,344.00	$ 10,752.00
24	12%	10%	Invasives	1.1.8	Weeding - Outside QCB High Use Areas	Field Technician	160	Hour(s)		$ 43.68	$ 6,988.80	1	$ 838.66	$ 698.88	$ 8,526.34
25	12%	10%	Invasives	1.1.8	Weeding - Outside QCB High Use Areas	Field Supervisor	8	Hour(s)		$ 101.00	$ 808.00	1	$ 96.96	$ 80.80	$ 985.76
26	12%	16%	Invasives	1.1.8	Weeding - Outside QCB High Use Areas	Habitat Manager	4	Hour(s)		$ 105.00	$ 420.00	1	$ 50.40	$ 67.20	$ 537.60
27	12%	10%	Invasives	1.1.8	Herbicide Concentrate		16	Gallon(s)	$ 130.00		$ 2,080.00	1	$ 249.60	$ 208.00	$ 2,537.60
28	12%	10%	Erosion	4.1.5	BMP Materials		1	Fee	$ 150.00		$ 150.00	1	$ 18.00	$ 15.00	$ 183.00
29	12%	10%	Fire_Recovery	4.2.3	Invasive Removal & Seeding	Field Technician	440	Hour(s)		$ 47.00	$ 20,680.00	30	$ 82.72	$ 68.93	$ 840.99
30	12%	10%	Fire_Recovery	4.2.3	Invasive Removal & Seeding	Field Supervisor	44	Hour(s)		$ 101.00	$ 4,444.00	30	$ 17.78	$ 14.81	$ 180.72
31	12%	16%	Fire_Recovery	4.2.3	Invasive Removal & Seeding	Habitat Manager	8	Hour(s)		$ 105.00	$ 840.00	30	$ 3.36	$ 4.48	$ 35.84
32	12%	10%	Fire_Recovery	4.2.3	Seeds		1	Fee	$ 1,040.00		$ 1,040.00	30	$ 4.16	$ 3.47	$ 42.29
33											**SUBTOTAL**		$ 5,015.99	$ 5,106.15	$ 51,922.03
34			**Reporting**												
35	12%	16%	Monthly Log Report - Preparation			Habitat Manager	12	Hour(s)		$ 105.00	$ 1,260.00	1	$ 151.20	$ 201.60	$ 1,612.80
36	12%	16%	CNDDB & SDMMP Data Submissions			Asst Habitat Manager	2	Hour(s)		$ 78.00	$ 156.00	1	$ 18.72	$ 24.96	$ 199.68
37	12%	16%	Annual Report - Preparation	5.1.1, 5.1.2, 5.1.3		Asst Habitat Manager	12	Hour(s)		$ 78.00	$ 936.00	1	$ 112.32	$ 149.76	$ 1,198.08
38	12%	16%	Annual Report - Preparation	5.1.1, 5.1.2, 5.1.3		Habitat Manager	4	Hour(s)		$ 105.00	$ 420.00	1	$ 50.40	$ 67.20	$ 537.60
39	12%	10%	Annual Report - Preparation	5.1.1, 5.1.2, 5.1.3		GIS Contractor	4	Hour(s)		$ 86.00	$ 344.00	1	$ 41.28	$ 34.40	$ 419.68

Phase 2b, Tasks and Costs

PROPERTY: Otay Hills Preserve LAST UPDATED: 8-2-2019

40	12%	16%	Annual Report - Review	5.1.1, 5.1.2, 5.1.3		Executive Director	2	Hour(s)		$ 120.00	$ 240.00	1	$ 28.80	$ 38.40	$ 307.20
41	12%	10%	Annual Report - County Review Fee	5.1.1, 5.1.2, 5.1.3			1	Fee	$ 378.00		$ 378.00	1	$ 45.36	$ 37.80	$ 461.16
42	12%	16%	RMP Update	5.1.5		Habitat Manager	12	Hour(s)		$ 105.00	$ 1,260.00	5	$ 30.24	$ 40.32	$ 322.56
43	12%	10%	Photo		Aerial Photo		1	Photo(s)	$ 56.16		$ 56.16	1	$ 6.74	$ 5.62	$ 68.52
44											**SUBTOTAL**		$ 485.06	$ 600.06	$ 5,127.28
45			**General Coordination**												
46	12%	16%	Coordinate - Fire Management Plan	4.2.1, 4.2.2		Habitat Manager	6	Hour(s)		$ 105.00	$ 630.00	1	$ 75.60	$ 100.80	$ 806.40
47	12%	16%	Coordinate - Resource Agencies	5.1.2, 4.2.1, 4.2.2, 2.1.5, 2.3.1, 3.1.1, 3.4.1, 2.2.2	Work Plan, Fire Management & Recovery, Habitat & Species Changes/Decline, Argentine Ants	Habitat Manager	20	Hour(s)		$ 105.00	$ 2,100.00	1	$ 252.00	$ 336.00	$ 2,688.00
48	12%	16%	Coordinate - Neighboring Entities			Habitat Manager	6	Hour(s)		$ 105.00	$ 630.00	1	$ 75.60	$ 100.80	$ 806.40
49											**SUBTOTAL**		$ 403.20	$ 537.60	$ 4,300.80
50			**Field Equipment**												
51	12%	10%	Mileage		Mileage - Annually		1755	Mile(s)	$ 0.72		$ 1,259.39	1	$ 151.13	$ 125.94	$ 1,536.45
52	12%	10%	Mileage		Mileage - 3-Year Efforts		390	Mile(s)	$ 0.72		$ 279.86	3	$ 11.19	$ 9.33	$ 113.81
53	12%	10%	Mileage		Mileage - 5-Year Efforts		325	Mile(s)	$ 0.72		$ 233.22	5	$ 5.60	$ 4.66	$ 56.91
54	12%	10%	Mileage		Mileage - 6-Year Efforts		195	Mile(s)	$ 0.72		$ 139.93	6	$ 2.80	$ 2.33	$ 28.45
55	12%	10%	Mileage		Mileage - 30-Year Efforts		260	Mile(s)	$ 0.72		$ 186.58	30	$ 0.75	$ 0.62	$ 7.59
56											**SUBTOTAL**		$ 171.46	$ 142.89	$ 1,743.21
57			**Operations**												
58	12%	16%	Project Management - Supervise & Coordinate			Executive Director	6	Hour(s)		$ 120.00	$ 720.00	1	$ 86.40	$ 115.20	$ 921.60
59	12%	10%	Audit		Audit - Flat Fee		1	Per Site	$ 759.20		$ 759.20	1	$ 91.10	$ 75.92	$ 926.22
60	12%	10%	Insurance Liability				1	Fee	$ 315.17		$ 315.17	1	$ 37.82	$ 31.52	$ 384.51
61	12%	10%	Project Accounting			Accountant	8	Hour(s)		$ 114.00	$ 912.00	1	$ 109.44	$ 91.20	$ 1,112.64
											SUBTOTAL		$ 324.76	$ 313.84	$ 3,344.97

TOTAL	**$**	**80,817.54**

Financial Summary, For Phases 1, 2a, 2b if Fund Over Time with Annual Payments

PROPERTY: Otay Hills Preserve LAST UPDATED: 8-2-2019

Acreage =	329.40
Contingency Rate =	12%
Administrative Rate (Staff) =	16%
Administrative Rate (Subcontractors & Materials) =	10%

	Phase 1	Phase 2a	Phase 2b
Contingency	$ 7,252.40	$ 6,234.92	$ 7,748.72
Administrative	$ 8,463.23	$ 7,050.49	$ 8,496.13

COSTS PER YEAR

	Ongoing Management Costs	*Emergency & Legal Fund (4%)*	**TOTAL ($)**
Annual Ongoing Costs per Year for Phase 1			
Year 1	*$ 76,152.27*	*$ 3,046.09*	$ 79,198.36
Annual Ongoing Costs per Year for Phase 2a			
Year 2*	*$ 67,852.83*	*$ 2,714.11*	$ 70,566.94
Year 3*	*$ 70,566.94*	*$ 2,822.68*	$ 73,389.62
Year 4*	*$ 73,389.62*	*$ 2,935.58*	$ 76,325.20
Year 5*	*$ 76,325.20*	*$ 3,053.01*	$ 79,378.21
Year 6*	*$ 79,378.21*	*$ 3,175.13*	$ 82,553.34
Annual Ongoing Costs per Year for Phase 2b			
Year 7*	*$ 102,259.97*	*$ 4,090.40*	$ 106,350.37
Year 8*	*$ 106,350.37*	*$ 4,254.01*	$ 110,604.38
Year 9*	*$ 110,604.38*	*$ 4,424.18*	$ 115,028.56
Year 10*	*$ 115,028.56*	*$ 4,601.14*	$ 119,629.70
Year 11*	*$ 119,629.70*	*$ 4,785.19*	$ 124,414.89
Year 12*	*$ 124,414.89*	*$ 4,976.60*	$ 129,391.48

TOTAL COSTS PER PHASE (PHASES 1, 2A, 2B)*	
Phase 1: Ongoing Costs + Emergency & Legal Fund (4% of Annual Ongoing Cost) (Year 1)	**$ 79,198.36**
Phase 2a: Ongoing Costs + Emergency & Legal Fund (4% of Annual Ongoing Cost) (Year 2 through Year 6)	**$ 382,213.30**
Phase 2b: Ongoing Costs + Emergency & Legal Fund (4% of Annual Ongoing Cost) (Year 7 through Year 12)	**$ 705,419.37**
TOTAL CONTRIBUTION FOR PHASES 1, 2A, 2B	**$ 1,166,831.03**

** Assumes annual payments will increase based upon that year's CP which this ELM estimates at 4%.*

Ongoing Tasks and Costs

PROPERTY: Otay Hills - Additional Management Area LAST UPDATED: 8-2-2019

1	C%	A%	TASK	ITEM	TITLE	#	UNIT	COST (Item)	COST (Title)	BASE COST	YRS	ANNUAL CONT	ANNUAL ADMIN	ANNUAL COST
2			**Biotic Surveys**											
3	12%	16%	QCB Adult Flight Survey		Habitat Manager	10			$ 105.00	$ 1,050.00	3	$ 42.00	$ 56.00	$ 448.00
4	12%	16%	QCB Host Plant Mapping		Habitat Manager	6			$ 105.00	$ 630.00	3	$ 25.20	$ 33.60	$ 268.80
5	12%	16%	Non-native Species Mapping		Habitat Manager	4			$ 105.00	$ 420.00	5	$ 10.08	$ 13.44	$ 107.52
6										**SUBTOTAL**		$ 77.28	$ 103.04	$ 824.32
7			**Habitat/Site Maintenance**											
8	12%	10%	Invasives	Weeding - Hand Removal	Field Technician	40	Hour(s)		$ 48.88	$ 1,955.20	1	$ 234.62	$ 195.52	$ 2,385.34
9	12%	10%	Invasives	Weeding - Hand Removal	Field Supervisor	4	Hour(s)		$ 101.00	$ 404.00	1	$ 48.48	$ 40.40	$ 492.88
10	12%	16%	Invasives	Weeding - Manage & Direct	Habitat Manager	4	Hour(s)		$ 105.00	$ 420.00	1	$ 50.40	$ 67.20	$ 537.60
11	12%	10%	Signs	Basic - 12"x18"		8	Item(s)	$ 41.60		$ 332.80	5	$ 7.99	$ 6.66	$ 81.20
12	12%	10%	Signs	Installation - Basic Sign		4	Hour(s)		$ 43.68	$ 174.72	5	$ 4.19	$ 3.49	$ 42.63
13										**SUBTOTAL**		$ 345.68	$ 313.27	$ 3,539.66

TOTAL	**$**	**4,363.98**

Financial Summary

PROPERTY: Otay Hills - Additional Management Area LAST UPDATED: 8-2-2019

Acreage =	50.00	
Contingency Rate =	12%	
Administrative Rate (Staff) =	16%	
Administrative Rate (Subs & Materials) =	10%	
Endowment per Acre =	$ 1,819.05	
Endowment per Acre per Year =	$ 87.28	

Contingency	$	422.96
Administrative	$	416.31

COSTS PER YEAR	**TOTAL ($)**
Annual Ongoing Costs per Year at 2019 rates	$ 4,363.98
TOTAL INITIAL FINANCIAL REQUIREMENTS	
Annual Ongoing Costs for Year 1	$ 4,363.98
Annual Ongoing Costs for Year 2	$ 4,363.98
Annual Ongoing Costs for Year 3	$ 4,363.98
Initial Financial Requirements for Years 1, 2,3	**$ 13,091.94**
ENDOWMENT REQUIREMENTS FOR ONGOING STEWARDSHIP*	
Endowment to Provide Ongoing Income of $ 4,363.98 at 4.25%	**$ 90,952.26**
EMERGENCY & LEGAL FUND	
4% of Endowment	**$ 3,638.09**
TOTAL CONTRIBUTION (Initial Financial Requirements for Years 1,2,3 + Endowment + Emergency & Legal Fund)	**$ 107,682.29**

** Assumes the endowment will be paid in 2019 and returns from the endowment will start being used to support stewardship tasks in Year 4.*

OTAY HILLS CONSERVATION AREA
ESTIMATE FOR LONG-TERM MANAGEMENT
(Phase 2c)

Prepared for:
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August 2, 2019

ESTIMATE FOR LONG-TERM MANAGEMENT
OTAY HILLS CONSERVATION AREA, COUNTY OF SAN DIEGO
PHASE 2c
August 2, 2019

An Estimate for Long-term Management (ELM) has been prepared for Phase 2c of the Otay Hills Conservation Area (OHCA), in accordance with the provisions in the October 12, 2016 and July 7, 2018 Cost Proposal Agreements between San Diego Habitat Conservancy (SDHC) and Superior ReadyMix (Project Proponent). The purpose of the ELM is to identify the tasks and costs associated with the long-term management of the 304.6-acre OHCA located approximately one mile north of the border with Baja California, Mexico, one mile east of the Otay Mesa border crossing, and east of the intersection of Otay Mesa and Alta Roads in the foothills immediately east of Otay Mesa in unincorporated southern San Diego County.

This ELM includes Long-term Ongoing Tasks and Costs associated with managing the OHCA and the sensitive habitat and resources within the OHCA. Refer to Attachment A for a map of the OHCA habitat and boundaries. The costs were estimated utilizing an Excel spreadsheet adapted from Property Analysis Record (PAR) software and based on management experience. The complete ELM cost sheets are provided in Attachment B. Although this ELM only applies to the long-term management (Phase 2c) tasks and costs to be funded by a non-wasting endowment, it assumes that SDHC will also perform all phased in management tasks and costs associated with Phases 1, 2a, and 2b, as well as the more limited management obligations for the 61-acre Additional Management Area (AMA) as set forth in a separate ELM. It is assumed that the management tasks associated with Phase 2c will begin only once the endowment is fully funded. This update is being provided to reflect updates to the resource management plan for the OHCA.

SDHC's Executive Director, Don Scoles, and Program Coordinator, Sarah Krejca, conducted a site visit of the OHCA on February 20, 2015. The primary source used to prepare this ELM is the Otay Hills Conservation Area Resource Management Plan prepared by HELIX Environmental Planning, Inc. (July 12, 2018) (RMP).

The ELM has been organized into the following categories:

- Open Space Property Description
- Ongoing (Phase 2c) Tasks and Costs
- Financial Summary
- Additional Assumptions

OPEN SPACE PROPERTY DESCRIPTION

The OHCA consists of 304.6 acres as well as a 61-acre AMA within the foothills of the San Ysidro Mountains east of the intersection of Otay Mesa and Alta Roads, for a total of 365.6 acres. Refer to the map in Attachment A for the boundaries of the OHCA and AMA. The AMA has an existing conservation easement in favor of the California Department of Fish and Wildlife (CDFW) and is subject to more limited management obligations, as detailed in the RMP and in the ELM for Phases 1, 2a, 2b, and the 61-acre AMA. The area to the west of the OHCA is dominated by industrial uses, including the Otay Hills Project. The San Ysidro Mountains and foothills lie to the north and east, including the Otay Mountain Cooperative Land and Wildlife Management Area and the Bureau of Land Management (BLM) Otay Mountain Wilderness Area, National Wilderness Preservation System land which overlay areas east of the Otay Hills Project development. The southern boundary

abuts the proposed East Otay Mesa Recycling and Collection Center Landfill. Portions of the BLM Otay Mountain Truck Trail cross the northern portion of the OHCA and AMA.

The OHCA contains 11 vegetation communities/habitats: Diegan coastal sage scrub, southern mixed chaparral, non-native grassland, chamise chaparral, coastal sage-chaparral scrub, native grassland, southern interior cypress forest, tamarisk scrub, cismontane alkali marsh, mule fat scrub, disturbed habitat, and developed land. Eighteen covered and/or sensitive plant species occur within the OHCA: ashy spike-moss (*Selaginella cinerascens*), Coulter's matilija poppy (*Romneya coulteri*), Dunn's mariposa lily (*Calochortus dunnii*), Gander's pitcher sage (*Lepechinia ganderi*), Munz's sage (*Salvia munzii*), Orcutt's bird's beak (*Cordylanthus orcuttianus*), Otay tarplant (*Deinandra conjugens*), Palmer's grapplinghook (*Harpagonella palmeri*) , San Diego barrel cactus (*Ferocactus viridescens*), San Diego County needlegrass (*Achnatherum diegoense*), San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*), San Diego marsh-elder (*Iva hayesiana*), San Diego sunflower (*Bahiopsis laciniata*), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*), Tecate cypress (*Hesperocyparis* [*Cupressus*] *forbesii*), variegated dudleya (*Dudleya variegata*), and western dichondra (*Dichondra occidentalis*). Seventeen covered and/or sensitive animal species have been detected within the OHCA: Quino checkerspot butterfly (QCB), red-diamond rattlesnake, coast horned lizard, Belding's orange throated whiptail, coastal California gnatcatcher, Bell's sage sparrow, golden eagle, burrowing owl, loggerhead shrike, grasshopper sparrow, northern harrier, southern California rufous-crowned sparrow, California horned lark, turkey vulture, common barn owl, San Diego black-tailed jackrabbit, southern mule deer, and mountain lion.

SDHC assumes that the County of San Diego will serve as the grantee to the conservation easement and to the open space easement, and that SDHC will hold fee title to the OHCA. SDHC assumes tasks associated with Phase 1 of the OHCA and the AMA will commence in 2019, Phase 2a of the OHCA will commence in 2020, Phase 2b of the OHCA will commence in 2021, and Phase 2c of the OHCA will commence in 2031 at which time the full endowment will be funded. The tasks and costs for Phases 1, 2a, and 2b i.e. phased tasks and costs, and the AMA are covered in a separate ELM. The costs for Phases 1, 2a, and 2b will be supported by annual payments while the costs for the AMA will be supported by an endowment.

PHASE 2c ONGOING TASKS AND COSTS **$ 83,247.89**

(Refer also to Attachment B.)

Assumptions for Phase 2c Ongoing Tasks and Costs

1. Update Vegetation Mapping (Task 1.1.3, 1.1.4, 1.1.5). SDHC will update the vegetation mapping every five years using the Vegetation Classification Manual for Western San Diego County cross-referenced to Holland code. Baseline mapping will be completed in GIS, utilizing a digitized topographic base map, digitized vegetation and sensitive species maps, and aerial photographs provided by Project Proponent. Baseline surveys will utilize all data and maps supplied by Project Proponent and baseline surveys will field verify the status of the most current mapping. SDHC will evaluate the changes in terms of the total sensitive habitat acreage target and the vegetation acreage baseline from previous updates. For any noted changes, the significance and likely cause(s) will be identified, as well as any necessary changes to management. If changes to the acreage targets for native vegetation are deemed necessary, SDHC will propose such changes to the County, USFWS, and CDFW.

2. Non-native Species Mapping (Task 1.1.6). SDHC will update non-native species mapping annually in QCB high use areas (see Figure 10 of the RMP) and every five years for the remainder of the OHCA. SDHC will map the invasive, non-native plant species, excluding non-native grasses, using specific location data (GPS coordinates). This ELM assumes that non-native species mapping in QCB high use areas will occur in conjunction with a monthly monitoring visit so no additional time has been allotted for this task.

3. QCB Host Plant Mapping (Task 2.1.1). SDHC will update QCB host plant mapping every three years by mapping the extent and abundance of QCB host plants within high host plant areas and adjacent moderate host plant areas in accordance with the methods outlined in Task 2.1.1 of the RMP and using a methodology similar to the San Diego Management and Monitoring Program (SDMMP) rare plant monitoring protocol. This data will be used to identify potential host plant enhancement areas for additional non-native plant removal and/or future seeding needs.

4. QCB Adult Flight Surveys (Task 2.1.3). Every three years, SDHC will conduct surveys for adult QCB in years of rainfall/climactic conditions that maximize QCB observations. Population assessments will be conducted in QCB high use areas (Figure 10 of the RMP) and consist of three surveys conducted one to two weeks apart at the peak of the flight season. Surveys will follow the most current USFWS survey protocol or recommendations. Surveys will include mapping of nectar plants and recording host plant phenology (germination, inflorescence emergence and senescence) in conjunction with larval and adult flight season in order to compare with fluctuations in QCB observations.

5. QCB Larval Surveys (Task 2.1.4). SDHC will conduct surveys for QCB larvae once every six years in years of rainfall/climactic conditions that maximize QCB larval observations. Surveys will occur in high and moderate host plant areas and up to 25 acres of high plantago areas would be surveyed twice during the optimum time for larval detection. When larvae are detected, the surveyor will document the number observed, location, nearest food plant(s), and preferred shelter habitat, if possible.

6. QCB Habitat Changes (Task 2.1.5). Every six years, SDHC will compare the results of all QCB adult and larval surveys, host plant mapping, and habitat assessments. If QCB populations and/or habitat quality have significantly decreased or appear threatened, after discussion with QCB experts, the County, USFWS, and CDFW, SDHC will determine whether such population fluctuations are consistent with data reported by other sites in the region and the likely cause(s). Working with the County, USFWS, and CDFW, SDHC will identify and implement feasible strategies to increase usage of the OHCA by QCB. The implementation of feasible strategies will be limited to the availability of contingency funds.

7. Evaluation of Habitat Quality for Sensitive Species (Task 2.3.1). Each year SDHC will monitor habitat quality for coastal California gnatcatcher and southern California rufous-crowned sparrow to assess trends, overall habitat quality, and potential threats using the USGS rapid assessment protocol currently in development or another protocol acceptable to the County, U.S. Fish and Wildlife Service (USFWS), and California Department of Fish & Wildlife (CDFW). If habitat quality declines to a level triggering action per the assessment protocol or populations of either species fall noticeably based on incidental observations, SDHC will consult with the County, USFWS, and CDFW to identify feasible strategies to increase habitat quality within the OHCA, such as supplemental seeding. Any strategies to increase habitat quality will be limited to the availability of contingency funds.

8. Rare Plant Surveys (Tasks 3.1.1, 3.4.1). Each year SDHC will conduct surveys per SDMMP requirements for San Diego goldenstar, Orcutt's birds-beak, and variegated dudleya at the

appropriate time of year for each species. During the first year of management and every five years thereafter, SDHC will also conduct surveys per SDMMP requirements for Dunn's mariposa lily, Otay tarplant, Tecate cypress, San Diego barrel cactus, and Gander's pitcher sage at the appropriate time of year for each species. If populations of San Diego goldenstar, Orcutt's birds-beak, variegated dudleya, San Diego barrel cactus, or Gander's pitcher sage show a significant decline in numbers, area, or health, for reasons other than low rainfall, (and for two consecutive survey periods for San Diego barrel cactus and Gander's pitcher sage) SDHC will consult with the County, USFWS, and CDFW to identify feasible strategies to increase population numbers within the OHCA. Any strategies to increase population numbers will be limited to the availability of contingency funds.

9. Monthly Monitoring (Tasks 4.1.2, 4.1.3, 4.1.4). The HM will perform monthly monitoring visits to observe natural conditions and identify potential conflicts to the OHCA goals. The HM will be accompanied by an assistant during each monitoring visit. Monthly visits will also include removal of trash and inspection of fencing and signs, including fencing on the east and south side of the quarry. Repairs to damaged or missing fencing or signs will occur within one month. Trash will be removed during the monthly visits unless a larger removal effort is needed, requiring a separate site visit. SDHC will maintain an updated list of wildlife and plant species observed or detected during all visits and surveys and will map new locations of sensitive species. SDHC will SDHC will also look for and map Argentine ants and consult with the County, USFWS, and CDFW regarding necessary control methods. Monthly monitoring visits will be documented by keeping a monitoring log of site conditions. The monthly log reports shall be appended to the annual report (Task #19).

10. Photodocumentation (Task 5.1.4). Photos will be taken from each point previously established in Phase 1 on an annual basis in conjunction with a monthly monitoring visit and any changes observed in the photos will be addressed, as needed.

11. Signs (Task 4.1.3). SDHC will be responsible for repairs and replacement of the 33 signs initially installed by Project Proponent throughout the OHCA pursuant to Figure 9 of the RMP. It is assumed that the signs will be replaced an average of every five years.

12. Annual Assessment for Rapidly Expanding Weed Populations (Task 1.1.7). At least once per year, SDHC will search the property for new or rapidly expanding invasive plant species locations as part of a monthly patrol, incorporating any discoveries into the database of invasive plant species. These locations will be targeted for treatment during the year in which they are discovered and will be included in the following year's work plan for follow-up treatment.

13. General Weed Control Outside of QCB High Use Areas (Task 1.1.8). Invasive removal outside of QCB high use areas will occur twice per year during late winter and early spring in areas where non-native plants identified by Cal-IPC as High or Moderate category species exceed 20% cover. SDHC will make every effort to remove plants rated as Management Level 1 or 2 (per Dendra Inc.'s Management Priorities for Invasive Non-native Plants) within two weeks of detection. Plants rated as Management Level 3 will be removed during the next scheduled removal event and plants rated as Management Level 4 will be targeted for aggressive removal in an effort to eradicate the population, as possible. Any removal efforts within Tecate cypress forest will be sensitive to the Thorne's hairstreak butterfly breeding season. Each invasive removal effort will consist of four crew days with a crew of four for a total of eight crew days.

14. QCB High Host Plant Area Weed Control (Task 2.1.2). SDHC will prioritize invasive control efforts first within QCB high host plant areas (Figure 10 of the RMP) and those areas identified

for enhancement based on QCB host plant mapping conducted under Task #3, above. The secondary focus will be on the approximate 8.9 acres of area adjacent to these high host plant areas. The weed control efforts will be limited to eight crew days per year. The priority for weed treatment will also be based on the level of threat posed by the plants to the sensitive species. Nonnative cover within each high host plant area should be less than 10% cover of Cal-IPC High and Moderate category species. SDHC will prepare an annual work plan, to be submitted with the annual report (Task #19) identifying the areas to be weeded and methods for treatment for review by the County, USFWS, and CDFW. Pre-emergent herbicides will not be used.

Weed management efforts in QCB high host plant areas will be performed in the presence of a biologist with a USFWS 10(a)(1)(A) recovery permit for QCB. This biologist will ensure the work is performed prior to seed set, approve the work area prior to work, identify the access route, be present during work, and redirect work immediately if QCB larvae are observed. Weed management efforts will occur twice annually, or as necessary, during periods when treatment would be most effective. Each weed management effort will consist of four crew days with a crew of four for a total of eight crew days. SDHC will monitor areas where weed treatment occurs at least twice annually during the monthly patrols to determine the effectiveness of control methods and if any changes should be made.

15. Fire Management Plan (Tasks 4.2.1, 4.2.2). SDHC will coordinate fire management practices with BLM and the County Fire Marshall at least annually to limit damage to natural resources by determining preferred access and parking areas for fire trucks, preferred fire break locations to avoid sensitive plants, and other methods to minimize impacts from both fire and fire suppression activities.

16. Erosion Control (Task 4.1.5). SDHC will focus on measures to control erosion and promote restoration, as needed. It is acknowledged there is an existing area of substantial erosion on the south facing slope in the center of the property. Nominal erosion control funds included in this ELM are intended to be used for minor future erosion control needs and limited to those erosion control funds and contingency as available. The erosion control funds included in this ELM are not currently intended to repair the substantial existing erosion in the center portion of the property. If sufficient contingency is built up and it is decided to use the contingency for an erosion control effort requiring mechanized equipment, advanced approval would be obtained from the County, USFWS, and CDFW.

17.

18. Post-fire Assessment (Tasks 4.2.3, 4.2.4). Within 30 days after a fire, the Executive Director and HM will assess the effects and, based on the extent and severity of damage, develop and implement specific adaptive management tasks such as weeding and/or seeding after concurrence with USFWS and CDFW. After this initial assessment, the HM, with assistance from SDHC's Program Coordinator or other personnel, will map all high burn areas and areas where invasive removal and/or seeding are necessary. Due to the lack of water at the OHCA and the difficulty and expense of providing water to the OHCA, container plants will not be used. This ELM assumes a "post-fire" five-year weed management effort. During the first year following a fire, the weed management effort will consist of four crew days with a crew of four. Thereafter, the second year will include three crew days with a crew of four, the third year will include two crew days with a crew of four, and the fourth and fifth years will each include one crew day with a crew of four. This schedule may be adjusted at the discretion of the HM. Qualitative and quantitative monitoring of natural regrowth in the burned area(s) will be conducted to evaluate post-fire restoration success and be limited to the availability of contingency funds and post-fire grants. The HM will determine what type of sampling

methods to use, based on the severity of the fire and the availability of funds. Additional adaptive management actions will be implemented as deemed necessary. If areas supporting Tecate cypress burn and there is excessive mortality with no recruitment of new individuals, SDHC will determine whether additional seeding is necessary. This ELM assumes that a post-fire assessment and restoration will be needed every 30 years.

19. General Coordination (Task 6.1.1). SDHC will meet with adjacent property owners to coordinate weed control actions, fire management, and public access control, on an annual basis or as needed.

20. Annual Report (Tasks 5.1.1, 5.1.2, 5.1.3, 5.1.4). SDHC will prepare an annual report to be submitted to the County, USFWS, and CDFW by November 1st of each year for the previous management year (October 1st through September 30th). The annual report shall summarize management activities and monitoring results conducted during that year, provide an assessment of the success of those management tasks, and recommend measures for the coming year to achieve the goals of the RMP. The results of all vegetation mapping and sensitive plant and animal surveys will be included in the annual report and will also be provided to the SDMMP and California Natural Diversity Database (CNDDB). Photo point locations will be shown on a figure included with the annual report and photodocumentation from each point will be appended to that year's annual report. The annual report will also include an annual work plan, photodocumentation, an accounting of funds used that year, a proposed budget for the coming year, and a summary statement of the status of the endowment fund. The annual work plan will consist of several paragraphs within the annual report and will identify the areas to be weeded, methods for treatment of invasives, and any additional tasks that will be implemented in the coming year.

    The annual work plan and budget will be reviewed by the County, USFWS, and CDFW. The County will provide written approval within 30 days of receipt of the annual work plan to the fund manager (anticipated to be The San Diego Foundation) for release of management funds for the following year. SDHC will make any requested changes and the County, USFWS, and CDFW will have 15 days to review and approve the revised work plan. If the County, USFWS, and CDFW do not respond within the prescribed times, the annual work plan shall be deemed approved and the fund manager shall release funds to SDHC.

21. RMP Update (Task 5.1.5). Every five years, SDHC will review the RMP goals, objectives, and tasks and make modifications, as necessary. Proposed RMP updates will be submitted to the County, USFWS, and CDFW for review and approval.

22. Contingency of 12%.

23. Administrative cost of 16% for staff and 10% for subcontractors and supplies.

FINANCIAL SUMMARY

If Fund in 2031 and Management Begins in 2031

Initial Financial Requirements[1]	$ 388,174.44
Annual Ongoing Financial Requirements – $83,247.89	
Endowment to Provide Income of $ 83,247.89[2]	$ 2,656,330.97
Emergency and Legal Defense Fund (4%)	$ $106,253.24
Total Contribution in 2030	**$ 3,150,758.65[3]**

[1] Assumes initial financial requirements and endowment will be paid in 2031 and management will begin in 2031.
[2] Assumes a 4.25% capitalization rate. Endowment value is reduced by the Initial Financial Requirements.
[3] For each additional year in advance that funding is received from Project Proponent, assume an approximate 3.85% decrease in the Total Contribution.

ADDITIONAL ASSUMPTIONS

1. This ELM assumes SDHC will manage the habitat in perpetuity and take fee title to the OHCA and AMA. The County of San Diego will be the grantee to the conservation easement and open space easement for the OHCA. Project Proponent will be responsible for ensuring a conservation easement over the OHCA, an open space easement over the OHCA, and any access easements are recorded prior to SDHC beginning any management tasks set forth above.

2. This ELM assumes SDHC will begin management of Phase 1 of the OHCA and the limited management tasks for the AMA in 2019, Phase 2a of the OHCA in 2020, Phase 2b of the OHCA in 2021, and Phase 2c of the OHCA in 2031 at which time the full endowment will be funded.

3. Control of exotic species, such as brown-headed cowbirds (*Molothrus ater*) and feral pigs (*Sus scrofa*), will be coordinated with regional efforts and be limited to the availability of contingency funds. Any control for Kuroshio shot-hole borer (*Euwallacea* sp., KSHB) will be limited to the availability of contingency funds. SDHC may elect to seek outside funding sources to address KSHB, as needed. SDHC will not be responsible for revegetation related to any dieback of vegetation due to KSHB.

4. The tasks and costs for Phases 1, 2a, and 2b, i.e. phased in tasks and costs, and the AMA are covered in a separate ELM.

5. Any ground-disturbing activities conducted on the site will avoid known archaeological sites and will be monitored by an archaeologist and a Native American monitor.

6. Project Proponent shall guarantee and maintain legal and physical access to the OHCA and AMA so SDHC can perform its obligations. Access points shall be verified by SDHC prior to the execution of the operating agreement.

7. Project Proponent will be responsible for the costs associated with repair and replacement of fencing required by the RMP. SDHC may install additional fencing to block unauthorized access points, as deemed necessary. SDHC will not create new routes through the OHCA and AMA.

8. Project Proponent will make available to SDHC all biological resource vegetation maps, sensitive plant maps, and digital files associated with biological resource surveys within the OHCA and AMA, at the time SDHC takes responsibility for habitat management. In addition, Project Proponent shall provide a digital base map with topography and OHCA and AMA boundaries. Boundary survey data points shall also be provided to SDHC.

9. Estimate does not include the costs associated with SDHC and SDHC General Counsel review of legal documents, including but not limited to: Conservation Easements, Title Reports, Operating Agreements, Access Agreements, or Deeds. Review and comment on applicable documents will be performed under a separate contract prior to SDHC taking

responsibility for long-term habitat management. A minimum of **four weeks** is required between when these documents are final to document execution to provide time for SDHC Board of Director review and vote.

10. Project Proponent shall provide a current aerial, at a scale of 1" = 400' and as current as possible to the date of the initial property inspections, prior to the date of inspection. The aerial will be used during the site inspection to document the condition of the site upon transfer of duties.

11. Adaptive management is anticipated over the life of the stewardship and the RMP is expected to evolve and be updated as site conditions warrant. However, changes to the scope of annual stewardship as a result of adaptive management will be limited to available contingency funds.

12. This estimate is good for a period of six months.

ATTACHMENT A

OPEN SPACE MAP

Property Boundary

Conservation Area

Vegetation within Conservation Area

- Mule Fat Scrub (63310)
- Cismontane Alkali Marsh (52310)
- Tamarisk Scrub (63810)
- Southern Interior Cypress Forest (83330)
- Diegan Coastal Sage Scrub (32500)
- Diegan Coastal Sage Scrub - Disturbed (32500)
- Coastal Sage - Chaparral Scrub (37G00)
- Chamise Chaparral (37200)
- Southern Mixed Chaparral (37120)
- Native Grassland (42100)
- Non-native Grassland (42220)
- Disturbed Habitat (11300)
- Developed (12000)

Note: The numbers in parentheses represent the code for vegetation type (Oberbauer 2008).

Inset - East Parcel

Key Map

Main Map

Inset Map

I:\PROJECTS\SRM\SRM-17_OtayHill_Bio\Map\BIO\RMPFig6_Vegetation.mxd SRM-12 03/03/15 EV.DR

Conservation Area Vegetation

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N

0 650 Feet

Figure 6

ATTACHMENT B

ELM WORKSHEETS

Phase 2c, Tasks and Costs

PROPERTY: Otay Hills Preserve LAST UPDATED: 8-2-2019

	C%	A%	TASK	RMP TASK NO.	ITEM	TITLE	#	UNIT	COST (Item)	COST (Title)	BASE COST	YRS	ANNUAL CONT	ANNUAL ADMIN	ANNUAL COST
			Biotic Surveys												
1	12%	16%	Baseline Mapping - Vegetation	1.1.3, 1.1.4, 1.1.5	VCS Method	Habitat Manager	22	Hour(s)		$ 105.00	$ 2,310.00	5	$ 55.44	$ 73.92	$ 591.36
2	12%	10%	Baseline Mapping - Vegetation	1.1.3, 1.1.4, 1.1.5		GIS Contractor	2	Hour(s)		$ 86.00	$ 172.00	5	$ 4.13	$ 3.44	$ 41.97
3	12%	16%	Non-native Species Mapping	1.1.6	Non-QCB High Use Areas	Habitat Manager	32	Hour(s)		$ 105.00	$ 3,360.00	5	$ 80.64	$ 107.52	$ 860.16
4	12%	16%	Non-native Species Mapping	1.1.6	QCB High Use Areas	Habitat Manager	8	Hour(s)		$ 105.00	$ 840.00	1	$ 100.80	$ 134.40	$ 1,075.20
5	12%	16%	QCB Host Plant Mapping	2.1.1		Habitat Manager	44	Hour(s)		$ 105.00	$ 4,620.00	3	$ 184.80	$ 246.40	$ 1,971.20
6	12%	16%	Sensitive Species Habitat Evaluation	2.3.1		Habitat Manager	12	Hour(s)		$ 105.00	$ 1,260.00	1	$ 151.20	$ 201.60	$ 1,612.80
7	12%	16%	Rare Plant Survey	3.1.1, 3.4.1	SD goldenstar, Orcutt's birds-beak, variegated dudleya	Habitat Manager	24	Hour(s)		$ 105.00	$ 2,520.00	1	$ 302.40	$ 403.20	$ 3,225.60
8	12%	16%	Rare Plant Survey	3.1.1, 3.4.1	Dunn's mariposa lily, Otay tarplant, Tecate cypress, SD barrel cactus, Gander's pitcher sage	Habitat Manager	30	Hour(s)		$ 105.00	$ 3,150.00	5	$ 75.60	$ 100.80	$ 806.40
9	12%	16%	QCB Adult Flight Surveys	2.1.3		Habitat Manager	60	Hour(s)		$ 105.00	$ 6,300.00	3	$ 252.00	$ 336.00	$ 2,688.00
10	12%	16%	QCB Larval Surveys	2.1.4		Habitat Manager	56	Hour(s)		$ 105.00	$ 5,880.00	6	$ 117.60	$ 156.80	$ 1,254.40
11	12%	16%	Post-fire Assessment	4.2.3, 4.2.4		Habitat Manager	10	Hour(s)		$ 105.00	$ 1,050.00	30	$ 4.20	$ 5.60	$ 44.80
12	12%	16%	Post-fire Assessment	4.2.3, 4.2.4		Executive Director	10	Hour(s)		$ 120.00	$ 1,200.00	30	$ 4.80	$ 6.40	$ 51.20
13	12%	16%	Post-fire Mapping	4.2.3, 4.2.4		Habitat Manager	20	Hour(s)		$ 105.00	$ 2,100.00	30	$ 8.40	$ 11.20	$ 89.60
14	12%	16%	Post-fire Mapping	4.2.3, 4.2.4		Asst Habitat Manager	20	Hour(s)		$ 78.00	$ 1,560.00	30	$ 6.24	$ 8.32	$ 66.56
15											**SUBTOTAL**		$ 1,348.25	$ 1,795.60	$ 14,379.25
16			**Habitat/Site Maintenance**												
17	12%	16%	Monthly Patrol	4.1.2, 4.1.3, 4.1.4		Habitat Manager	36	Hour(s)		$ 105.00	$ 3,780.00	1	$ 453.60	$ 604.80	$ 4,838.40
18	12%	16%	Monthly Patrol	4.1.2, 4.1.3, 4.1.4		Asst Habitat Manager	36	Hour(s)		$ 78.00	$ 2,808.00	1	$ 336.96	$ 449.28	$ 3,594.24
19	12%	10%	Signs	4.1.3	Basic - 12"x18"		33	Item(s)	$ 40.00		$ 1,320.00	5	$ 31.68	$ 26.40	$ 322.08
20	12%	10%	Signs	4.1.3	Installation - Basic Sign	Field Technician	16	Hour(s)		$ 47.00	$ 752.00	5	$ 18.05	$ 15.04	$ 183.49
21	12%	10%	Invasives	2.1.2	Weeding - QCB High Host Plant Areas	Field Technician	320	Hour(s)		$ 47.00	$ 15,040.00	1	$ 1,804.80	$ 1,504.00	$ 18,348.80
22	12%	10%	Invasives	2.1.2	Weeding - QCB High Host Plant Areas	Field Supervisor	16	Hour(s)		$ 101.00	$ 1,616.00	1	$ 193.92	$ 161.60	$ 1,971.52
23	12%	16%	Invasives	2.1.2	Weeding - QCB High Host Plant Areas	Habitat Manager	80	Hour(s)		$ 105.00	$ 8,400.00	1	$ 1,008.00	$ 1,344.00	$ 10,752.00
24	12%	10%	Invasives	1.1.8	Weeding - Outside QCB High Use Areas	Field Technician	160	Hour(s)		$ 47.00	$ 7,520.00	1	$ 902.40	$ 752.00	$ 9,174.40
25	12%	10%	Invasives	1.1.8	Weeding - Outside QCB High Use Areas	Field Supervisor	8	Hour(s)		$ 101.00	$ 808.00	1	$ 96.96	$ 80.80	$ 985.76
26	12%	16%	Invasives	1.1.8	Weeding - Outside QCB High Use Areas	Habitat Manager	4	Hour(s)		$ 105.00	$ 420.00	1	$ 50.40	$ 67.20	$ 537.60
27	12%	10%	Invasives	1.1.8	Herbicide Concentrate		16	Gallon(s)	$ 125.00		$ 2,000.00	1	$ 240.00	$ 200.00	$ 2,440.00
28	12%	10%	Erosion	4.1.5	BMP Materials		1	Fee	$ 150.00		$ 150.00	1	$ 18.00	$ 15.00	$ 183.00
29	12%	10%	Fire_Recovery	4.2.3	Invasive Removal & Seeding	Field Technician	440	Hour(s)		$ 47.00	$ 20,680.00	30	$ 82.72	$ 68.93	$ 840.99
30	12%	10%	Fire_Recovery	4.2.3	Invasive Removal & Seeding	Field Supervisor	44	Hour(s)		$ 101.00	$ 4,444.00	30	$ 17.78	$ 14.81	$ 180.72
31	12%	16%	Fire_Recovery	4.2.3	Invasive Removal & Seeding	Habitat Manager	8	Hour(s)		$ 105.00	$ 840.00	30	$ 3.36	$ 4.48	$ 35.84
32	12%	10%	Fire_Recovery	4.2.3	Seeds		1	Fee	$ 1,000.00		$ 1,000.00	30	$ 4.00	$ 3.33	$ 40.67
33											**SUBTOTAL**		$ 5,262.62	$ 5,311.68	$ 54,429.50
34			**Reporting**												
35	12%	16%	Monthly Log Report - Preparation			Habitat Manager	12	Hour(s)		$ 105.00	$ 1,260.00	1	$ 151.20	$ 201.60	$ 1,612.80
36	12%	16%	CNDDB & SDMMP Data Submissions			Program Coordinator	2	Hour(s)		$ 76.00	$ 152.00	1	$ 18.24	$ 24.32	$ 194.56
37	12%	16%	Annual Report - Preparation	5.1.1, 5.1.2, 5.1.3		Program Coordinator	12	Hour(s)		$ 76.00	$ 912.00	1	$ 109.44	$ 145.92	$ 1,167.36
38	12%	16%	Annual Report - Preparation	5.1.1, 5.1.2, 5.1.3		Habitat Manager	4	Hour(s)		$ 105.00	$ 420.00	1	$ 50.40	$ 67.20	$ 537.60

Phase 2c, Tasks and Costs

PROPERTY: Otay Hills Preserve LAST UPDATED: 8-2-2019

39	12%	10%	Annual Report - Preparation	5.1.1, 5.1.2, 5.1.3		GIS Contractor	4	Hour(s)		$ 86.00	$ 344.00	1	$ 41.28	$ 34.40	$ 419.68
40	12%	16%	Annual Report - Review	5.1.1, 5.1.2, 5.1.3		Executive Director	2	Hour(s)		$ 120.00	$ 240.00	1	$ 28.80	$ 38.40	$ 307.20
41	12%	10%	Annual Report - County Review Fee	5.1.1, 5.1.2, 5.1.3			1	Fee	$ 378.00		$ 378.00	1	$ 45.36	$ 37.80	$ 461.16
42	12%	16%	RMP Update	5.1.5		Habitat Manager	12	Hour(s)		$ 105.00	$ 1,260.00	5	$ 30.24	$ 40.32	$ 322.56
43	12%	10%	Photo		Aerial Photo		1	Photo(s)	$ 54.00		$ 54.00	1	$ 6.48	$ 5.40	$ 65.88
44											**SUBTOTAL**		$ 481.44	$ 595.36	$ 5,088.80
45			**General Coordination**												
46	12%	16%	Coordinate - Fire Management Plan	4.2.1, 4.2.2		Habitat Manager	6	Hour(s)		$ 105.00	$ 630.00	1	$ 75.60	$ 100.80	$ 806.40
47	12%	16%	Coordinate - Resource Agencies	5.1.2, 4.2.1, 4.2.2, 2.1.5, 2.3.1, 3.1.1, 3.4.1, 2.2.2	Work Plan, Fire Management & Recovery, Habitat & Species Changes/Decline, Argentine Ants	Habitat Manager	20	Hour(s)		$ 105.00	$ 2,100.00	1	$ 252.00	$ 336.00	$ 2,688.00
48	12%	16%	Coordinate - Neighboring Entities			Habitat Manager	6	Hour(s)		$ 105.00	$ 630.00	1	$ 75.60	$ 100.80	$ 806.40
49											**SUBTOTAL**		$ 403.20	$ 537.60	$ 4,300.80
50			**Field Equipment**												
51	12%	10%	Mileage		Mileage - Annually		1755	Mile(s)	$ 0.72		$ 1,259.39	1	$ 151.13	$ 125.94	$ 1,536.45
52	12%	10%	Mileage		Mileage - 3-Year Efforts		390	Mile(s)	$ 0.72		$ 279.86	3	$ 11.19	$ 9.33	$ 113.81
53	12%	10%	Mileage		Mileage - 5-Year Efforts		325	Mile(s)	$ 0.72		$ 233.22	5	$ 5.60	$ 4.66	$ 56.91
54	12%	10%	Mileage		Mileage - 6-Year Efforts		195	Mile(s)	$ 0.72		$ 139.93	6	$ 2.80	$ 2.33	$ 28.45
55	12%	10%	Mileage		Mileage - 30-Year Efforts		260	Mile(s)	$ 0.72		$ 186.58	30	$ 0.75	$ 0.62	$ 7.59
56											**SUBTOTAL**		$ 171.46	$ 142.89	$ 1,743.21
57			**Operations**												
58	12%	16%	Project Management - Supervise & Coordinate			Executive Director	6	Hour(s)		$ 115.00	$ 690.00	1	$ 82.80	$ 110.40	$ 883.20
59	12%	10%	Audit		Audit - Flat Fee		1	Per Site	$ 759.00		$ 759.00	1	$ 91.08	$ 75.90	$ 925.98
60	12%	10%	Insurance Liability				1	Fee	$ 315.17		$ 315.17	1	$ 37.82	$ 31.52	$ 384.51
61	12%	10%	Project Accounting			Accountant	8	Hour(s)		$ 114.00	$ 912.00	1	$ 109.44	$ 91.20	$ 1,112.64
											SUBTOTAL		$ 321.14	$ 309.02	$ 3,306.33

TOTAL	**$**	**83,247.89**

Financial Summary, For Phase 2c if Fund in 2031

PROPERTY: Otay Hills Preserve LAST UPDATED: 8-2-2019

Acreage =	329.40	
Contingency Rate =	12%	
Administrative Rate (Staff) =	16%	
Administrative Rate (Subs & Materials) =	10%	
Endowment per Acre =	$	8,064.15
Endowment per Acre per Year =	$	252.73

	Phase 2c
Contingency	$ 7,988.12
Administrative	$ 8,692.14

COSTS PER YEAR	**TOTAL ($)**
Annual Ongoing Costs per Year for Phase 2c at 2018 Rates (Year 13 to perpetuity)	$ 83,247.89
TOTAL INITIAL FINANCIAL REQUIREMENTS*	
Initial and Capital Costs for Year 13 at 2031 rates	$ 129,391.48
Initial and Capital Costs for Year 14 at 2031 rates	$ 129,391.48
Initial and Capital Costs for Year 15 at 2031 rates	$ 129,391.48
Total Initial Years 13, 14, 15	**$ 388,174.44**
ENDOWMENT REQUIREMENTS FOR ONGOING STEWARDSHIP OF PHASE 2C	
Endowment to Provide Ongoing Income of $ 129,391.48 at Cap. Rate of 4.25%	$ 3,044,505.41
Less Total Initial Years 13, 14, 15	$ (388,174.44)
Required Endowment at Year 16	**$ 2,656,330.97**
EMERGENCY & LEGAL FUND	
4% of Endowment	**$ 106,253.24**
TOTAL CONTRIBUTION FOR PHASE 2C	**$ 3,150,758.65**

**Assumes initial financial requirements and endowment will be paid in 2031 and management will begin in 2031.*

Financial Summary, For All Phases if Fund at One Time in 2019

PROPERTY: Otay Hills Preserve LAST UPDATED: 8-2-2019

Acreage =	329.40	
Contingency Rate =	12%	
Administrative Rate (Staff) =	16%	
Administrative Rate (Subs & Materials) =	10%	
Endowment per Acre =	$	6,278.84
Endowment per Acre per Year =	$	252.73

	Contin	Admin
Phase 1	$ 7,252.40	$ 8,463.23
Phase 2a	$ 6,234.92	$ 7,050.49
Phase 2b	$ 7,748.72	$ 8,496.13
Phase 2c	$ 7,988.12	$ 8,692.14

COSTS PER YEAR*	**TOTAL ($)**
Annual Ongoing Costs per Year for Phase 1 (Year 1)	$ 76,152.27
Annual Ongoing Costs per Year for Phase 2a (Years 2 to 6)	$ 65,243.10
Annual Ongoing Costs per Year for Phase 2b (Years 7 to 12)	$ 80,817.54
Annual Ongoing Costs per Year for Phase 2c (Year 13 into perpetuity)	$ 83,247.89
TOTAL INITIAL FINANCIAL REQUIREMENTS	
Initial and Capital Costs for Year 1 (2019)	$ 76,152.27
Initial and Capital Costs for Year 2 (2020)	$ 65,243.10
Initial and Capital Costs for Year 3 (2021)	$ 65,243.10
Total Initial Years 1, 2, 3	**$ 206,638.48**
ENDOWMENT REQUIREMENTS FOR ONGOING STEWARDSHIP**	
Endowment to Provide Ongoing Income Starting in Year 4 at Cap Rate of 4.25%	**$ 2,068,250.56**
EMERGENCY & LEGAL FUND	
4% of Endowment	**$ 82,730.02**
TOTAL CONTRIBUTION FOR ALL PHASES*	**$ 2,357,619.05**

**Assumes initial financial requirements and endowment will be paid in 2019 and management will begin in 2019.*

***Assumes the endowment will be paid in 2019 and returns from the endowment will start being used to support stewardship tasks in Year 4. Costs for Years 1 through 3 were not factored into the endowment calculation.*

Appendix B

SPECIES ACCOUNTS

Appendix B
PROPOSED COVERED SPECIES
OCCURRING IN OTAY HILLS CONSERVATION AREA

Quino checkerspot butterfly (*Euphydryas editha quino*)

Legal Status: Federal: Endangered
State: None

MSCP: Not Covered

Habitat Characteristics/Use: Extant Quino checkerspot butterfly (QCB) populations primarily inhabit grassland, remnant forbland, juniper woodland, and open scrub and chaparral communities that support the primary larval host plants and a variety of adult nectar resources. These areas tend to be distributed as patches in a mosaic of vegetation communities. Microhabitat use appears to include patches of exposed soil with abundant sun exposure. The QCB has been reported over a wide elevation range from approximately 500 feet above mean sea level (amsl) to higher than 5,000 feet amsl (USFWS 2003a).

The County of San Diego (County) defines "Occupied QCB Habitat" in its Draft Multiple Species Conservation Program (MSCP) QCB Amendment Proposed Conservation Policies (County 2009). Occupied QCB habitat includes:

- All potential QCB habitat within 200 meters (656 feet) of a QCB sighting (at a minimum).

- Any additional natural habitat within 200 meters (656 feet) of a QCB sighting containing Significant Larval Host Plant Patches (defined below) with appropriate nectaring plants present.

- Any additional natural lands within 200 meters (656 feet) of Significant Larval Host Plant Patches with appropriate nectaring plants present, until no additional significant patches are encountered.

- Habitats to be excluded from extension beyond the 200-meter (656-foot) radius from Significant Larval Host Plant Patches include inappropriate QCB habitat or habitat beyond significant barriers to dispersal, including:

    - Closed canopy chaparral, upland forest, or riparian forest that do not have open areas at least two square meters (21.5 square feet) in size;

    - Dense deergrass meadows;

    - Dense non-native grassland where few host plants are present; and

    - Barriers such as solid fencing/walls over two meters (6.6 feet) in height, dense vegetation (ornamental or natural) over three meters (9.8 feet) in height, or buildings.

- Hilltops or ridgelines, linked by open areas and natural vegetation to open canopy areas containing an open, woody-canopy area at least two square meters (21.5 square feet) in size, that may be used by QCB for mating or hilltopping behavior within 200 meters (656 feet) of an open area containing host and nectar plants for feeding and natural vegetation or open areas for movement and basking (e.g., are within 500 meters [1,640 feet] of Significant Larval Host Plant Patch and consist of potential QCB habitat).

As stated in the County's Draft MSCP QCB Amendment Proposed Conservation Policies:

> *Although dense-canopy chaparral is not generally considered to have the potential to support Quino, all chaparral habitats have been included as Potential Quino Habitat because available mapping does not consider vegetation density and features such as fire breaks, dirt roads, or trails, which could provide patches of suitable habitat. Many Quino observations have been in habitat largely mapped as chaparral, but which has been opened up by grazing, fire breaks, and dirt roads (e.g., on Otay Mountain).*

Based on this definition of occupied QCB habitat, 304.6 acres of the OHCA are occupied by the QCB and no acres are considered not occupied.

Occurrences within the OHCA: One QCB was sighted during the HELIX 2000 survey on Parcel A. During the HELIX 2001 surveys, 9 QCBs were observed within the OHCA. Approximately 48 QCB observations occurred within Parcels A, B, C, and E during 2001 EDAW focused surveys (EDAW 2001a, 2001b). Many of these sightings are believed to be repeats of the same individuals.

The QCB was not observed within a 50-acre area of the northwestern portion of Parcel A or the access road during the HELIX 2002 survey period. Due to low rainfall levels in the 2001-2002 winter season, habitat within this area was very dry. Few flowering annual plants were observed, and larval host plant species were not present, although host plant species such as dwarf plantain had previously been observed in the northwest corner of the survey area (HELIX 2002). Potential nectar sources that were noted include deerweed (*Acmispon glaber*) and California buckwheat (*Eriogonum fasciculatum*). Very few individuals of any of these species were flowering during the survey period (HELIX 2002).

In 2003, the QCB was not observed within a 42-acre portion of Parcel A during surveys by HELIX. Although the area received average rainfall for the first time in several years in the 2000-2003 winter, flowering annual plants were sparse and present in small patches. Dwarf plantain was present but occurred sparsely. Potential nectar sources that were noted include deerweed, goldfields (*Lasthenia californica*), and California buckwheat. During surveys of Parcels B, C, E, and additional land in the immediate vicinity of the Project site in 2003, nine QCBs were observed along a dirt road just south of Otay Truck Trail. These sightings occurred within sparse chaparral containing dwarf plantain and cryptantha (*Cryptantha* spp.).

In 2016, the QCB was not observed within the proposed Otay Hills Conservation Area (OHCA) during non-protocol surveys conducted by HELIX. Two larval host plant species were mapped

throughout the entire Project site and observed during each of the surveys: dwarf plantain and purple owl's clover. Dwarf plantain was the most abundant larval host plant observed and recorded within the survey area. Host plants were in good condition during the four weeks of surveys, though dwarf plantain on south facing slopes began drying up sooner than less exposed areas of the survey area. However, dwarf plantain numbers were beginning to decrease and most individuals were beginning to senesce by the fourth week of surveys. Purple owl's clover was observed in low and medium densities. Five potential nectar resources were noted within the QCB survey area: popcorn flower (*Cryptantha* and *Plagiobothrys* spp.), California buckwheat, ground pink (*Linanthus dianthiflorus*), and onion (*Allium* sp.).

Detailed larval host plant mapping of the entire Project site was conducted in 2016. Isolated plants and small populations were recorded as points, while patches larger than 250 square feet were recorded as polygons. Numbers are approximate because large populations were visually estimated rather than each plant counted individually. Using the mid-point of the estimated host plant populations, the Project would preserve approximately 1,192,307 individuals (99 percent) of dwarf plantain in the OHCA.

The OHCA supports 1,192,307 individuals of dwarf plantain and 47 purple owl's clover. There is a large cluster (defined as "high host plant location"; 50,100 individuals and as many as eight QCB locations) in the northern end of the open space. There are scattered moderate host plant locations (and two QCB locations) in the west-central portion of the open space. An east-west ridgeline traverses the central portion of the open space that supports approximately 1,018,100 host plant individuals and at least nine QCB locations, and represents four high host plant locations of varying sizes. There is a smaller, disjunct habitat patch in the west-central portion of the site that contains approximately 1,500 host plants (moderate host plant location). There are two high host plant locations and one moderate host plant location in the southern portion of the open space that support approximately 57,725 host plants and 24 QCB locations. The Project would also preserve 47 individuals of purple owl's clover in the OHCA. No purple owl's clover was observed in the impact area in the 2016 habitat mapping.

Designated Critical Habitat for the QCB occurs on 304.4 acres of the OHCA. The Project maintains connectivity of preserved habitats in the 304.6-acre OHCA with off-site vacant lands to the north, south, and east that support the QCB.

Threats and Conservation Needs: The QCB is primarily threatened by urban and agricultural development, non-native plant species, off-road vehicle use, grazing, increased fire frequency, increased nitrogen deposition, and fire management practices (USFWS 1997a *in* USFWS 2003a). The QCB could be increasingly vulnerable to prolonged and intense droughts predicted by climate change models (Parmesan 1996, Preston et al. 2012 *in* SDMMP 2013). Other threats include direct mortality from roads and human use of preserves causing trampling of larvae and host plants and compaction of soils (SDMMP 2013). Essentially, any activity that fragments QCB habitat or removes host or nectar plants increases the probability of extinction of the QCB (USFWS 2003a). The survival and recovery of the QCB depends on protection, restoration, and management of habitat within the distribution of metapopulations of QCB, augmentation of extant populations of QCB, and reintroduction or discovery of new populations (USFWS 2003a).

The SDMMP (2013) outlines an overarching goal for QMU 3 and five objectives for meeting that goal. The goal for QMU 3 is to "…protect, restore, and enhance Quino checkerspot habitat within currently occupied and historically occupied sites and the landscape connections between them to create resilient occurrences and to allow for potential reintroduction to ensure persistence over the long-term (>100 years)." "Resilient occurrences" is defined as, "stable or increasing number of occupied patches over a 10- to 20-year period measured in the third of three years of favorable climate (total annual January and February precipitation within one standard error of average for those months over the past 30 years based on local or proxy climate data)" (USFWS 2003 *in* SDMMP 2013).

The five objectives for meeting that goal (SDMMP 2013) are to:

- Enhance habitat and improve connectivity between the Otay Lake/Jamul occurrence and other occurrences to the north.

- Develop and test best management techniques for QCB habitat restoration at a scale and location that would measurably improve the status of species.

- Establish a seed bank for host and larval food plants and bulk as necessary for habitat restoration to enhance QCB occurrences.

- Implement pre-fire management actions identified in the Strategic Fire Plan in order to reduce the effects of an altered fire regime on QCB occurrences on Conserved Lands.

- Implement high priority actions to manage habitat within the South West San Diego Recovery Unit to maintain landscape connectivity between the Otay Lakes/Rancho Jamul occurrence complex and occurrence complexes to the north (Proctor Valley, Jamul, Hidden Valley National Wildlife Refuge, Los Montanas National Wildlife Refuge, Rancho San Diego), south (West Otay Mountain), east (Honey Springs, Dulzura, Marron Valley, Barrett Junction), and west (Otay Valley, West Otay Mesa) using methods identified in the USFWS 2003 Recovery Plan.

Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*)

Legal Status: Federal: None
State: Species of Special Concern

MSCP Subarea Plan: Covered

Habitat Characteristics/Use: This subspecies inhabits low-elevation coastal scrub, chamise-redshank chaparral, mixed chaparral, and valley-foothill hardwood habitats. It prefers washes and other sandy areas with patches of brush and rocks (Stebbins 1972) and does not require permanent water (Zeiner et al. 1988). It actively forages on the surface and scratches through surface debris taking a variety of small arthropods (Stebbins 1972). During periods of inactivity, individuals seek cover under objects such as rocks, logs, decaying vegetation, and boards, or in rock crevices (Zeiner et al. 1988).

For purposes of this analysis, it is assumed that the entire OHCA (except disturbed habitat and developed) is potentially suitable to support the orange-throated whiptail, even though mule fat scrub, cismontane alkali marsh, tamarisk scrub, and southern interior cypress forest may not be entirely suitable. These habitats were included because they occur as smaller patches among large areas of suitable habitat. Therefore, potentially suitable habitat in the OHCA totals approximately 295.7 acres. Table 3-5 of the 1998 Final MSCP Plan lists coastal sage scrub, coastal sage-chaparral scrub, and chaparrals as orange-throated whiptail habitats.

Occurrences within the OHCA: Despite an abundance of potentially suitable habitat being present in the OHCA, Belding's orange-throated whiptail has not been observed during surveys conducted from 2000 through 2012. The species is assumed to be present, however, throughout the OHCA where potential habitat exists (approximately 295.7 acres for purposes of this analysis; see Habitat Characteristics/Use, above).

Threats and Conservation Needs: Habitat destruction is likely the major cause of the decline of Belding's orange-throated whiptail populations. Despite what appears to be abundant suitable whiptail habitat, urban and agricultural development may serve as effective dispersal barriers (Bostic 1966). Argentine ants (*Linepithema humile*) are an invasive non-native species known to displace many native insects, and may influence the food base of Belding's orange-throated whiptail (Jennings and Hayes 1994). Excessive prescribed burning can lead to increased exposure to predation due to modification of the canopy profile, and can ultimately lead to type conversion from coastal sage scrub and chaparral to non-native grassland (McGurty 1981). In addition, repeated reduction of normally abundant woody fuels has a direct effect on western subterranean termite (*Reticulitermes hesperus*) presence, the nearly exclusive food prey source of Belding's orange-throated whiptails. Further threats include irreversible habitat destruction resulting from land filling or artificial channelization of natural drainage bottoms, which likely serve as foraging and dispersal areas for this species.

Conservation needs for the Belding's orange-throated whiptail include conserving large areas of suitable habitat and conserving connections between conservation areas. Conserved areas should be managed to maintain suitable habitat for the species and include control of non-native and domestic species, such as the Argentine ant, non-native grasses, and domestic cats and dogs.

As stated previously, the orange-throated whiptail does not currently appear at risk of extinction within the MSCP boundary; however, certain edge populations should be monitored for edge effects (USGS and San Diego State University 2001). Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) require that edge effects be addressed.

Coast horned lizard (*Phrynosoma blainvillii*)

Legal Status: Federal: None
State: Species of Special Concern

MSCP Subarea Plan: Covered

Habitat Characteristics/Use: Coast horned lizards are found in a wide variety of habitats including coastal sage scrub, chaparral, grassland, coniferous forest, oak woodland, riparian, and the margins of the higher elevation desert where it is restricted to juniper-desert chaparral (Grinnell and Grinnell 1907, Van Denburgh 1922, Klauber 1939, Smith 1946, Dixon 1967, Stebbins 1985, Jennings and Hayes 1994, and Brattstrom 1997 *in* Hollingsworth and Beaman 2005). This species has been reported from elevations ranging from sea level to 8,000 feet amsl (Brattstrom 1997 *in* Hollingsworth and Beaman 2005).

Within each of these habitats, this species prefers areas with loose, fine soils, and an abundance of open areas for basking.

For purposes of this analysis, it is assumed that all habitats in the OHCA (except disturbed habitat and developed) are suitable to support the coast horned lizard, even though cismontane alkali marsh and southern interior cypress forest may not be entirely suitable. These habitats were included because they occur as smaller patches among large areas of suitable habitat. Therefore, potential habitat for coast horned lizard in the OHCA totals approximately 295.7 acres. Table 3-5 of the 1998 Final MSCP Plan lists coastal sage scrub, coastal sage-chaparral scrub, chaparrals, and riparian scrubs as coast horned lizard habitats.

Occurrences within the OHCA: The San Diego horned lizard was observed in the OHCA in seven total locations during surveys conducted in 2000, 2001, 2003, and 2008. These locations were associated with Diegan coastal sage scrub, non-native grassland, and chamise chaparral. The species is assumed to be present throughout the OHCA where potential habitat exists (approximately 295.7 acres for purposes of this analysis; see Habitat Characteristics/Use, above).

Threats and Conservation Needs: The USGS and San Diego State University (2001) recommend that new trails and roads be restricted where coast horned lizards are known to occur to reduce edge effects (including illegal collection). Argentine ants are another edge effect threat to the species' prey base. Argentine ant presence is negatively correlated with native ant species diversity, and is one cause of local native ant extinction (Suarez et al. 1998 *in* USGS and San Diego State University 2001). Within the MSCP region of San Diego, Argentine ants appear limited by moisture and have not widely invaded natural habitats (Suarez et al. 1998 *in* USGS and San Diego State University 2001). These ants may benefit from urban runoff from development, and increased moisture levels associated with it could play a role in their invasion (USGS and San Diego State University 2001). Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) require that specific measures be implemented to maintain native ant species, discourage the Argentine ant, and protect against the species from detrimental edge effects.

Cooper's hawk (*Accipiter cooperii*)

Legal Status: Federal: None
State: Watch List

MSCP Subarea Plan: Covered

Habitat Characteristics/Use: The Cooper's hawk nests in deciduous, conifer, and mixed woodlands. In southern California, it generally favors extensive riparian bottomlands (Garrett and Dunn 1981 *in* Grindrod 2005). Most nests in a California study were in groves of six or more trees, with two or more trees close enough together that the crowns formed one continuous canopy (Asay 1987 *in* Grindrod 2005). Oaks (*Quercus* spp.) are the traditional nests tree in California (Asay 1987 *in* Unitt 2004). The range of nest height in several studies was 20 to 60 feet (Bent 1961, Meng 1951, Reynolds et al. 1982, Palmer 1988a, and Rosenfield and Bielefeldt 1993 in Grindrod 2005).

Unitt (2004) noted, however, that in the 1980s, Cooper's hawks began adapting to urban environments in San Diego County and nesting in eucalyptus (*Eucalyptus* spp.) trees and other urban trees. He stated that these open "woodlands" of planted trees may even be more attractive habitat than natural areas, particularly if an increase in prey items like rock pigeon (*Columba livia*), mourning dove (*Zenaida macroura*), western scrub jay (*Aphelocoma californica*), and California ground squirrel (*Otospermophilus beecheyi*) is supported by a steady supply of food (e.g., seed from bird feeders; Unitt 2004). By the time the San Diego County Bird Atlas period began in 1997, Cooper's hawks had colonized many small parks and school yards, and nests in suburban and rural areas proliferated. The numbers in San Diego Christmas bird counts increased from an average of 11 Cooper's hawks in 1985 to 30 in 2002 (Unitt 2004).

Winter habitat requirements are poorly quantified, but Christmas bird count data suggest that Cooper's hawks use essentially the same habitats during winter and summer (Grindrod 2005).

For purposes of this analysis, it is assumed that all habitats in the OHCA except disturbed habitat and developed are suitable to support Cooper's hawk foraging. This includes all areas of coastal sage scrub, coastal sage-chaparral scrub, and chaparrals (as listed in Table 3-5 of the 1998 Final MSCP Plan), which totals approximately 296.4 acres. There are no oak woodland or oak riparian habitats (listed in Table 3-5 of the 1998 Final MSCP Plan) in the OHCA.

Occurrences within the OHCA: The Cooper's hawk was observed in the OHCA in 2012 during a burrowing owl survey. While the OHCA does not support trees suitable for nesting, the OHCA provides 296.4 acres of potentially suitable foraging habitat for the species.

Threats and Conservation Needs: Cooper's hawk populations have been roughly stable from 1966 through 2010 according to the North American Breeding Bird Survey. The breeding population is estimated at 700,000 pairs. Cooper's hawk population trends have turned around from the mid-20th century when use of the pesticide DDT and widespread shooting greatly reduced its numbers (Cornell Lab of Ornithology 2014a). Area Specific Management Directives

applicable to the OHCA for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) require 300-foot impact avoidance areas around active Cooper's hawk nests.

Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)

Legal Status: Federal: None
State: Watch List

MSCP Subarea Plan: Covered

Habitat Characteristics/Use: This sparrow prefers coastal sage scrub (Unitt 2004) but can also be found breeding in coastal bluff scrub, low-growing serpentine chaparral, and along the edges of tall chaparral habitats (Thorngate and Parsons 2005), as well as in open chaparral or coastal sage scrub and grasslands with scattered shrubs (Unitt 2004). Following a chaparral fire, suitable habitat may develop in the early stages of chaparral re-growth (Gallagher 1997), and rufous-crowned sparrows may stay in such open, disturbed habitats for years (Rising 1996, Collins 1999).

For purposes of this analysis, it is assumed that all coastal sage scrub and coastal sage-chaparral scrub (as listed in Table 3-5 of the 1998 Final MSCP Plan), or approximately 225.3 acres in the OHCA, are potentially suitable for this sparrow. There is no maritime succulent scrub (also listed in Table 3-5) in the OHCA.

Occurrences within the OHCA: Twenty individual southern California rufous-crowned sparrows were observed/detected in 17 locations in the OHCA during surveys conducted in 2001 and 2003. Suitable habitat for the species in the OHCA totals approximately 225.3 acres.

Threats and Conservation Needs: Rufous-crowned sparrows are likely susceptible to avian predators that target passerines, as well as various reptilian and mammalian predators (Collins 1999 *in* Thorngate and Parson 2005), but there is no indication that predation is a significant threat to this sparrow.

In southern California, habitat loss, degradation, and fragmentation resulting from urban and agricultural development are restricting the range of rufous-crowned sparrows (Bolger 2002 *in* Thorngate and Parson 2005). Fire suppression has also led to habitat loss as rufous-crowned sparrows abandon dense, uniform stands of chaparral and coastal sage scrub. Conservation of southern California rufous-crowned sparrow will require securing large patches of suitable habitat in order to minimize edge effects. Core habitat areas will need to be interconnected through corridors of habitat that provide for the regular movement of dispersing juveniles. Management actions that promote the type of open scrub habitats preferred by southern California rufous-crowned sparrow include prescribed burning, limited grazing, and removal of non-native plant species (Thorngate and Parsons 2005). Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) require maintenance of dynamic processes, such as fire, to perpetuate some open phases of coastal sage scrub with herbaceous components.

Burrowing owl (*Athene cunicularia*)

Legal Status: Federal: Bird of Conservation Concern
State: Species of Special Concern

MSCP Subarea Plan: Covered, Narrow Endemic

Habitat Characteristics/Use: In general, burrowing owl habitat is composed of drier, open areas that can include prairies, grasslands, and savannas. The burrowing owl can also be found living in deserts, farmlands, pastures, cemeteries, airports, vacant lots, university campuses, golf courses, and other urban areas (Cornell Lab of Ornithology 2014b). Burrowing owls are dependent on the presence of fossorial mammals (primarily prairie dogs and ground squirrels), whose burrows are used for nesting and roosting (Klute et al. 2003). In southern California, the most commonly used rodent burrow is that of the California ground squirrel (Collins 1979).

For purposes of this analysis, it is assumed that all grassland vegetation communities (as listed in Table 3-5 of the 1998 Final MSCP Plan), or approximately 17.0 acres in the OHCA (16.3 acres of non-native grassland and 0.7 acre of native grassland), are potentially suitable for the burrowing owl.

Occurrences within the OHCA: A single burrowing owl was observed in 2001 in non-native grassland in the western portion of the project impact footprint. The species was not found in the OHCA during a focused burrowing owl survey in 2012. In East Otay Mesa, however, all grassland habitats are considered occupied by the burrowing owl (County 2010). The OHCA supports approximately 17.0 acres potential burrowing owl grassland habitat (16.3 acres of non-native grassland and 0.7 acre of native grassland), and this habitat could be used for foraging and/or nesting.

Threats and Conservation Needs: Although no one major factor has been implicated in the decline of this species, the cumulative effects of human activities have undoubtedly taken a major toll (Poulin et al. 2011).

Habitat loss and degradation from rapid urbanization of farmland in the core areas of the Central and Imperial valleys is the greatest threat to the species in California. Discing to control weeds in fallow fields may destroy burrows (Rosenberg and Haley 2004 *in* Shuford et al. 2008). Road and ditch maintenance in agricultural areas poses a threat to both owls and their nests, but these impacts can be minimized through management actions (Catlin and Rosenberg 2006 *in* Shuford et al. 2008). Nests have been destroyed and adults and young killed by road maintenance activities (Poulin et al. 2011). Pesticides may affect burrowing owl populations in croplands and rangelands (James and Fox 1987 and James et al. 1990 *in* Shuford et al. 2008). The incidental poisoning of burrowing owls and the destruction of their burrows during eradication programs aimed at rodent colonies have been a large factor in their decline (Collins 1979, Remsen 1978, and Zarn 1974).

In addition to loss of nesting burrows from extermination of ground squirrels, developed environments (such as ongoing urbanization in coastal regions) pose a substantial risk to

burrowing owls from mortality caused by traffic (Klute et al. 2003 and D.K. Rosenberg et al. unpubl. data *in* Shuford et al. 2008). Owls nesting along roadsides or parking lots are at greatest risk (Gervais et al. 2003 *in* Shuford et al. 2008). Other types of development can also impact burrowing owls. Wind turbines in the Altamont Pass Wind Resource Area in central California were estimated to kill more than 100 burrowing owls annually (Smallwood 2007). High-voltage electrical fences around prisons (including the Richard J. Donovan Correctional Facility on Otay Mesa) have caused mortality throughout the State.

The preservation of potential habitat and populations of burrowing mammals is critical for the conservation of burrowing owls (Klute et al. 2003). Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) require enhancement of known, historical, and potential burrowing owl habitat and management for ground squirrels. Enhancement measures may include creation of artificial burrows and vegetation management to enhance foraging habitat. Management plans must include: monitoring of burrowing owl nest sites to determine use and nesting success, predator control, and establishing a 300-foot-wide impact avoidance area (within the preserve) around occupied burrows. Table 3-5 states that eight known burrowing owl locations occur within Major Amendment Areas of the South County Segment of the County Subarea Plan, and the conservation of occupied burrowing owl habitat must be one of the primary factors for preserve design during the permit amendment process.

Northern harrier (*Circus cyaneus*)

Legal Status: Federal: None
State: Species of Special Concern

MSCP Subarea Plan: Covered

Habitat Characteristics/Use: Northern harrier wintering habitat in California includes fresh and saltwater wetlands, coastal dunes, grasslands, deserts, meadows, and crop lands. Breeding habitat includes freshwater wetlands, coastal brackish wetlands, open wet meadows and grasslands, shrub-steppe communities, desert sinks, areas along rivers and lakes, and agricultural fields (Grinnel and Miller 1944, Martin 1987, and MacWhirter and Bildstein 1996 *in* Cripe undated). The northern harrier can be found from sea level up to 10,000 feet (Cripe undated).

Occurrences within the OHCA: One northern harrier was observed flying over the OHCA. For purposes of this analysis, it is assumed, however, that all salt marsh and grassland vegetation communities (as listed in Table 3-5 of the 1998 Final MSCP Plan), or approximately 17.1 acres within the OHCA (that is, 0.07 acre of cismontane alkali marsh, 16.3 acres of non-native grassland, and 0.7 acre of native grassland), are potentially suitable for the northern harrier, primarily for foraging and possibly for nesting.

Threats and Conservation Needs: As stated previously, northern harriers are disappearing as a breeding resident from the county (Unitt 2004), and extensive local population declines continue to occur as habitat is lost (Ramsen 1978, Martin 1989, and MacWhirter and Bildstein 1996 *in* Cripe undated). Other documented threats to the species include nest destruction by agricultural

practices (MacWhirter and Bildstein 1996 *in* Cripe undated), possible effects of repeated exposure to agrochemicals (Martin 1997 *in* Cripe undated), and predation (primarily to eggs and nestlings) from a variety of native mammalian, avian, and reptilian predators (MacWhirter and Bildstein, LBWA *in* Cripe undated).

Conservation needs for the species include: 1) protecting remaining habitat, addressing threats of continued habitat loss, and reclaiming and restoring habitat when possible; 2) maintaining high prey base in available habitats (density of prey base is highly correlated with density and success of harriers); and 3) providing adequate nesting habitat (Cripe undated). Area Specific Management Directives for this MSCP Covered Species applicable to the OHCA (Table 3-5 of the 1998 Final MSCP Plan) require management of agricultural and disturbed lands (that become part of the MSCP Preserve) within four miles of nesting habitat to provide foraging habitat, including an impact avoidance area (900-foot or maximum possible within the Preserve) around active nests and coordination of efforts to manage for wintering foraging habitat within the Preserve.

Coastal California gnatcatcher (*Polioptila californica californica*)

Legal Status: Federal: Threatened
State: Species of Special Concern

MSCP Subarea Plan: Covered

Critical Habitat Description: There are 11 designated critical habitat units for the coastal California gnatcatcher that include 197,303 acres of federal, state, local, and private land in Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties (72 FR 72010). Designated critical habitat includes habitat throughout the species' range in a variety of climatic zones and vegetation types to preserve the genetic and behavioral diversity that currently exists within the species. The individual units contain essential habitat for the coastal California gnatcatcher and help to identify special management considerations for the species.

Primary Constituent Elements (PCEs) for the coastal California gnatcatcher are those habitat components that are essential for the primary biological needs of foraging, nesting, rearing of young, intra-specific communication, roosting, dispersal, genetic exchange, or sheltering (72 FR 72010). These include: 1) dynamic and successional sage scrub habitats (i.e., Venturan coastal sage scrub, Diegan coastal sage scrub, Riversidean sage scrub, maritime succulent scrub, Riversidean alluvial fan scrub, southern coastal bluff scrub, and coastal sage-chaparral scrub) that provide space for individual and population growth, normal behavior, breeding, reproduction, nesting, dispersal, and foraging; and 2) non-sage scrub habitats such as chaparral, grassland, and riparian areas, in proximity to sage scrub habitats that provide space for dispersal, foraging, and nesting.

Habitat Characteristics/Use: The coastal California gnatcatcher is closely associated with coastal sage scrub vegetation, and it utilizes this community for foraging and nesting. In San Diego and Orange counties, the coastal California gnatcatcher occurs most commonly in coastal sage scrub with high proportions of coastal sagebrush (*Artemisia californica*) and California

buckwheat, and less commonly in sub-associations dominated by black sage (*Salvia mellifera*) or lemonadeberry (*Rhus integrifolia*; Atwood 1980, 1990; Mock et al. 1990; Bontrager 1991; Weaver 1998; USFWS 2010). The birds remain on their territory throughout the year and expand their home range during non-breeding season. They will forage with neighboring individuals in habitats not defended (Preston et al. 1998, Grishaver et al. 1998 *in* Mock 2004).

For purposes of this analysis, it is assumed that all Diegan coastal sage scrub (including disturbed) in the OHCA is suitable habitat for the coastal California gnatcatcher. Table 3-5 of the 1998 Final MSCP Plan lists coastal sage scrub as gnatcatcher habitat. Therefore, potentially suitable habitat in the OHCA totals approximately 219.9 acres. The OHCA also supports 5.4 acres of coastal sage-chaparral scrub.

The territory size of coastal California gnatcatcher varies. Mean territory size during the breeding season ranges from approximately 12 to 27 acres per pair, while mean territory size during the non-breeding season ranges from approximately 12 to 42 acres per pair (Preston et al. 1998). During the non-breeding season, coastal California gnatcatchers have been observed in adjacent territories and unoccupied habitat, thus increasing their home range size to approximately 78 percent larger than their breeding territory (Preston et al. 1998).

Occurrences within the OHCA: Four pairs of coastal California gnatcatchers were observed in the OHCA based on 2011 surveys, and approximately 219.9 acres of Diegan coastal sage scrub and 5.4 acres of coastal sage-chaparral scrub occur in the OHCA.

Threats and Conservation Needs: The primary cause of the coastal California gnatcatcher's decline is the cumulative loss and fragmentation of coastal sage scrub by urban and agricultural development (Atwood 1990; ERC Environmental and Energy Services Company 1990). Up to 90 percent of coastal sage scrub vegetation was estimated to have been lost before 1981 (Westman 1981a, 1981b), and since the listing of this subspecies, the amount of coastal sage scrub has continued to decrease (USFWS 2001). Furthermore, air pollution, increases in fire frequency, and introduction of invasive non-native plants have all adversely affected coastal sage scrub (USFWS 2001).

Wildland fires, particularly those in 2003 and 2007, have burned thousands of acres of coastal California gnatcatcher habitat, including preserved habitat. Data indicate that more than one-third of the habitat in the southern California range of the subspecies has burned since 2003, and the overall fire frequency has been increasing over time as urbanization encroaches farther into wildlands (USFWS 2010). The burned areas are at risk of being overtaken by non-native grasses and forbs that can convert coastal sage scrub to other habitat types (USFWS 2009). Therefore, the threat from wildland fire is high and is anticipated to stay high for the foreseeable future (USFWS 2010), particularly if drought conditions continue. Drought can alter the number and frequency of fires, which can affect the numbers and distribution of the coastal California gnatcatcher. Prolonged drought, by itself, can also threaten coastal California gnatcatchers by adversely affecting the range and quality of coastal sage scrub.

Predation is thought to be the primary cause of reproductive failure for the coastal California gnatcatcher, and they are subject to predation by a variety of vertebrate predators (Sockman

1997; Braden et al. 1997), including human subsidized predators (e.g., house cats, raccoons, ground squirrels, and scrub jays). Brown-headed cowbirds also parasitize gnatcatcher nests (USFWS 1991; Ogden Environmental and Energy Services 1993; Braden et al. 1997), but predation and nest abandonment may be the cause of most losses (Braden et al. 1997).

Management measures that could be taken to benefit the gnatcatcher include removing exotic plant species from its shrubland habitats, avoiding disturbances that eliminate shrubby vegetation, managing fire frequency to maintain a semi-open shrub structure in coastal sage scrub, and creating/maintaining a network of habitat reserves linked by habitat linkages (Mock 2004).

Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) must include measures to reduce edge effects and minimize disturbance during the nesting period, fire protection measures to reduce the potential for habitat degradation due to unplanned fire, and management measures to maintain or improve habitat quality including vegetation structure. No clearing of occupied habitat within the County's Biological Resource Core Areas may occur between March 1 and August 15 (the OHCA is in a County Biological Resource Core Area).

Mountain lion (*Puma concolor*)

Legal Status: Federal: None
State: Specially Protected Mammal

MSCP Subarea Plan: Covered

Habitat Characteristics/Use: Mountain lions are habitat generalists, inhabiting a variety of habitats throughout California from deserts to the humid Coast Ranges (Dixon 1982). Mountain lions typically inhabit remote hilly or mountainous areas in forest and shrub habitats. Dickson and Beier (2005) found that mountain lions preferred riparian habitats and avoided human-dominated habitats, and that grasslands were the most avoided natural vegetation type. They are most abundant in areas that support a large population of deer, their primary prey. Within these habitat types, mountain lions tend to prefer areas that provide cover, for example rocky cliffs (Dixon 1982). They require open water for drinking, large foraging areas, and areas within which to den like rocky shelters or caves.

For purposes of this analysis, it is assumed that the entire OHCA is potentially suitable to support the mountain lion. This includes a total of approximately 304.6 acres.

Occurrences within the OHCA: Neither the mountain lion, nor sign of mountain lion (e.g., scat or tracks) was observed in the OHCA. Tracks were observed in the vicinity, however, and a mule deer was observed in the OHCA. It is assumed that the entire OHCA (approximately 304.6 acres) is suitable mountain lion habitat.

Threats and Conservation Needs: The primary threats to the mountain lion are loss and fragmentation of large expanses of suitable habitats and human/mountain lion interactions that

typically result in the death of the individual mountain lion involved. Roadkill is a frequent factor in more urbanized areas (Beier 1993).

Large-scale, intense, wildland fires have the potential to remove protective cover and the mountain lions' prey base, which may displace mountain lions for a period of time. However, fire plays an important role in determining the suitability of habitat for mountain lions. Fires that reduce canopy closure, increase vigor and accessibility, and improve palatability of shrub species preferred by deer benefit mountain lion populations. In California chaparral, mountain lions were attracted to the edges of recent burns where deer tended to congregate. Fire exclusion, on the other hand, has the potential to allow vegetation to mature to a level where it is less suitable for deer, which can adversely affect mountain lions (Quinn 1990).

Mountain lion hunting has not been allowed in California since 1972 (Torres et al. 1996) and in 1990, a State ballot initiative (Proposition 117) was passed into law, establishing the California Wildlife Protection Act of 1990 and designating the mountain lion as a "specially protected mammal." This designation generally prohibits the "taking" (hunting or killing), injury, possession, or sale of mountain lions in California. However, provisions of the Act allow for the issuance of depredation permits when a mountain lion: (1) is perceived as an imminent threat to public health or safety, (2) damages livestock or other property, or (3) is attacking people.

The linkage at Coal Canyon from the Santa Ana Mountains to the Chino Hills State Park has been identified as important to maintaining lions in the Santa Ana Mountains and Chino Hills. Landscape linkages from the Santa Monica Mountains to the San Gabriel Mountains to the San Bernardino Mountains to the San Jacinto Mountains to Palomar Mountain to the San Diego Mountains and Santa Ana Mountains are very important for long-term viability of the mountain lion in southern California. Linkages to the Central Coast, Sierras and Baja California are also very important (U.S. Forest Service [USFS] 2005).

Southern mule deer (*Odocoileus hemionus fuliginata*)

Legal Status: Federal: None
State: None

MSCP Subarea Plan: Covered

Habitat Characteristics/Use: Mule deer require cover for security, thermal protection, and snow interception (Biswell 1961, Bunnell 1990, Dorrance 1967, Geist 1981, Mackie et al. 2003, and Wallmo 1981 *in* Innes 2013). According to a review, concealment cover is provided by vegetation within seven feet of the ground. Olson (1992 *in* Innes 2013) described patches of concealment cover as "any vegetation capable of hiding 90 percent of a mule deer from human view at a distance ≤200 feet." Mature chaparral stands provide essential cover and forage for mule deer during parts of the year (Wallmo 1981 *in* Innes 2013). Mule deer summer foraging sites in California chaparral include riparian areas, seeps, springs, streams, and ponds. In fall, foraging sites include stream bottoms, ridge tops, and northern slopes. In winter, mule deer forage on south slopes and sheltered ridges (Ashcraft 1979 *in* Innes 2013).

Mule deer forage-site selection is based in part on forage quantity and nutritional quality, which are influenced by plant species composition, plant phenology and related changes in nutrition, site characteristics (soil, shade, and topography), successional stage, grazing and browsing pressure, and weather. Mule deer forage-site selection is also affected by predation risk and proximity of foraging sites to drinking water and habitats providing cover. Edge habitat is generally considered important to deer because of high habitat diversity within ecotones and easy access to more than one habitat type (Bendell 1974 and Kucera 1991 *in* Innes 2013). Mule deer commonly use edges between burned and unburned habitats (Innes 2013).

In the southwestern United States, mule deer occur in a range of habitats including desert shrublands at the lowest elevations; semidesert shrubland-grassland communities, chaparral, mountain shrub, and woodlands at middle elevations; and some forests at high elevations (Wallmo 1981 *in* Innes 2013). Desert grasslands without shrubs do not have mule deer unless they contain rugged topography or riparian areas. Dry washes are important to mule deer in semidesert grasslands because they provide food as well as resting, escape, and travel cover throughout the year (Severson and Medina 1983 *in* Innes 2013).

For purposes of this analysis, it is assumed that the entire OHCA is potentially suitable to support the mule deer. This includes a total of approximately 304.6 acres.

Occurrences within the OHCA: Mule deer were observed in the OHCA during surveys that occurred from 2000 to 2003 and in 2012 during a burrowing owl survey. It is assumed that the entire OHCA (approximately 304.6 acres) is suitable mule deer habitat.

Threats and Conservation Needs: Threats to mule deer populations include overharvesting, increased human disturbance, and non-native invasive plants. Human development generally reduces mule deer use of developed areas (Mackie et al. 2003 and Wallmo 1981 *in* Innes 2013). Some sources suggested that the carrying capacity of rangeland for mule deer may be reduced by non-native invasive plants that displace more palatable native grasses and forbs (Bodurtha et al. 1989, Duncan 2005, Lym and Duncan 2005, and Rice 2005 *in* Innes 2013).

Major predators of mule deer include coyotes, mountain lions (*Puma concolor*), gray wolves (*Canis lupus*), bobcats (*Lynx rufus*), brown bears (*Ursus arctos*), American black bears (*Ursus americanus*), and humans (Anderson and Wallmo 1984, Connolly 1981, Geist 1998, and Mackie et al. 2003 *in* Innes 2013). Golden eagles are common predators of young (Anderson and Wallmo 1984, Connolly 1981, and Mackie et al. 2003 *in* Innes 2013). Numerous bacterial diseases and parasites infest mule deer and may cause mortality. Occasional epizootics in wild populations have been responsible for high mortality (Hibler 1981 *in* Innes 2013).

The generalization that fire benefits mule deer is supported by some but not all empirical studies. In general, the literature regarding fire effects on mule deer habitats indicates that fire sets back plant development and succession and removes accumulated litter, often increasing mule deer forage quality and/or quantity in the short term. Fire also tends to increase habitat patchiness, providing mule deer with abundant edge habitat and diverse vegetation. However, because mule deer depend on vegetation for forage, snow interception cover, hiding cover, and thermal protection, fire is likely to be detrimental to mule deer in the short term if it removes too much

vegetation (Bendell 1974, Higgins et al. 1989, Severson and Medina 1983, and Shantz 1947 *in* Innes 2013). Fire may also facilitate establishment of unpalatable or invasive plants, which may reduce mule deer forage (Innes 2013).

Disturbance can produce habitat for mule deer by favoring forage growth and by creating ecotones between areas of dense cover and more open feeding areas. Conversely, loss of cover over large areas can be detrimental to mule deer (Hanley 1984 and Mackie et al. 2003 *in* Innes 2013). Several researchers suggested that resource managers may need to consider proximity of food, cover, and water before implementing actions that may impact mule deer habitats (Holechek 1982, Mackie et al. 2003, and Mackie 1981 *in* Innes 2013).

San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*)

Legal Status: Federal: None
State: CNPS RPR 1B.1

MSCP Subarea Plan: Covered

Habitat Characteristics/Use: San Diego goldenstar occurs in clay soils or cobbly loams on dry grassland mesas, hillsides, and around vernal pools (Reiser 1994). It is associated with coastal sage scrub, chaparral, valley grassland, freshwater wetland habitats, and openings in shrubby habitats (Smith and Berg 1988) and occurs at elevations from 50 to 465 meters amsl (CNPS 2014). Table 3-5 of the 1998 Final MSCP Plan lists grassland as San Diego goldenstar habitat.

Occurrences within the OHCA: San Diego goldenstar was found in Diegan coastal sage scrub, southern mixed chaparral, non-native grassland, and native grassland habitats in the OHCA. An estimate of San Diego goldenstar numbers using several years of survey data resulted in a total population estimate of 11,174 individuals in the OHCA, although it is likely that not all of the corms sprouted each year. Most of these plants occur within four primary populations. Virtually all of the plants occur on north- and west-facing slopes in the OHCA. The Likely Limits of Occurrence (suitable habitat) for this species in the OHCA totals 69.46 acres.

Threats and Conservation Needs: Threats to this species include urbanization, road construction, vehicles, non-native plant species, and illegal dumping (CNPS 2014). This species was afforded coverage under the MSCP because eight of 11 major populations, 125 of 144 occurrences, and 38 percent of grassland will be conserved. Presently, there are 11,200 acres of grassland within the MSCP Preserve boundary, and 5,836 acres (52 percent) have been conserved, according to CDFW Habitrak Data through 2013 (CDFW 2014). Within the County's Subarea, there are 2,145 acres of grassland within the MSCP boundary, and 1,067 acres (44 percent) have been conserved (CDFW 2014).

Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) require monitoring of transplanted populations and specific measures to protect against detrimental edge effects.

Dunn's mariposa lily (*Calochortus dunnii*)

Legal Status: Federal: None
State: CNPS RPR 1B.2

MSCP Subarea Plan: Covered, Narrow Endemic

Habitat Characteristics/Use: This species occurs in rocky openings in chaparral, grassland/ chaparral ecotone, and closed-cone coniferous forest. It appears to be restricted to metavolcanic-and gabbroic-derived soils (CNPS 2014).

Occurrences within the OHCA: Two individuals were observed in 2004 and eight were observed in 2011 in association with chamise chaparral in the OHCA; however, it is likely that not all of the bulbs sprouted each year.

Threats and Conservation Needs: Threats to Dunn's mariposa lily include development, non-native plant species, and vehicles (CNPS 2014). This species was afforded coverage under the MSCP because 100 percent of the major populations will be conserved.

Orcutt's bird's beak (*Cordylanthus orcuttianus*)

Legal Status: Federal: None
State: CNPS RPR 2.1

MSCP Subarea Plan: Covered

Habitat Characteristics/Use: The preferred habitat of this species is seasonally dry drainages and uplands adjacent to riparian habitats (Reiser 2001). The CNPS (2014) lists its habitat as coastal scrub at elevations from 10 to 350 meters amsl.

Occurrences within the OHCA: Twenty-one individuals of this species were observed in the OHCA in 2001 (one in southern mixed chaparral and 20 in Diegan coastal sage scrub).

Threats and Conservation Needs: Orcutt's bird's beak is threatened by urbanization, trail widening, and non-native plant species (CNPS 2014). This species was afforded coverage under the MSCP because 75 percent of the major populations will be conserved.

Tecate cypress (*Hesperocyparis* [*Cupressus*] *forbesii*)

Legal Status: Federal: None
State: CNPS RPR 1B.1

MSCP Subarea Plan: Covered

Habitat Characteristics/Use: This plant is found in association with closed cone coniferous forest and chaparral with clay, gabbroic, or metavolcanic soil (CNPS 2014). This species prefers

well-drained, north-facing slopes (Reiser 2001). Table 3-5 of the 1998 Final MSCP Plan lists Tecate cypress forest as Tecate cypress habitat.

Occurrences within the OHCA: Seventy-eight individual Tecate cypress occur within southern interior cypress forest and in other scattered locations in the OHCA.

Threats and Conservation Needs: Threats to this species include alteration of fire regimes and mining (CNPS 2014). Area Specific Management Directives for protected Tecate cypress (Table 3-5 of the 1998 Final MSCP Plan) require specific measures to maintain or increase populations. Such measures must include addressing the autecology and natural history of the species and to reduce the risk of catastrophic fire. Management measures to accomplish this may include prescribed fire.

Otay tarplant (*Deinandra conjugens*)

Legal Status: Federal: Endangered
State: Endangered; CNPS RPR 1B.1

MSCP Subarea Plan: Covered, Narrow Endemic

Critical Habitat Description: Three critical habitat units have been designated for Otay tarplant on 6,330 acres in San Diego County, California. Designated critical habitat includes sufficient habitat to maintain self-sustaining populations of Otay tarplant throughout its range. The individual units contain essential habitat for Otay tarplant and help to identify special management considerations for the species. The proposed project includes portions of Unit 3 (Otay Valley/Big Murphy's Unit) of the final critical habitat designation. Unit 3 encompasses approximately 2,250 acres and contains populations in the southern and eastern extent of the species' historical distribution. Unit 3 was designated because it contains multiple large Otay tarplant populations that are capable of producing large numbers of individuals in good years, which is important for this species to survive through a variety of natural and environmental changes, as well as stochastic (random) events (67 FR 76042).

Primary Constituent Elements (PCEs) are the physical and biological features essential to the conservation of the species that may require special management considerations or protection. The PCEs for Otay tarplant critical habitat are soils with a high clay content (generally greater than 25 percent) or clay intrusions or lenses that are associated with grasslands, open coastal sage scrub, or maritime succulent scrub communities between 80 and 1,000 feet elevation (67 FR 76040).

Please refer to the final critical habitat rule (67 FR 76030) for detailed information on the units, including their sizes, locations, and special management considerations.

Habitat Characteristics/Use: This species can be found in coastal scrub and valley and foothill grassland habitats with clay soils (CNPS 2014). Reiser (2001) states that the preferred habitat of this species is fractured clay soils in grasslands or lightly vegetated Diegan coastal sage scrub. The distribution of Otay tarplant is strongly correlated with clayey soils, subsoils, or lenses

(isolated area of clay soil) (Bauder et al. 2002 *in* USFWS 2002). Such soils typically support grasslands, but may support some woody vegetation (USFWS 2002)

Status and Distribution: Otay tarplant occurs in southwestern San Diego County and Baja California, Mexico at elevations from 25 to 300 meters amsl (CNPS 2014). The species has a limited distribution consisting of at least 25 historical populations near Otay Mesa in southern San Diego County and one population in Estado de Baja California, Mexico, near the U.S. border (CDFG 1994, Roberts 1997, CNDDB 2002, Reiser 1996, herbarium records at the SDNHM, S. Morey, in litt. 1994 *in* USFWS 2002). In the MSCP area, it is reported in the vicinities of Otay Mesa, the Otay River valley, and San Miguel Mountain (USFWS and CDFW 1996).

A population in excess of 730,000 individuals occurs within and adjacent to Johnson Canyon located within the Lonestar Ridge project site approximately two miles west of the OHCA north of Brown Field (HELIX 2006). This large population represents the second largest known Otay tarplant population in California and is proposed for preservation under the City of San Diego's MSCP Subarea Plan (City of San Diego 1997). In addition, Otay tarplant (estimated at 97 individuals) occurs immediately south of the site according to the California Natural Diversity Data Base (CNDDB; CDFW 2006), and a second population of approximately 800 individuals occurs in six locations within grasslands southeast of the site (EDAW 2001a).

Occurrences within the OHCA: A total of 510 individuals of this species were reported in the OHCA within two primary populations, the largest of which contained 400 individuals. It is likely, however, that not all of the seeds germinate each year from the seed bank in the soil, so the potential population in any given year may fluctuate. This species is endemic to clay soils; however, San Miguel-Exchequer rocky silt loams, nine to 70 percent slopes (Bowman 1973) occur where these plants were found. The lower soil horizon of this mapped soil type does consist of clay, indicating that the species is likely occurring in areas where the upper soil horizon has been removed by erosion or other disturbance, or in small inclusions of clay within the upper soil horizon. Suitable habitat for this species within the OHCA, based on slope orientation and vegetation type, is 6.58 acres. The OHCA does not meet the MSCP threshold for major populations (1,000 individuals) as the species was not evaluated in the MSCP 1995 and 1996 Species Evaluations (USFWS and CDFW 1996).

Otay tarplant was also seeded as part of a restoration effort within the impact neutral area along the southern property boundary. Because this is not part of a natural population, it is not included in this assessment.

Threats and Conservation Needs: Urban development and agricultural activities, invasion of non-native plant species, and habitat fragmentation and degradation have resulted in the loss of suitable habitat across the species' range. Its annual growth habit and requirement for cross pollination to produce viable seeds puts the species at risk of population fluctuations and a decline in genetic variation due to variable weather conditions and the abundance of pollinators. Maintenance of the genetic variability within the species, through cross pollination, may be critical to long-term survival. The extensive fragmentation of remaining populations may exacerbate these threats by reducing population connectivity (USFWS 2004a).

Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) must include specific measures for monitoring populations and adaptive management of preserves (taking into account extreme population fluctuations from year to year) and specific measures to protect this species from detrimental edge effects.

Variegated dudleya (*Dudleya variegata*)

Legal Status: Federal: None
State: CNPS RPR 1B.2

MSCP Subarea Plan: Covered, Narrow Endemic

Habitat Characteristics/Use: This species can be found on clay soils in association with chaparral, cismontane woodland, coastal scrub, valley and foothill grassland, and vernal pools (CNPS 2014).

Occurrences within the OHCA: A total of approximately 4,867 individuals of this species were found on north-facing slopes throughout the OHCA. The MSCP defines major populations as areas supporting greater than 500 individuals; two areas within the OHCA meet that criterion. Three populations of variegated dudleya are present in the OHCA (two of these are MSCP major populations with greater than 500 individuals each). Suitable habitat for this species within the OHCA totals 48.65 acres.

San Diego barrel cactus (*Ferocactus viridescens*)

Legal Status: Federal: None
State: CNPS RPR 2.1

MSCP Subarea Plan: Covered

Habitat Characteristics/Use: San Diego barrel cactus prefers dry slopes in coastal sage scrub.

Occurrences within the OHCA: One-hundred sixty six individuals were found on south-facing slopes throughout the OHCA. The MSCP defines major populations of this species as areas supporting greater than 200 individuals.

Threats and Conservation Needs: San Diego barrel cactus is threatened by urbanization, vehicles, collecting, agriculture, and non-native plant species (CNPS 2014).

This species was afforded coverage under the MSCP because 81 percent of major populations will be conserved. This is an abundant species that would be protected at varying levels in several subareas: Carmel Mountain (64 percent), East Elliot (64 percent), Marron Valley (90 percent), Mission Trails Regional Park (94 percent), Otay Mesa (70 percent), Otay River Valley (100 percent), Sweetwater Reservoir (100 percent), and Sycamore Canyon/Fanita Ranch (50 percent). Area-Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) must include measures to protect this species from edge effects

and unauthorized collection. Directives should also include appropriate fire management/control practices to protect against a too frequent fire cycle.

Gander's pitcher sage (*Lepechinia ganderi*)

Legal Status: Federal: None
State: CNPS 1B.3

MSCP Subarea Plan: Covered, Narrow Endemic

Habitat Characteristics/Use: This species is apparently restricted to gabbroic or metavolcanic soils in closed-cone coniferous forest, chaparral, coastal scrub, and valley and foothill grassland (CNPS 2014, Reiser 2001).

Occurrences within the OHCA: Ninety-two individuals of this species were found in the OHCA. These individuals are part of the major population that occurs within the Otay Mountain Major Amendment Area (Table 3-5 of the MSCP).

Threats and Conservation Needs: Gander's pitcher sage is threatened by development (CNPS 2014). Area Specific Management Directives for this MSCP Covered Species (Table 3-5 of the 1998 Final MSCP Plan) must include: 1) specific measures to protect the species from detrimental edge effects and uncontrolled access; 2) measures to promote the increase in populations; and 3) specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire (management measures to accomplish this may include prescribed fire). At the time permit amendments are proposed, strategies to provide protection for this species within the amendment area must be included.

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Appendix M

HERMES COPPER BUTTERFLY SURVEY REPORT

Memorandum

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To: Heather Steven/Rob Hingtgen – County of San Diego

Susan Wynn – U.S. Fish and Wildlife Service

David Mayer – Ca. Dept. of Fish and Wildlife

Cc: Arnie Veldkamp

Date: February 25, 2019 **From:** Barry Jones

Subject: Spiny Redberry/Hermes Copper Butterfly Survey at Otay Hills

HELIX Project No.: SRM-17

Message:

This memo documents the results of spiny redberry (*Rhamnus crocea*) and Hermes copper butterfly (*Lycaena hermes*) surveys conducted at the Otay Hills site through the end of July 2014. On March 21, 2014, HELIX biologist George Aldridge conducted a survey in order to map the locations of spiny redberry, the larval host plant of the Hermes copper butterfly. The survey focused on the proposed impact area and approximately 200 feet outside of the impact area to the east and north where such areas lie on site. Off-site areas were also surveyed incidentally. The entire survey area was transected on foot and all areas were thoroughly inspected through 10x binoculars.

On May 23, 2014, HELIX biologists Amy Mattson and Ben Rosenbaum surveyed for spiny redberry within the proposed impact area and a 1000-foot buffer. Cloud cover did not dissipate to allow for a focused survey of Hermes Copper in accordance with County of San Diego interim survey guidelines (County of San Diego 2010). Subsequent surveys were conducted per these guidelines. Ms. Mattson and HELIX biologist Jenna Hartsook conducted Hermes Copper surveys May 27 and June 6 and 23, 2014. The fourth and final survey was conducted by Ms. Mattson and Mr. Rosenbaum on July 9, 2014.

The survey area for Hermes Copper was determined by mapping all spiny redberry plants that are within 15 feet of buckwheat (*Eriogonum fasciculatum*) plants per County protocol. Spiny redberry plants without buckwheat nearby were not mapped or surveyed. The resulting survey area polygons were created by delineating 15-foot buffers around each redberry plant and grouping those areas that overlapped or were adjacent to each other. Surveys were conducted on foot with the aid of binoculars. All butterflies observed within the polygons and during the hiking between polygons were recorded. The survey area and locations of spiny redberry plants found in the survey area are shown on the attached graphic (Attachment 1).

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In sum, the survey area generally supports three vegetation types: non-native and native grassland and Diegan coastal sage scrub, with small patches of a miscellany of other vegetation types including tamarisk scrub (along a creek in the north-central portion of the survey area) and disturbed habitat (at the western edge and along roads). The Diegan coastal sage scrub in the survey area is overwhelmingly dominated by California buckwheat, California sagebrush (*Artemisia californica*), and San Diego sunflower (*Bahiopsis laciniata*), and includes scattered individuals of laurel sumac (*Malosma laurina*) and many other species typical of the community; however, it is predominantly open, low-growing, and fairly sparse. Therefore, the survey area was easily traversed and tractable to visual inspection through binoculars. Spiny redberry shrubs were conspicuous, except for where they occurred under large shrubs.

A small number of spiny redberry plants were found within the project footprint, consisting of a single individual northeast of the eastern terminus of the access road and of 12 survey areas consisting of one or two spiny redberry spread out on the north-facing slope to the southeast of the access road (Attachment 1). Outside of the proposed impact area, spiny redberry were observed in three general locations (Attachment 1). Several individuals were found growing along the ecotone between non-native grassland and Diegan coastal sage scrub east of the northeastern corner of the development footprint. The closest individual was approximately 425 feet from the impact footprint, with the other individuals 500 or more feet from the project footprint. The second patch of spiny redberry occurs to the east of the utility tower surrounded in the central portion of the site, within generally north-facing Diegan coastal sage scrub. The closest individual was approximately 140 feet from the impact footprint. The third location was approximately 200 feet from the project footprint, where a single individual occurs on the west-facing slope supporting Diegan coastal sage scrub east of the access road.

No Hermes copper butterfly were observed during focused surveys, and the probability of occurrence is considered low.

Enclosure:
Attachment 1 Survey limits and Spiny Redberry Locations

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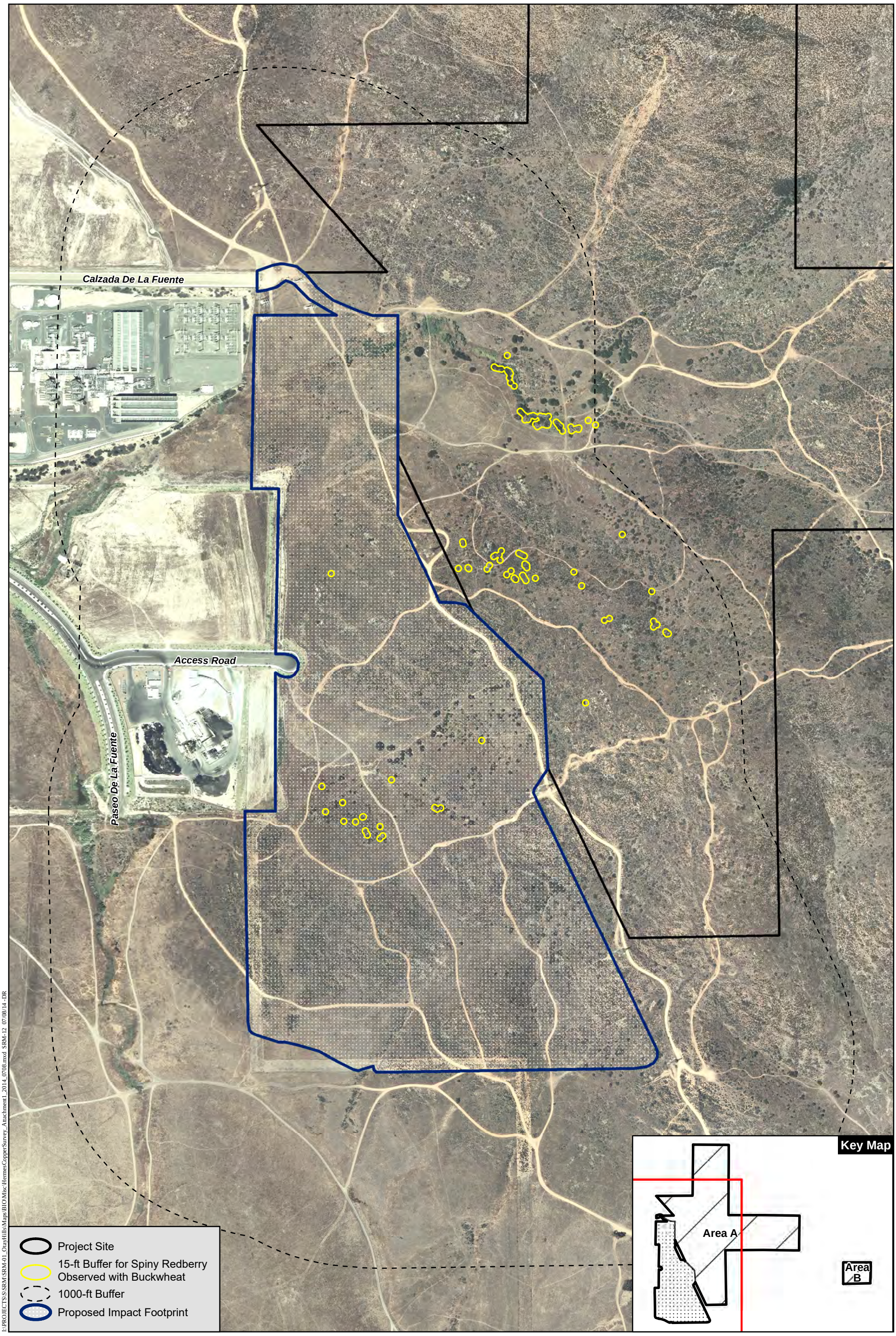

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Survey Limits and Spiny Redberry Locations

OTAY HILLS

HELIX Environmental Planning

Attachment 1